

Development and Evaluation of a Prototype web XBRL-Enabled Financial Platform for the Generation and Presentation of Financial Statements according to IFRS

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Abstract

The main objective of IFRS is to provide a common qualitative accounting basis and to promote greater transparency and comparability of financial reporting across the world. However, the success of IFRS depends on how financial information flows within the company and in which format is represented to outside users. Therefore, accounting information systems and web financial applications should meet the qualitative criteria of IFRS. Also, it is necessary to introduce new advanced technologies that will be able to electronically describe the new "business language", XBRL. The purpose of this paper is to study accountants' perceptions to use eXtensible Business Reporting Language (XBRL), investigating the implications of implementing an XBRL project in the Greek capital market. In addition, a pilot model for Web financial reporting, using XBRL, was developed and specifically evaluated. The results indicated that this pilot model is a financial environment where accountants can easily and quickly find, parse, edit and exchange useful and meaningful accounting information. This empirical study revealed that both: a) Greek companies by their prospective adoption of XBRL b) Greek capital market by implementing a sophisticated web financial reporting model seek for the generation and presentation of high quality accounting data.

Keywords: IFRS, XBRL, Financial Reporting, Accounting Information Systems, Web Financial Platform, Greek Capital Market

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Introduction

International Financial Reporting Standards (IFRS) adoption is one of the greatest changes, not only in the field of accounting but also in the history of financial reporting generally (Hung & Subramanyam, 2007). Over than 100 countries around the world have already adopted IFRS and, considering the globalization pressure, the spread of IFRS adoption will continue to gain acceptance by many enterprises (Daske, Hail, Leuz & Verdi, 2008). The official application of IFRS started at January 1, 2005 (European Regulation 1606/2002) with all listed companies in European Union preparing their financial statements in accordance with IFRS (Tsalavoutas & Evans,2010). IFRS are developed to provide higher financial information quality than the local accounting standards, ensuring, thus, greater transparency and comparability of financial statements around the world. Even though, IFRS offer better quality, comparability and transparency of financial statements (Cohen & Karatzimas,2012), some questions need to be answered related to whether accounting information systems reflect IFRS characteristics and development of new financial technologies is needed.

IFRS success depends on the way internal financial reporting flows within the companies and on how external financial information is provided in various stakeholders. Therefore, accounting information systems and web financial reporting applications must reflect the quality characteristics of IFRS and specifically relevance, comparability, understandability and faithful representation. Also, web financial information should be easily provided to users, in a useful and clear way (relevance), in order to understand the similarities and differences of accounting events over time (comparability). In addition, electronic systems should: a) incorporate the concept of IFRS, b) promote accounting harmonization and serve the needs of many different users by implementing new electronic languages (understandability). Additionally, the web financial information should be timely verifiable and editable, in order to faithfully represent the financial position of the company (faithful representation).

IFRS is the new "business language" that changes the accounting-oriented enterprise in a single and uniform accounting environment (Stanko & Zeller,2 010). However, with the introduction of IFRS, the process and the integrity of accounting information have become more complex and the amount of data has significantly increased.

The IFRS complexity and the rapid changes in the business environment are leading to the adoption of a common computer language, based on the language of IFRS (Blanas, Stavropoulos & Stergiaki, 2011a). Much research interest has been focused on the introduction of a new technology, XBRL (eXtensible Business Reporting Language), which was designed by the International Accounting Standards Board (IASB) for the electronic representation of financial statements in accordance with IFRS (Núñez, De Andrés Suárez, Gayo & De Pablos, 2008). XBRL is gaining prevalent recognition, support and advocacy from a range of key constituencies, including accounting, software, regulatory and industrial sectors (Jones & Willis, 2003).

It also permits information producers to reuse information in their systems for multiple reporting purposes without re-keying (Williams, Scifleet, & Hardy, 2006). More specifically, it provides data within an interactive, context-rich format so that individuals can download directly by using more skilled software. As an XML-based standard, XBRL is designed to provide a set of textual tags for marking various parts of a document and identify accounting numbers for external financial reporting (Bovee, Kogan, Nelson, Srivastava & Vasarhelyi, 2005). Since tags are computer-readable, information submitted by report generators can be automatically sorted, parsed, organized and edited by users, thus, decreasing the cost of using information and increasing its value (Arnold, Bedard, Phillips & Sutton, 2009).

Many countries around the world such as Australia, Canada, Switzerland, China, India, Ireland, Japan, Korea, South Africa, Sweden, the USA, the United Arab Emirates, Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, Netherlands, Portugal, Spain and Great Britain, successfully adopted XBRL. Previous research suggests that most of the European countries that adopted XBRL are satisfied with the performance, quality and generally with all the advantages that the technology offers (Stergiaki, Stavropoulos & Lalou, 2013; Hodge, Kennedy & Maines, 2004; Pinsker, 2008). Most countries, that actively use XBRL, have developed special web financial platforms to provide more reliable, efficient, accurate, transparent and low cost financial information. Currently, there's a number of XBRL platforms at the market and each one serves different purposes. For example, the United States of America stock exchange recently developed a very upscale platform for XBRL Cloud. Moreover, many platforms provide a wide variety of tools available for creating XBRL files.

