DIFFUSION OF XBRL INNOVATION MODEL OF ADOPTION AND USAGE

BY

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أبي وأمي الغاليين على قلبي الحديث عن فضلكم لا يتوقف حتى يبدأ من جديد

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أخواتي الغاليات وعائلاتهن

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فلذات كبدي جود وايلاف وعبادة ...

أبو حمزة وأم حمزة والحديث عن فضلهما يطول

اليكم جميعا اهدي هذا الجهد المتواضع

ADMISSION

I, Awni Atallah Al-Rawashdeh, declare that this thesis, submitted in fulfillment of requirements for award of Doctor of Philosophy, in College of Business (the discipline of Accounting Information Systems, minor Interactive Data Format ("XBRL") for financial reporting), Universiti Utara Malaysia, is wholly my own work unless otherwise referenced of acknowledged. The document has not been submitted for qualifications at any other academic institution.

Awni Atallah Al-Rawashdeh

March 2011

ABSTRACT

Motivated by the purported benefits of XBRL, yet its slow adoption by financial data consumers, the aims of this study are to determine the significant factors affecting the adoption and usage of XBRL amongst financial data consumers. However, currently no model addresses this problem from the viewpoint of financial data consumers, which is the focus of the proposed model. The model is developed by using technology diffusion and adoption theories such as Diffusion of Innovation (DOI), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Decomposed Theory of Planned Behavior (DTPB), Campeau Social Cognitive Theory (CSCT), Technology Acceptance Model (TAM), Technology Acceptance Model 1999 (TAM1999), Technology Acceptance Model 2 (TAM2), Technology Acceptance Model 2001 (TAM2001), unified theory of acceptance and use of technology (UTAUT) and use diffusion model (UD). The data was collected using an online survey approach. The findings of this study indicate that attitudinal and control factors are significant factors in explaining financial data consumers' behavior intentions to adopt XBRL. In term of usage, HTML & PDF users are significantly different in 11 out of 23 online services. All these findings can be used by the regulators or industry to further increase the adoption and usage of XBRL amongst financial data consumers.

ABSTRAK

Penggunaan XBRL adalah rendah di kalangan pengguna data kewangan walaupun ia memberi faedah yang banyak kepada mereka. Bertitik tolak dari situasi ini maka tujuan kajian ini adalah bagi mengenalpasti faktor-faktor yang mempengaruhi penerimaan dan penggunaan XBRL di kalangan pengguna data kewangan. Setakat hari ini tidak ada model yang boleh digunakan bagi menyelesaikan masalah ini daripada perspektif pengguna data kewangan. Justeru, fokus bagi model yang dibina oleh kajian ini adalah untuk membantu menyelesaikan permasalahan tersebut. Model yang dicadangkan dibina dengan menggunakan teori-teori penyebarluasan dan penerimaan teknologi seperti Diffusion Of Innovation (DOI), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Decomposed Theory of Planned Behavior (DTPB), Campeau Social Cognitive Theory (CSCT), Technology Acceptance Model (TAM), Technology Acceptance Model 1999 (TAM1999), Technology Acceptance Model 2 (TAM2), Technology Acceptance Model 2001 (TAM2001), unified theory of acceptance and use of technology (UTAUT) dan use diffusion model (UD). Data kajian telah dikutip dengan menggunakan kaedah tinjauan. Dapatan daripada kajian ini menunjukkan bahawa faktor-faktor sikap, kawalan dan normatif mempengaruhi secara signifikan niat tingkah laku pengguna data kewangan untuk menerima XBRL. Dari aspek penggunaan pula, pengguna HTML dan PDF adalah berbeza secara signifikan dalam 11 daripada 23 perkhidmatan atas talian. Semua dapatan kajian ini boleh digunakan oleh pihak berkuasa atau industri bagi meningkatkan penerimaan dan penggunaan XBRL di kalangan pengguna data kewangan.