In particular, specialized tools help user to create XBRL files, guiding him with various messages, warnings and errors, and validate XBRL financial records in accordance with the accounting rules of each country (Fischer & Mueller, 2011). However, even though Greece is an emerging market developing rapidly within the European Union, still no effort is observed to adopt new innovative technologies. It is highly important, in this case, to develop and evaluate new upgraded information systems that will present and analyze financial statements in accordance with IFRS, using XBRL format. The aim specifically of this paper is to investigate how the introduction of IFRS leads to the development of new XBRL-enabled information systems by examining accountants' behavioral intention to use a prototype web financial platform. The following section discusses development drivers of new web financial technologies by the Athens Stock Exchange. Sections 3 and 4 analyze the architecture and implementation of the prototype web financial reporting platform. Section 5 presents the empirical research. The final section of the paper discusses and concludes the main findings of the study.

Need for Development of New Web Financial Technologies from the Athens Stock Exchange

The principles and rules of IFRS bring many changes in accounting work, transforming it from a simple transfer of economic events in a company's book to a qualitative level of financial work. In addition, information systems release a large amount of financial information to interested external parties with the help of web-based financial applications. However, the way in which financial information flows to various web applications and then to interested parties does not seem to reflect the quality of IFRS. This is due to the fact that electronic data obtained from the accounting information systems can be easily read by humans, but they cannot be easily used by software applications. Additionally, in their current form, financial reports seem to be opaque, in that they are not facilitating corporate accountability legislation and auditing (Troshani & Lymer, 2010).

According to article 300 of the Athens Stock Exchange (ASE) Regulation, the financial information is firstly submitted to H.E.R.M.E.S. II (Hellenic Exchanges Remote Messaging Services) system and then it is published directly at the official website of ASE (www.ase.gr), which provides free access for all stakeholders.

Listed companies must follow a specific procedure in order to publish their financial statements.

Firstly, they must prepare consolidated and parent financial statements based on two separate template excel files, that ASE has developed in cooperation with the regulatory authorities. This template excel file is designed to import financial data not automatically but manually. Secondly, they export financial data in XML files. So, within company accounting data flows in digital format, but when accounting reporting data must be released to external parties, the flow of digital data is stopped. As a result, the submission of financial information in ASE database seems to be time-consuming and not cost-effective for Greek companies. Meanwhile, investors-analysts endure many difficulties in the extraction and the analysis of financial data, because the only file formats that are available in the web platform are .pdf and .html files. Additionally, H.E.R.M.E.S. II system provides only the basic financial information and excludes detailed financial information such as financial ratios, graphs and comparative financial statements between industry companies.

All this information could be effectively issued in digital form, renouncing the traditional information production process, which requires the manual intervention by the human factor. Specifically, the accounting information should be presented in a clear and usable manner with minimum human intervention (Hoffman & Rodríguez, 2013). With the help of XBRL, companies have the ability to collect and extract the information they need automatically, without introducing data manually. This is due to the fact that XBRL allows the transformation of files in other typical kinds of data formats such as html, xml, ASCII, xls, pdf, etc. and the presentation in a wide range of electronic devices such as Personal Digital Assistant (PDA), mobile phones, etc. XBRL acts as an independent platform, which can be "snapped" and imported or exported to any accounting information system for the production of different financial statements (e.g. Greek GAAP, International Accounting Standards, etc.). XBRL automatically captures more detailed accounting information (e.g. footnotes) and acts as a bridge between accounting information systems and financial statements (McGuire, Okesson, & Watson, 2006). Therefore, internal accounting information is based on a common specification, which in turn can be used continuously. Accordingly, the preparation and exchange of financial information can easily become an automated process (Li, Roge, Rydl & Crews, 2006).

Architecture of XBRL-PASSPORT

Investors and analysts carry out the long and difficult task of compiling and analyzing financial data from a variety of sources and formats and at the same time companies incur higher cost of consistency, as a result of diverse formatting. To break the information logjam, a smart client prototype solution has been developed, “XBRL-Passport” (Pilot Athens stock exchange’s Statements Source PORTal). The initial goals of the above prototype were as follows:

1. Provide a location that could be used to gather financial data converted to XBRL files for the listed companies in ASE.
2. Create relevant financial data and information ready-for-analysis.
3. Provide the comparison of companies included in the same sector.

The initial implementation of the model is based on a simple three-layer architecture, consisting of a database layer (MySQL v5.1), a logic layer (PHP scripted), and finally a presentation layer (web application). The prototype model functions as a web application; therefore, it was designed with the help of PHP scripting language. PHP code interpreted by the web server (apache v.2.0 with a PHP processor module) accesses the information stored in the database layer and formulates a response to the user query in HTML form. Then, the generated document is entrenched in the research web site. A content management system (currently Joomla v1.5.22) serves as an environment to the research implementation, offering additional supporting features and an easy way to provide research documentation, links, news and other research related material. It also provides the ability to integrate and support additional tasks such as research surveys, presented all to the visitor in a rationally layered fully integrated environment.

In this initial implementation of the “XBRL Passport” model a search mechanism able to retrieve a set of references to the desired data based on user-selected criteria was created. These references to the appropriate data are presented to the user as links to the desired information. The desired information is presented in HTML format, as XBRL data is embedded within a variety file types such as XBRL, HTML, Excel, Xml or text. Since the web viewing applications to parse XBRL format is limited, the format of the presented material is HTML (using XBRL Schema) and not XBRL based.

Implementation of XBRL Passport

One of the most important features of “XBRL Passport” is that it provides an XML application that creates computer readable and searchable documents. The primary task of the module is to create a familiar financial reporting environment for the listed companies in ASE as well as for the investors and analysts over the Internet via XML Web Services. The implementation of the model in ASE companies provides them with the ability to exchange financial data, which is converted to XBRL files and then upload them to a central database hosted by “XBRL Passport” model. Then, the XBRL database can be available to analysts and investors through the World Wide Web. The implementation process involves two main stages.

Firstly, the user-investor has to choose the year that he/she is interested in collecting financial data of. After the selection of the year, he/she has two options: a company selection or a sector selection from the list that the system offers. Additionally, the system offers a more advanced search using the index selection. Index selection includes the following indices: current ratio, ROE after Tax, gross profit margin, accounts receivable turnover, total debt to equity, sales to current liabilities, ROA after TAX and net profit margin. This additional criteria enables the user to make a more qualitative search by presenting companies with the best performance.

In the next stage, XBRL Schema is introduced by presenting the financial information of the selected company. Considering the fact that, for the elaboration process of this data, programs such as MS Excel are used, “XBRL Passport” is capable of creating ready-for-analysis MS Excel files with XBRL Schema. Also, there are additional tools that the system offers: a) the aggregated presentation of the data of the chosen company, b) comparing companies results of the same sector, c) calculation of key financial ratios, d) graphs’ construction, as well as, e) disclosure footnotes. It is obvious that the XBRL Schema provides the user great manipulation and data presentation capabilities. “XBRL Passport” essentially plays the role of a specialized Web financial information system, as it encloses a dual rendering, which interacts with both its users and its external information sources from the selected listed companies.

Through a simple interface, the user has the ability to submit the selection preferred company to the system, and then “XBRL Passport” automatically provides them access to:

1. Financial statements of the companies for all the years included to the database in HTML format.
2. Disclosure footnotes through each company's financial statement.
3. Storage and retrieval of financial statements using XBRL Schema.
4. Aggregated & comparison results of the selected companies.
5. Calculated financial ratios of the companies.
6. Graphs.

Empirical Research-Evaluation of the Prototype web Financial Reporting platform

Previous studies on XBRL usage and development of XBRL prototype models For the evaluation of a prototype model, it is important to examine whether the new technology is a useful and productive tool for the user. Previous research on acceptance-usage of innovative technologies shows that firstly it is necessary to understand the significance and the implications for organizations (Doolin & Troshani, 2007).Most of the research related to XBRL has focused primarily on the adoption of technology from the organisations, and presents little insight into the determinants of XBRL usage between users of financial reporting (Hodge, Kennedy & Maines, 2004; Troshani&Doolin,2005; Selamat & Rawashdeh, 2010).Hodge, Kennedy & Maines(2004) used the context of recognition versus disclosure of stock option compensation to investigate whether using an XBRL-facilitating technology improves nonprofessional investors' acquisition and integration of web financial information in investment decisions. The results indicated that XBRL reduces differences in nonprofessional investors' financial performance judgments and investment decisions created by recognition versus disclosure. Moreover, they concluded that investors perceived greater differences in financial statement reliability between recognition and disclosure, when they used XBRL.Pinsker (2008) examined adoption intentions of managers who have low knowledge of XBRL, but work for firms who may adopt it, by using competing theories from a previous Pinscher's research framework.

Technology Acceptance Model (TAM) and Absorptive Capacity were used for the examination of three major variables: perceived usefulness, perceived ease of use and absorptive capacity. The results showed that perceived usefulness and absorptive capacity have a significant influence on user attitudes toward XBRL adoption and that XBRL is an ease and useful technology.

Ghani & Jusoff (2009) compared XBRL, PDF and HTML format to observe user's opinion, regarding the adaptation of a desirable presentation format. They realized that users with more working experience preferred to use PDF while those with less working experience preferred to use HTML or XBRL. Arnold, Bedard, Phillips & Sutton (2009) investigated alternative structures for the Management Discussion and Analysis (MD & A), comparing the standard format of the corporate annual report currently used by companies with a "tagged" format that mimics XBRL using a dedicated web site and process tracing software.

The results suggested that there is much more efficiency and effectiveness implications into professional and nonprofessional investors when they spend less time viewing the risk information. Janvrin, Pinsker & Mascha (2011) studied nonprofessional investors' choice of three reporting technologies (PDF, Excel, and XBRL-related) by modifying the experimental design used by Hodge, Kennedy & Maines (2004). In their experiment they selected experimental companies with great differences in net income. The results indicated that more participants chose to use XBRL technology to complete their financial analysis task, because it was more efficient than Excel or PDF. Stergiaki, Stavropoulos & Lalou (2013) examined the factors that lead to the acceptance and usage of XBRL across several European countries. Researchers extended TAM2 with new variables derived from technology acceptance literature and found that there is a strong user base in Europe supporting and promoting XBRL.

On the other hand, previous literature on development of prototype models indicates that there are few studies that discuss XBRL prototypes or platforms and to the best of our knowledge there is a small number of studies that evaluate them. Bovee, Kogan, Nelson, Srivastava & Vasarhelyi (2005) suggested an intelligent agent named Financial Reporting and Auditing Agent with Net Knowledge (FRAANK). The prototype has the ability to extract accounting numbers from natural-text financial statements available from the SEC (Securities and Exchange Commission) EDGAR repository and converts them into XBRL.

Researchers stated that the system has the potential to offer many benefits in various decision makers (e.g., investors, creditors, auditors, and managers) as it relieves them from the time-consuming part of their tasks, and expeditiously allows them to concentrate on more intelligent aspects of the decision-making process.

In addition, they evaluated the prototype system and they found that FRAANK is an advanced research prototype that can be useful in various practical applications on the Internet, since it communicates with external information sources over the Internet (e.g., SEC, Yahoo, Quicken, etc.). Prichard & Roohani (2004) created a prototype public XBRL file repository as a project in a graduate web development course, in an effort to present challenges and opportunities of web financial reporting. The authors discussed the development of the submitted module and concluded that it facilitates users to gather a lot of information from (anyone – public access) any location of XBRL documents on the web.