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LIST OF ABBREVIATION

XBRL	=	eXensible Business Reporting Language
HTML	=	Hyper Text Markup Language
PDF	=	Portable Document Format
XBI	=	XBRL Behavior Intention
XAB	=	XBRL Adoption Behavior
MXA	=	Model of XBRL Adoption
PU	=	Perceived Usefulness
PE	=	Perceived Ease of Use
PRA	=	Perceived Relative Advantage
PC	=	Perceived Compatibility
PX	=	Perceived Complexity
PI	=	Peer Influence
SI	=	Superior Influence
TR	=	Training
EL	=	English Language
KN	=	Knowledge
SE	=	Self-Efficacy
FCR	=	Facilitating Conditions Resources

DOI = Diffusion of Innovation

TRA = Theory of Reasoned Action

TPB = Theory of Planned Behavior

DTPB = Decomposed Theory of Planned Behavior

CSCT = Campeau Social Cognitive Theory

TAM = Technology Acceptance Model

UTAUT = Unified Theory of Acceptance and Use of Technology

UD = Use Diffusion Model

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Financial data has become a key resource of most financial data consumers, companies and economies. Today's consumers' financial data are operating in the Internet financial reporting (IFR) form. The IFR such as portable document format (PDF) or Web pages formatted using Hyper Text Markup Language (HTML), has changed from traditional presentation format to interactive data such as eXensible Business Reporting Language (XBRL) (Doolin & Troshani, 2004; Hodge, Kennedy & Maines, 2004; Taylor & Dzuranin, 2010). More and more financial data consumers believe that XBRL is critical to their success (Plumlee & Plumlee, 2008; Boyer-Wright, summers, Kottemann, 2010; Debreceny et al., 2010), however not many of them have turned this belief into actual usage (Henderson, Sheetz & Trinkle, 2009).

Traditional presentation format of data (non-XBRL data such as HTML and PDF) can have significant social and business impacts (Henderson et al., 2009). There is strong evidence that traditional presentation format problems, such as manual rekeying of data, time consuming and error-prone human interaction, high cost, lack of transparency (Hodge et al., 2004; Henderson et al., 2009), information asymmetry and lack of timeliness (Yoon, Zo & Ciganek, 2010) are becoming prevalent in the practical setting (Hodge et al., 2004; Naumann, 2004; Premuroso & Bhattacharya, 2008). Most

financial data consumers are not satisfied with traditional presentation format when carrying out financial activities (Ghani & Jusoff, 2009). This highlights the importance of XBRL to the participants of financial reporting supply chain that want to perform well or even just survive in the 21st century (Arnold et al., 2010).

Doolin and Troshani (2005) argued that the diffusion of XBRL is very challenging and believed that, despite significant signs of global acceptance by regulators and governments (Doolin & Troshani, 2005), there is a strong feeling that XBRL has not been considered seriously (Fisher, 2008), particularly among consumers. The main concern is that the financial data consumers cannot be easily convinced to adopt new innovations such as XBRL (Fisher, 2008). In this case, their concerns should be studied and understood so that the adoption and usage of XBRL can be promoted and accelerated. Fisher (2008) mentioned that a senior corporate reporting partner at PricewaterhouseCoopers (PwC) in London said that many people are baffled by the relatively slow uptake of XBRL. "Given the explosion in information based around the Internet, you would really expect market forces to have taken a stronger hold by now," he said. "But the fact is that companies are not yet accepting the benefits of XBRL, and investors are not calling for it in great numbers."

Henderson et al. (2009) stated that XBRL diffusion is influenced by managerial and personnel resources, technical infrastructure, and financial resources; and innovation factors such as compatibility, complexity, and perceived benefits of use. Thus, knowledge of the factors that influence on XBRL diffusion between consumers will

assist regulators to accelerate XBRL adoption amongst them (Henderson et al., 2009).

While information system and information technology studies have looked at innovation diffusion, XBRL studies have focused on organizational factor of XBRL (Doolin & Troshani, 2005; Henderson et al., 2009; Abdullah, Khadaroo & Shaikh, 2009). It appears that there have been very few attempts to identify the factors that influence XBRL diffusion between consumers. However, there is no model that discusses the slow uptake of XBRL and addresses this problem from the consumers' point of views, which is the focus of this research (Selamat & Rawashdeh, 2009). This research attempts to develop a model by using technology diffusion and adoption theories such as diffusion of innovation (DOI), theory of reasoned action (TRA), theory of planned behavior (TPB) and decomposed theory of planned behavior (DTPB), Campeau social cognitive theory (CSCT). Technology acceptance model (TAM), various TAM extensions, TAM2, unified theory of acceptance and use of technology (UTAUT) and use diffusion model (UD), discuss in chapter 2, to identify the factors that influence XBRL adoption between consumers.