E Silva & MacDonald (2006) created a tool named IntelExtra (intelligent agent for extracting information), that provides access to financial information easier and less costly, both for its users as for the companies that produce it. IntelExtra has the ability to extract key financial information presented in tables and make automatically a transition to a fully XBRL-based financial reporting world, without changing companies' information systems. Fischer & Mueller (2011) developed open source software to facilitate the ongoing development of XBRL technology and resolve many interoperability and conformance issues. They suggested a highly portable software library, named Arelle, for parsing and validating XBRL documents. Researchers believe that once the proposed model will be constructed and put into practice by the auditors, will facilitate control process, since they can make direct controls using the online XBRL financial data. Additionally, the online software controllers will be able to easily and quickly compare financial data of all management sessions between different companies and industries. Nagoya & Kitagawa (2013) developed a working model for forecasting financial statements and calculating business valuations by two materials: disclosed documents in the Financial Services Agency of the Japanese Government and users' expectations. The model uses XBRL files for the presentation of 4 basic financial statements: income statement, balance sheet, statement of cash flows and statement of changes in net assets. According to their experience, the prototype model will have the potential to improve development costs and product quality with the benefit of rapid prototyping and formal methods. However, there was no real implementation and evaluation of the model, therefore, researchers do not guarantee that the model fits in any software project.

Research Model and Hypotheses

Previous empirical studies examined the usage of XBRL by comparing it with other applied technologies or by examining variables that influence technology adoption. Most of the researchers used TAM or TAM2 to identify factors that influence XBRL adoption and examined in depth user preferences. On the other hand, most researchers that developed XBRL prototypes focused more on the technical analysis of their models and none of them examined the acceptance and usage of prototypes by end users. Hence, new research models should be constructed by integrating and combining factors of two or more theoretical frameworks, in order to improve the understanding of acceptance and usage of new innovative technologies, such as XBRL prototypes (Salimonu, Osman, Shittu & Jimoh, 2013; Urbach&Müller,2012).

The success of information systems depends on their output results, such as tools and information that help the user to improve the efficiency and effectiveness of his work with the same or better quality. However, the measurement of an information system can be achieved through the examination of technological and human dimensions and their between interaction (Chen,2010). Technological dimensions like system and information quality and human dimensions like usefulness and ease of use are the most important factors for examining the success of information systems (Wixom & Todd, 2005; Chen, 2010; Lee & Yu,2012; Miyamoto, Kudo, & Iizuka,2012). Therefore, the current study proposes the construction of an integrated research model that combines and extends two major research frameworks: the DeLone and McLean (1992) «IS Success Model» and the Venkatesh and Davis (2000) «TAM2». The proposed model consists of six key variables: Information Quality (IQ), System Quality (SQ), Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), Behavioral Intention (BI) and Job Relevance (JR). According to the variables of the proposed model, the success of XBRL Passport depends on the extent of its usage, which is associated with the quality of information, quality of the system, usefulness, ease of use and relevance to the work.

Information Quality (IQ)

IQ is a factor that significantly affects Information Systems success. The quality of information the system produces, includes the desirable characteristics of system outputs through the measurement of a form, a report or a web page (Balaban, Mu&Divjak,2013).

Moreover, a system that provides high quality information will be regarded as useful because it enables the user to improve his/her work performance and make better decisions (Saeed&Abdinnour-Helm, 2008). However, the quality of accounting information is significantly enhanced when high-quality accounting standards are combined with high quality technologies (Zhu & Fu, 2009). XBRL is considered to be one of the most qualitative tools for the production and consumption of large amount of accounting information, as it increases business transparency and market efficiency (Debreceeny, Farewell, Piechocki, Felden & Gräning, 2010). Since, XBRL Passport is a web-based financial reporting platform in XBRL format, it is expected that it will generate high levels of both data and information quality. Therefore, the construct IQ is used to measure the quality characteristics of XBRL through the prototype application, XBRL Passport.

Venkatesh & Davis (2000) claimed, in previous studies, that the quality of information positively affects PU. Balaban, Mu & Divjak (2013) argue that IQ is directly related with the PU of a system. They state, also, that information is useful only if the user finds that the web information is accurate, understandable and updated. In addition, Lin & Lu (2000) mention that PU and PEOU have significant direct effect on IQ, as the user prefers to use a web application/site that increases his/her work performance without too much effort. Thus, the current study assumes that XBRL information quality will be positively related to PU and PEOU of XBRL Passport. So, the first and second hypotheses are:

H1: XBRL Information Quality (IQ) will positively affect Perceived Usefulness (PU) of XBRL Passport.

H2:XBRL Information Quality (IQ) will positively affect Perceived Ease Of Use (PEOU) of XBRL Passport.

System Quality (SQ)

SQ includes software and data components and represents the quality of the information that the system process.

Basically, SQ measures the technical specifications of the system (Lee & Yu, 2012). Technical specifications should meet user's perceptions through the interaction with the system, over time.

In that sense, higher quality systems will be easier to use and will appear higher levels of utility and use. SQ describes the measures of web contexts as information processing system and expands the performance characteristics such as operational appearance and efficiency (Ahn, Ryu & Han, 2004). However, if a web application is unreliable, unfriendly, difficult to access and does not provide timely information, users will negatively evaluate the use and utility of the system (Gao & Bai, 2014).