The understanding on factors that influences XBRL diffusion between consumers can be used to accelerate the adoption and usage of XBRL amongst them and ultimately solve the deficiency of traditional IFR.

1.2 PROBLEM STATEMENT

The aim of IFR is to communicate useful, relevant, and reliable information

timely to the consumers of financial data. However, current IFR practices require the exchange of financial information in a variety of non-interchangeable presentation formats, including PDF or HTML (Selamat & Rawashdeh, 2009; Debreceny et al., 2010). This is because preparing, processing and analyzing financial information has to be carried out manually. In turn, current IFR practices are time-consuming, labor-intensive, and error prone (Selamat & Rawashdeh, 2009; Henderson et al., 2009). Furthermore, in their current form of IFR are opaque, because it provides limited help to the consumers when undertaking financial activities such as automating the processes of data collection, converting data between different forms (GAAP and IFRS) and exchanging information between applications (Henderson et al., 2009).

The above scenario leads to the increase of data entry errors and their inherent negative impacts such as high operational cost, low production and absence of new innovation of these errors are increasing (Willis, 2005; Selamat & Rawashdeh, 2009; Debreceny et al., 2010). Furthermore, incorrect and insufficient data adversely affect the decision making (Hodge et al., 2004; Ghani & Jusoff, 2009). For example, errors made in entering figures or currency unit in balance sheets could lead to tangible loss to any organization and affect its reputation. In addition, the use of traditional standard results in the process of reviewing financial reports becomes difficult.

Recent financial reporting scandals lead the investors to be more skeptical with the disclosed financial information. Reporting and reviewing of financial information is full with problems and inefficiencies (Farewell & Pinsker, 2005; Selamat & Rawashdeh,

2009). For example, Securities and Exchange Commission (frequently abbreviated SEC) did not review financial filings of Enron, (prepared in PDF and HTML formats) from 1997 (Hannon, 2003; Taylor & Dzuranin, 2010), which ultimately resulted in its financial crisis. Thus, it could be argued that leaving out XBRL in financial reporting leads to significant negative social and business impacts.

However, although XBRL offers benefits at all stages of business reporting and analysis to the consumers in terms of automation, cost saving, speed, more reliable and accurate handling of data, improved information analysis and decision making, it has been adopted slowly by financial data consumers (Willis, 2005; Gray & Miller, 2009; Henderson et al., 2009). Consumers are slow to see the value of XBRL and are even reluctance to expand the use of XBRL, calling into question XBRL's status as the best alternative for HTML and PDF (Troshani & Rao, 2007; Abdullah, Khadaroo & Shaikh, 2009; Henderson et al., 2009; Taylor & Dzuranin, 2010). On the contrary, HTML and PDF continue to proliferate and the consumers continue to increasingly dependent upon PDF-based or HTML-based reports to support decision making (Ghani, Laswad & Tooley 2007).

Although XBRL international put an incentive in the development of XBRL specification and taxonomies, the rate of XBRL adoption has been relatively slow since the start (Selamat & Rawashdeh, 2009; Abdullah et al., 2009; Selamat & Rawashdeh, 2010). According to XBRL's (2011) website, the number of countries that have adopted XBRL is only 24 countries. Furthermore, Abdullah et al. (2011) argued that although

XBRL has been adopted in many countries including USA, UK, Ireland, Australia, Canada, New Zealand, Australia, Japan, Germany and France among others, its global development and varying degree of success worldwide is of success worldwide is of concern.

This means that in order to enhance the homogenous adoption and use of XBRL, it is essential to focus upon understanding the individual financial data consumer or micro-level factors influencing the deployment and use of XBRL.

Additionally, there has been no published model of XBRL adoption and usage focused on the XBRL adoption from micro-level perspective (e.g., attitudinal, normative, control factors, behavior intention and adoption behavior) to the researcher's best knowledge.

In addition, no evidence has been found in the research literature relating to a model of XBRL adoption and usage being developed in the context of the individual financial data consumers as subjects and the XBRL as the technology context. Thus developing a model of XBRL adoption and usage from micro-level perspective is important and necessary in order to promote adoption and usage of the technology amongst financial data consumers. It is therefore expected that the determination of the significance of these factors will lead to an explanation for why adoption has been limited and suggest actions that policy makers, XBRL solution providers, auditors, and investors can take to encourage the adoption of XBRL.