SQ is a critical factor for the evaluation of web financial platform, XBRL Passport. Previous research has shown that nonprofessional investors of financial reporting do not prefer to use the online environment of ASE, because access to the financial statements is difficult, the website navigation is often interrupted and the information provided is not sufficient to make useful decisions (Blanas, Stavropoulos & Stergiaki, 2011b). On the other hand, XBRL Passport application could provide a financial environment where users can easily and quickly access, process and exchange useful and easy to use financial information. Therefore, this study suggests that the quality of XBRL Passport will be positively correlated with the Perceived Usefulness and the Perceived Ease Of Use of the system. Thus, the third and fourth hypotheses are:

H3: System Quality (SQ) will positively affect PU of XBRL Passport.

H4: System Quality (SQ) will positively affect PEOU of XBRL Passport.

Perceived Usefulness (PU)

PU refers to the usefulness of a system and can be defined as "the user's ability to use the advantages of a system". Within an organization, employees increase the efficiency of their work when they have motivations such as salary increase, promotion, extra rewards or extra benefits. Accordingly, a system is considered to be useful, when it provides all the functions that increase work efficiency. PU is one of the most important factors of TAM and TAM2 that significantly affects IS acceptance-usage (Davis, 1989; Wang & Strong, 1996).

Additionally, several researchers found that there is a positive correlation between PU and BI (Davis, 1989; Dishaw & Strong, 1999; Venkatesh & Davis, 2000; Chen, Gillenson & Sherrell, 2002; Venkatesh, Morris, Davis & Davis, 2003).

In particular, empirical studies show that when a user finds a system useful, there is more willingness to fully examine and use the features and functions of it (Saeed & Abdinnour-Helm, 2008). Tsai, Chih & Hsu (2007) analyzed the relationship between user behavior and acceptance of a knowledge management system and concluded that when a system improves its efficiency, productivity and effectiveness, users react positively to the acceptance-usage of this specific system. Chiou & Fang (2005) examined the behavior of users when using the Internet and concluded that when a website provides useful information, users prefer to use this web site in order to complete their work. Saeed & Abdinnour-Helm (2008) investigated the relationship between user behavior and usefulness of an online information system and the results showed a positive correlation between them. Pinsker (2008) examined the intentions of business managers to use XBRL technology.

The results showed that XBRL is a useful technology and that its multiple functions significantly increased the efficiency and effectiveness of their work. Stergiaki, Stavropoulos & Lalou(2013) found that XBRL is a useful financial reporting tool, as it significantly contributes to the performance of business processes. Accordingly, it is argued that if XBRL Passport facilitates users to improve and complete their work, they will prefer to use it in the future. Thus, this study suggests that PU of XBRL Passport will be positively correlated with the user's intention to use the technology. So, the fifth hypothesis is:

H5: PUof XBRL, as illustrated through XBRL Passport, will positively affect Behavioral Intention (BI) to use XBRL Passport.

Perceived Ease of Use (PEOU)

PEOU includes the ease of system use and can be defined as "the lack of difficulty or great effort". Davis (1989) states that if a system is easy to use, users are more likely to have higher intention to accept and use it. PEOU is a factor that affects information systems acceptance-usage, either directly through BI or indirectly through PU. Previous studies demonstrated the positive correlation between PEOU and BI. Ramayah & Suki (2006) examined students' intention to use laptops during the course lesson in order to effectively conduct the learning process.

Researchers found that PEOU has a major influence on the intention to use laptops. Stergiaki, Stavropoulos & Lalou (2013) indicated that XBRL is an easy system to use and, therefore, encourages users to use it more. They concluded that PEOU has a significant impact on the users' intention to use XBRL. Ilias, Razak & Razak (2014) investigated the intention of professional investors to use online financial reports. According to the research results, PEOU was found to be the most important factor in the intention to use online financial reports. In conclusion, if XBRL Passport is easy to use, compared to Greek web financial information platform, users will prefer to use the web application.

H6: Perceived Ease Of Use (PEOU) of XBRL, as illustrated through XBRL Passport, will positively affect BI to use XBRL Passport.

Job Relevance (JR)

JR is defined as an individual's perception regarding the degree to which the target system has a direct application to his/her job (Venkatesh & Davis, 2000). Depending on the nature of the job, the user may possess different attitudes and behaviors toward a technology due to the discrete knowledge he develops through work related experiences (Kim & Garisson, 2010). According to TAM2, JR will impact PU, if users perceive the knowledge and the tools related to their work by implementing a system that increases their job efficiency (Lee, Li, Yen & Huang, 2010). Stakeholders have different perceptions outcomes and expectations from the web financial information systems, due to the different nature of their work. For example, analysts will prefer to use financial reporting systems that provide more specialized and complex tools in order to make better decisions. Greek stakeholders are exposed to several external sources of financial information, such as Athens Stock Exchange, Web business pages etc., which may influence in their decision upon which platform to choose. Therefore, Greek stakeholders will choose the financial platform that satisfies their basic mission requirement and achieves their work goal. Previous studies examined JR as a moderate variable between PU and BI and found a statistically significant correlation between the variables. Moreover, researchers stated that individuals, who perceived the technology being relevant to their job, viewed the technology useful and intended to reuse it (Kim, 2008; Strohmeier, 2010). This study uses JR as a moderate variable that will strengthen the relationship between perceived usefulness and intention to use technology.

Specifically, the more effective the web application XBRL Passport for users' work is perceived to be, the stronger the relationship between PU and BI. Therefore, individuals' perceptions about the relevance of XBRL Passport to their job would strengthen the relationship between PU and BI toward XBRL Passport. Thus, the seventh hypothesis is:

H7: Job Relevance (JR) moderates the effect of PU on BI to use XBRL Passport.