Thus, to enhance the adoption and use of XBRL to reduce costs and streamline processes for collecting and reporting financial information, it is suitable to focus on understanding the factors influencing the decisions of XBRL consumers (Doolin & Troshani, 2004). This research intends to investigate this in detail.

1.3 RESEARCH QUESTIONS

The research questions for this research are:

RQ1: What are the factors that influence behavioral intention towards XBRL adoption amongst financial data consumers?

RQ2: Do XBRL behavioral intentions (XBI) and control factors influence the actual adoption of XBRL?

RQ3: Do demographic factors (i.e., age, gender, experience, education, type of industry, and country) influence the actual adoption of XBRL?

RQ4: Does the rate of IFR usage differ for the XBRL and HTML & PDF financial data consumers?

RQ5: Do XBRL consumers use more IFR services than HTML & PDF consumers?

The above research questions become the primary motivation for conducting the research on XBRL diffusion, its adoption and usage between financial data consumers.

1.4 RESEARCH AIM AND OBJECTIVES

The main aim of this research is to investigate the consumers-level factors affecting XBRL adoption and usage from the perspective of financial data consumers. In order to achieve the overall aim, the objectives of this research are:

- To identify possible factors influencing XBRL diffusion from the literature.
- To develop a conceptual model for examining consumers' adoption and usage of XBRL.
- To examine the factors identified in the conceptual model by developing a new questionnaire and demonstrating its reliability and validity.
- To empirically validate and refine the proposed conceptual model in order to examine XBRL adoption and usage between financial data consumers.

The first and second objectives were achieved in chapter 2, by reviewing the theories and models that focus upon individual and/or consumer adoption and usage of technology. The next step is to select relevant factors from appropriate theories and models and to formulate a research hypothesis in order to examine XBRL adoption and usage from the financial data consumer perspective. This in turn led to achieve research objective three. The third objective was achieved in chapter 4; the research instrument was developed and validated using reliability, content validity, pre-test and pilot test

approaches. The fourth objective was achieved in chapter 5 and 6; this was achieved by collecting and analyzing data from the financial data consumers, which in turn was led to answer first, second, third and fourth research questions in chapter 5.

1.5 SCOPE OF THE RESEARCH

There are many participants in business reporting supply chain to consider, including the companies, data aggregators and financial publishers, consumers, regulators and software vendors (Hoffman, 2006). The previous debate clearly indicates that XBRL adoption is still going very slow and current studies have not yet addressed the problem of adoption and usage of XBRL between financial data consumers. The main focus of this research is therefore the financial data consumers. Hence the proposed conceptual model, will consider the factors and studies that are significant to the individual financial data consumers. As discussed above, the focus on consumers is considered essential for this research. The two main reasons behind this is that previous studies were only concentrating on managerial factors and less attention has been paid to examining individual financial data consumers.

Financial data consumers are individuals that use financial data (Rawashdeh, Selamat & Abdullah, 2011). For example, a person can be categorized as a consumer when he/she uses financial data such as financial statements, revenue income, taxes owed, net assets, cash flows and dividend payments. Thus the term consumer that is used throughout the thesis means the person who receive, consume and use financial information.

1.6 RESEARCH CONTRIBUTION

There is a societal benefit for increasing the comprehension of why XBRL has not been widely adopted. XBRL has been touted by many constituencies (e.g., SEC, Financial Accounting Standards Board (FASB), XBRL US, and XBRL International) as a means for significantly improving the performance of and reducing the cost of financial reporting, auditing the financial statements, and analyzing securities. Furthermore, by integrating models of TPB, DTPB, TAM and DOI, the anticipated results will also offer additional ways to increase adoption of other innovations.

This research also contributes in terms of theoretical framework, the development and validation of research instrument for data collection. This instrument will examine XBRL adoption and usage (chapter 4).

Considering the slow level of adoption of XBRL, the policy makers and the providers of the innovation (in this case the XBRL Industry Solutions) holds a particular interest in the findings of this study.