Research methodology

Data Collection and Sample

Data was collected using an online survey to test the research model and its hypotheses. The targeted respondents of the survey were senior accountants who are currently working in listed companies of ASE. The specific target population was chosen for three reasons. Firstly, XBRL is a technology specifically designed for the preparation and presentation of financial statements in accordance with IFRS. Secondly, XBRL offers many advantages which have a direct impact on the accounting community. Thirdly, XBRL Passport is designed to produce and present web financial information for the Greek capital market. An invitation e-mail was sent to 233 listed companies and a total of 115 replies was obtained and used for this study. There was no missing data in the sample because participants could not submit their response unless it was complete. The response rate, based on the number of questionnaires returned, is 49.36%. The demographic distribution shows that the majority of the participants in this study were male (53.9%). The age of participants ranged between two groups 20-30 (33%) and 41-50 (33%). Most of the participants were postgraduates and had an average of more than 11 years of professional work experience.

Measures of Research Constructs

The scale items were adopted from previously suggested and validated measures in many researches and carefully constructed to reflect the characteristics of XBRL Passport. The questionnaire was firstly tested to 10 accountants. After they completed the questionnaire, a face-to-face discussion was conducted with them, to improve the survey based on their feedback. The research model consists of 6 constructs that were employed and measured by 24 items with a five-point Likert scale ranging from "Strongly disagree" to "Strongly agree".

Empirical Study and Discussion

Reliability and Validity Analysis

The research model was firstly tested for internal consistency using Cronbach's alpha reliability measurement. Reliability analysis of the data was addressed from the viewpoint of both the entire construct model and each model variable individually. All of the constructs were found to be reliable measures for their respective constructs as the Cronbach's alpha coefficients exceed 0.70, the lowest suggested limit (Ferketich, 1991). The study also adopts factor analysis to measure the construct validity of the questionnaire, applying KMO value. Hence, as Table 1 shows, KMO is 0.826, exceeding the recommended value of 0.6 (Kaiser, 1974) and indicating that the construct model provide distinctive and trustworthy factors.

Table 1: Reliability & Validity Analysis

Construct	<i>Reliability</i>	<i>KMO</i>
Allfactors	0.948	0.826
InformationQuality	0.781	
SystemQuality	0.847	
PerceivedUsefulness	0.835	
PerceivedEaseofUse	0.821	
BehavioralIntention	0.830	
JobRelevance	0.845	

Characteristics of Construct

An average value of every construct variable is been demonstrated in Table 2. In the constructed model, variables include Information Quality (mean=4.146), System Quality (mean=4.036), Perceived Usefulness (mean=3.939), Perceived Ease of Use (mean=4.043), Job Relevance (mean=3.925) and Behavioral Intention (mean=4.142).

Table 2: Mean Analysis

Variables	Item	Mean
InformationQuality	4	4.146
SystemQuality	6	4.036
PerceivedUsefulness	4	3.939
PerceivedEaseofUse	4	4.043
BehavioralIntention	3	4.142
JobRelevance	3	3.925

Correlation Analysis

Matrices of Pearson correlation coefficients were used to measure the relationship between variables. Samples to be tested are based on the questions of every construct. Table 3 shows that all factors of the research model are correlated each other positively, with each Pearson correlation coefficient ranging from 0.374 to 0.863.

Table 3: Correlation Analysis

	InformationQuality	SystemQuality	PerceivedUsefulness	PerceivedEaseofUse	BehavioralIntention	JobRelevance
InformationQuality	1					
SystemQuality	0.637**	1				
PerceivedUsefulness	0.599**	0.863**	1			
PerceivedEaseofUse	0.374**	0.803**	0.700**	1		
BehavioralIntention	0.630**	0.761**	0.749**	0.673**	1	
JobRelevance	0.473**	0.538**	0.478**	0.427**	0.631**	1

* $p < 0.05$, ** $p < 0.001$

Measurement Model

The measurement model for the constructs was tested using confirmatory factor analysis (CFA).

Following Hair, Blake, Babin & Tatham (2006), a number of adjusted fit measures were applied to demonstrate a reasonable fit for the model, including Chi-square/degrees of freedom, Root Mean Squared Error of Approximation (RMSEA), Normal Fit Index (NFI), Goodness-of-fit Index (GFI), Parsimonious Normal- Of-Fit Index (PNFI) and Parsimonious Goodness-Of-Fit Index (PGFI). Absolute fit indices showed the following values: $\chi^2 = 1178.99$ with 243 degrees of freedom, $\chi^2 / \text{degrees of freedom} = 4.85$, RMSEA = 0.07 and GFI = 0.96, indicating that all indices are above minimum acceptable limits and that the research model has good explanatory power. Incremental fit measures valued as follows: NFI = 0.93, indicating that if all values are above acceptable minimum limits, the model has a good fit to the data. Finally, parsimonious fit measures resulted the following: PNFI = 0.51 and PGFI = 0.55, suggesting that there is not significant differences between the quality fit of the model with the number of the valued coefficients. The measurement analysis of the model is yielded at Table 4.

After measuring the goodness of fit of this model, it is important to examine the reliability of the potential variables of various indices as well as the significant differences among the estimated parameters of the model. The construct validity was judged by two measures: construct reliability (CR) and average variance extracted (AVE). The minimum accepted measurement level for CR is 0.70, and for AVE 0.50 (Fornell & Cha, 1994; Hair, Blake, Babin & Tatham, 2006). As the Table 5 Measurement Model demonstrates, the CR of IQ, SQ, PU, PEOU, JR and BI are 0.780, 0.850, 0.840, 0.820, 0.850, and 0.830 respectively, while the AVE for each item is 0.510, 0.510, 0.560, 0.540, 0.670, and 0.620 respectively. All of these values exceed the marginally acceptable range, justifying good discriminant validity of the model.

Table 4: Measurement Model

Measures Index	Idealsuggestvalue	OverallModel N=115
<i>Absolute Fit Measures</i>		
χ^2	-	1178,99
df	-	243
χ^2 / df	<5	4,85
RMSEA	<0,08	0,07
GFI	>0,90	0,96
<i>Incremental fit measures</i>		
NFI	>0,90	0,93
<i>Parsimonious fit measures</i>		
PNFI	>0,50	0,51
PGFI	>0,50	0,55

Table 5: Measurement Model

Variables	Factor Loading	AVE	CR
InformationQuality			
Information presented in XBRL format enhances the presentation quality of Web Financial Reporting?	0.490	0.510	0.780
XBRL Passport provides enough information about the financial image of listed companies?	0.630		
Do you believe that the information presented in XBRL format is accurate?	0.920		
Financial information is presented in a clear manner?	0.750		
SystemQuality		0.510	0.850
Do you believe that the information provided by XBRL Passport could improve reliability in ASE?	0.550		
Did you get the information you wanted on time?	0.730		
XBRL Passport eases the observation and the analysis of Comparable data?	0.670		
XBRL Passport eases the observation and the analysis of Aggregated data?	0.750		
Could XBRL Passport replace the current financial system of ASE?	0.780		
XBRL Passport gives you easy access to the financial statements of listed companies?	0.800		
PerceivedUsefulness		0.560	0.840
XBRL Passport helps you to do your job faster?	0.800		
XBRL Passport helps you to do more easily your job?	0.790		
XBRL Passport is a useful tool for financial statements' analysis?	0.730		
XBRL Passport offers more advantages than the existing financial reporting presentation methods?	0.670		
PerceivedEaseofUse		0.540	0.820
XBRL Passport is an easy system to use?	0.770		
Did you get familiar with XBRL Passport?	0.650		
XBRL Passport can easily be used by an investor?	0.810		
XBRL Passport can easily be used by a financial analyst?	0.710		
JobRelevance		0.670	0.850
XBRL Passport helps me to successfully complete my job.	0.920		
XBRL Passport is relevant to my job.	0.630		
XBRL Passport helps me to successfully overcome difficult tasks of my job.	0.880		
BehavioralIntention		0.620	0.830
Would you like to re-use XBRL Passport for the financial analysis process?	0.720		
Would you prefer to use XBRL Passport instead of the current financial platform of ASE?	0.940		
Would you like to adopt and use XBRL Passport in the future?	0.680		

Structural Model

After the confirmation of construct reliability and validity, the study examined the relationships between individuals' intention to use XBRL Passport and IQ, SQ, PU, PEOU, with the moderating effect: Job Relevance. Hypotheses were tested, and the tested results are demonstrated into Table 6. Regarding the associations between IQ and PU, the standard coefficient is 0.149 with a p-value of 0.0000 which supports H1, reflecting that IQ positively affects individuals' PU of XBRL Passport. Additionally, the standard coefficient of IQ and PEOU is 0.236 with a p-value of 0.0000, thus, H2 is supported. This result indicates that IQ positively affects individuals' PEOU of XBRL Passport. In terms of the relationship between SQ and PU, the standard coefficient is 0.910 with a p-value of 0.0000, hence, H3 is supported. So, it is concluded that SQ positively affects individuals' PU of XBRL Passport. The standard coefficient of SQ and PEOU is 0.989 with a p-value of 0.0000, displaying that SQ positively affects individuals' PEOU of XBRL Passport. Therefore, H4 is accepted. Concerning the relation between PU and PEOU on BI, the standard coefficients are 0.534 and 0.161 respectively with a p-value of 0.0000, which proves that H5 and H6 are accepted. Thus, it is assumed that PU and PEOU of XBRL, as illustrated through XBRL Passport, positively affect individuals' BI to use XBRL Passport.

As for the association between JR, PU and BI was found that JR is a significant moderator. Therefore, H7 is supported. More specifically, the results showed a strong positive correlation between PU and BI (standard coefficient = 0.534 and p-value = 0.0000) and between JR and BI (standard coefficient = 0.291 and p-value = 0.0000). Overall, the relationship $PU * JR$ was statistically significant with a standard coefficient of 0.189 and a p-value of 0.005, suggesting that JR strengthens the relationship between PU and BI of XBRL, through the web application XBRL Passport. Thus, as individuals use XBRL Passport to perform their job, they feel that XBRL is useful, which affects their positive intention to use it.

Direct and Indirect Effects

To test the overall effect in BI, it is important to analyze direct and indirect effects of variables. According to hypotheses 1, 2, 5 and 6, IQ indirectly affects individuals' intention to use XBRL through two paths.

The first path involves variables IQ-PU-BI and the indirect influence is 0.080 (by multiplying the path coefficients $0.149 * 0.534$). The second path involves variables IQ-PEOU-BI and the indirect influence is 0.038 (by multiplying the path coefficients $0.236 * 0.161$). As a result, the overall effect is 0.118. SQ indirectly affects individuals' intention to use XBRL (through the financial application XBRL Passport) through two paths, according to hypotheses 3, 4, 5 and 6. The first path displays an indirect influence of 0.486 (by multiplying the path coefficients $0.910 * 0.534$), involving variables SQ-PU-BI, and the second path displays an indirect influence of 0.159 (by multiplying the path coefficients $0.989 * 0.161$) involving variables SQ-PEOU-BI. Thus, the overall effect is 0.645. The results of indirect effects indicate that SQ has the largest impact on individuals' intention to use, with an overall influence of 0.645, next to IQ, which has an overall influence of 0.118. The above results prove that SQ plays the most important role on individuals' intention to use XBRL, through XBRL Passport.