Furthermore, findings of this research can be directly incorporated into XBRL usage, especially in developing countries. Many regulators are currently investigating the ways to increase the diffusion of XBRL in their own countries; thus, information on other countries' experiences will be useful to understand how different factor influences XBRL adoption. Furthermore, regulators including Financial Accounting Standards Board (FASB), Central Banks, Accounting Standards Board (IASB), Security

Authorities, Stock Exchanges, Tax Agencies and other Government Agencies, Financial Institutions including Commercial Banks and Security Houses, Persons interested in XBRL as a standard for regulatory/financial reporting, Auditors, Chartered Accountants, IT vendors, System consultants are concerned in discovering how to improve their current strategies of XBRL implementation. However, for both policy and practice, this study offers a comprehension of the XBRL diffusion strategies at financial data consumers' level. This is particularly helpful since some research already published in the area of corporation adoption of XBRL. Furthermore, the outcomes of this research will also provide an additional ways to increase adoption of XBRL in developing countries.

1.7 RESEARCH APPROACH

Since the research subject is the financial data consumers of IFR, it can be argued that the online survey methodology is the most acceptable research methodology for this research. This is due to matters such as convenience, cost, time, and accessibility (Gilbert, 2001). The level to which a researcher can be a part of the context being examined is an important factor when choosing the suitable research methodology. Within the consumers' financial information context, it is difficult for a researcher to be part of the context; consequently the online survey methodology is more suitable than others in the same area, such as case study, ethnography, and observations.

The collated data was analyzed using the statistical software statistical package for the social sciences (SPSS) version 12. The statistical techniques that are utilized are

t-test, Chi-square test, discriminate analysis, linear and logistics regression analysis.

1.8 ORGANIZATION OF THE THESIS CHAPTERS

This research is designed to provide a comprehensive review of appropriate information regarding XBRL adoption and usage, and the prominent models and theories of technology acceptance. The thesis consists of seven chapters, and its organization is presented as follows.

Chapter 1 offers the introduction to the research including the background of the research and the problem statement. Then, the research aims and objectives are discussed. The chapter also outlines the research significance and scope of this study, and a brief description of the research methodology used to conduct this research.

Chapter 2 provides an overview on XBRL. It presents the literature review regarding XBRL by reviewing and examining the literature related to the prominent models and theories of technology acceptance as well as information technology adoption and usage. It also highlights the models of XBRL adoption which is comprised of three factors that are anticipated to influence usage behavior of consumers, together with their sub factors.

Chapter.3 aims to discuss the research approaches in general and those specific to this research. It also describes and justifies the research methodology and techniques used to conduct this research.

Chapter 4 aims to describe the development of the research instrument that is designed to investigate XBRL adoption and usage. The chapter describes the following four stages of developing a reliable research instrument: (1) identification of the factors from the literature that are expected to explain the XBRL adoption behavior and determining them by employing an exploratory survey; (2) content validation on items that result from the exploratory survey, the purpose of this step is to confirm the representativeness of items to a particular construct domain; (3) a description of a pre-test; and (4) a pilot-test in order to confirm the reliability of measures.

Chapter 5 presents findings obtained from a confirmatory survey that was conducted in order to examine the adoption and usage of XBRL among financial data consumers. The chapter provides an illustration and discussion of the estimation of response rates reliability, questionnaire validation and the findings obtained from the survey. This section also presents the findings obtained from the online survey that was conducted. The discussion of these findings comprises of descriptive statistics, differences between the adopters and nonadopters of XBRL, demographic differences and regression analysis. This chapter also presents findings related to the usage of XBRL.

Chapter 6 discusses and reflects upon the findings obtained in Chapters 5 from the theoretical point of views presented in chapter 2. It also discusses the empirical issues that have been reported from the survey findings. Finally, the chapter discusses the refined and validated model of XBRL adoption.

Chapter 7 summarizes the research findings and provides a discussion of the research contributions and implications of this research in terms of the theory, policy and practice. This chapter also delineates the research limitations and presents future research directions in the area of XBRL diffusion and adoption.

1.9 SUMMARY

The purpose of this chapter is to lay the foundations of this research by providing its background, research problems, research questions, research objectives, scope, research contribution, a brief research methodology and the organization of the thesis. Lack of study on XBRL adoption and diffusion amongst financial data consumers results in limited number of appropriate conceptual models specific to XBRL adoption and diffusion. Chapter 2 aims to provide a basis for developing a conceptual model for this research. This model will increase the understanding on XBRL adoption and diffusion. The proposed conceptual model will be used as a basis for the empirical investigation.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND STUDIES CONCEPTUAL MODEL OF THE RESEARCH