Table 6: Model Hypotheses Test

Hypothesis	Path Coefficient	Result
H1: XBRL Information Quality (IQ) will positively affect Perceived Usefulness (PU) of XBRL Passport.	0.149	Supported
H2: XBRL Information Quality (IQ) will positively affect Perceived Ease Of Use (PEOU) of XBRL Passport.	0.236	Supported
H3: System Quality (SQ) will positively affect PU of XBRL Passport.	0.910	Supported
H4: System Quality (SQ) will positively affect PEOU of XBRL Passport.	0.989	Supported
H5: PU of XBRL, as illustrated through XBRL Passport, will positively affect Behavioral Intention (BI) to use XBRL Passport.	0.534	Supported
H6: Perceived Ease Of Use (PEOU) of XBRL, as illustrated through XBRL Passport, will positively affect BI to use XBRL Passport.	0.161	Supported
H7: Job Relevance (JR) moderates the effect of PU on BI to use XBRL Passport.	0.189	Supported

Discussion and Conclusion

The findings of the empirical research indicate that IQ, SQ, PU and PEOU positively affect the use of XBRL, through XBRL Passport. Specifically, the result is in line with previous studies that examined the effect of IQ on PU and PEOU and concluded that users perceive a system to be useful and easy to use when they receive high quality information from it (Wixom & Todd, 2005; Pai & Huang, 2011; Gao & Bai, 2014).

Therefore, the findings of the research show that participants found XBRL Passport useful and easy to use, mainly because it provides meaningful and productive financial information. Examining the influence of SQ on PU and PEOU, a high correlation among the variables was observed. The findings are similar to previous studies which support that SQ has a significant positive relationship with PU and PEOU (Chiou & Fang, 2005; Ahn, Ryu & Han, 2007; Pai & Huang, 2011). As a result, this study asserts that XBRL Passport is an easy to use, flexible, useful and rapid web financial platform that offers many advantages to accountants. Regarding PU and PEOU, survey results demonstrated a positive correlation with users' intention to use XBRL Passport. Similar results were presented in previous research, where the participants stated that they intend to implement XBRL in the future because they perceive a lot of benefits from it (Pinsker, 2008; Stergiaki, Stavropoulos & Lalou, 2013). Similarly, current study demonstrated that the use of XBRL can improve accountants' work performance, productivity and efficiency. Additionally, the results indicated that PU has the most significant influence on BI, while PEOU presented a relatively low impact regarding the intention to use XBRL. These findings are similar to other empirical studies (Davis, 1989; Wu & Wang, 2005; Yi, Jackson, Park & Probst, 2006), which concluded that PEOU has less impact on BI than PU. The above resolves that users gave more emphasis on the usefulness of the financial information in XBRL format. Therefore, participants strongly express their interest to use XBRL, because it helps them to effectively improve their work and to make better and informed decisions. Furthermore, JR was also found to be a significant moderator that strengthens the relationship between PU and BI. The above result highlights the importance of Job Relevance in users' intention to use specific technology. Moreover, the findings indicate that users adopt a technology if it is within their prior experience. Hence, in the current study participants found that the knowledge and the tools, provided by XBRL Passport, are directly related to the accounting presentation of financial statements in accordance to IFRS and that a future application of the system will increase the efficiency of their accounting and financial work.

Finally, the quality of the system itself was revealed to be the single, most important factor that affects more participants to use XBRL. As a result, accountants are encouraged to use XBRL, if they have a financial information system that is easily accessible, reliable, ease and extracts financial information on time.

Even more, the application of XBRL Passport is a specific financial environment where accountants can easily and quickly find, parse, edit and exchange useful and meaningful financial information. Meanwhile, it is also concluded that XBRL Passport is an advanced web financial application, which offers many more benefits to end-users than the system currently adopted by ASE. The above argument holds that accountants have a positive attitude to the wider acceptance of XBRL through the future use of XBRL Passport.

This study suggested the development of a prototype web financial application that may become the start for the systematic examination of the impact of XBRL in web financial reporting and for the implementation of financial XBRL applications in Greece. Since, there has not been yet any attempt to adopt XBRL in Greek listed companies, the study specifically proposes the development of the XBRL Passport, which will automate the production process and submission of financial reports in accordance with IFRS. Moreover, the study integrates two major frameworks: TAM and IS Success Model to justify and extend the Technology Acceptance Theory to accounting information systems. Thus, this research may add a new dimension to those frameworks by emphasizing the interactions that occur between different factors in the acceptance and usage of new innovative technologies (IT). Although current study makes significant contributions to both academia and practice, there are several constraints which need further research. A major one is that the final presentation of financial information was presented in HTML files, and not in XBRL format, since the online tools applications for presentation of dynamic XBRL files were published recently and they were not available for educational and research purposes. Also, the standard model XBRL Passport does not provide financial details of all listed companies in ASE, but only those randomly selected. Future studies should further integrate XBRL Passport using XBRL files and having a database financial data for all listed companies in ASE. Finally, a new tool should be integrated to the model that will allow the extraction of financial data directly from the official businesses websites and their conversion into XBRL files.

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