2.1 INTRODUCTION

This chapter discusses the literature review of this research according to the first research objective (see Chapter 1). An examination of previous literature in the information systems area illustrates that researchers have not yet undertaken research on XBRL in the area of financial data consumer diffusion. Instead, most of the research associated with XBRL has mainly focused on examining the macro level factors leading to adoption in an organization. Recently conducted studies highlight the need to understand adoption and diffusion of XBRL from the end user (e.g., financial data consumer) perspective. The limitation to studying adoption at a micro-level has resulted in a lack of appropriate conceptual models specific to XBRL (Selamat & Rawashdeh, 2009). As pursued in previous adoption studies (Davis, 1989; Venkatesh & Brown, 2001), constructing a conceptual model specific to XBRL diffusion at the financial data consumer level necessitates the review, identification, and integration of the relevant factors related with adoption and usage of technology previously examined in information systems studies. Therefore, this chapter reviews and assesses the appropriateness of previous technology adoption models and factors to study XBRL adoption and usage. Then, this chapter provides further theoretical justification for selecting the factors that are used to study XBRL adoption and usage, formulate the hypotheses and finally draw a conceptual model of XBRL adoption and usage.

2.2 THE XBRL INNOVATION: AN OVERVIEW

2.2.1 XBRL Definition

XBRL is a subset of Extensible Markup Language (XML). It is an XML-based computer language (see below an example of XBRL). It allows creators of electronic content to apply tags to financial data. The tags have often been compared to barcode found on retail/consumer good. It uses tags to encode financial data, so that the information can be read automatically by XBRL-enabled software, allowing the software to classify, sort, and analyze the information. However, there is more to the process than assigning a single identifier to a tag. The tags must include contextual information. For example, telling a computer that a number is 2343,132 is of limited use without defining what the number represents (total assets), the currency in which it is reported (JD), scaling and rounding (millions), time period covered (Year Ended December 31, 2010), and the company identity. This is a small example of XBRL instance document.

```
<? XML version="1.0" encoding="utf-8"?>
XBRL document created with Dragon Tag (R) XBRL Enabler by Rivet Software version 3.0.0.4. Based on XBRL 2.1. Created on:
8/6/2008 12:06:30: am.
-<XBRL XMLns="http://www.XBRL.org/2003/instance" XMLns:
link="http://www.XBRL.org/2003/linkbase" XMLns: xlink="http://www.w3.org/1999/xlink" XMLns:
stock="http://www.uum.edu" XMLns:iso4217="http://www.XBRL.org/2003/iso4217" XMLns:usfr-
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XBRL is a royalty free open standard built to accommodate the electronic preparation and exchange of XBRL financial reports around the world (Saeedi, Richards

& Smith, 2004). It was developed by XBRL International, a nonprofit consortium with over 450 members in over 30 countries involved in its developed in 1999, with 12 organizations as the founding members (Saeedi et al., 2004).

XBRL allows for the tagging of data and facilitates the automated entry, storage, retrieval, and manipulation of data (Saeedi et al., 2004). While financial data is an obvious choice for electronic tagging, all data can be tagged. XBRL is a subset of XML, the eXtensible Markup Language, and an extensible language which means more attributes can be easily added when necessary. The rules, for these languages require to be managed so as to allow consistency in their development (Saeedi et al., 2004).

The XML specifications are developed by the World Wide Web Consortium. The XML specifications provide a standard for creating XML vocabularies and documents that is flexible enough to be used for diverse needs such as websites. XBRL International organization is responsible for the technical XBRL specification and each country-specific jurisdiction works to facilitate the development and adoption of local XBRL taxonomies (Saeedi et al., 2004).

XBRL is a language for the creation of business reports. In order to create the business reports, the XBRL specification describes two kinds of documents namely taxonomy documents and instance documents. Taxonomy in general means a catalogue or a set of rules for classification. In XBRL, the taxonomy is a digital dictionary, containing computer-readable definitions of business reporting terms as well

relationships between them and links connecting them to human-readable resources meta-data. For example, in an accounting taxonomy, cash is a subset of current assets which itself is a subset of total assets. Taxonomy can also be described as an XML schema. Once the taxonomy is agreed upon, the data is then mapped to the taxonomy and the result is an instance document which contains the XML tagged data. Hence, XBRL instance documents is an instance document that consists of a collection of data elements tagged according to the concepts found in the taxonomies being used (Yuan & Wang, 2009). Each document serves a specific purpose and together these documents constitute a business report (Saeedi et al., 2004). Figure 2.1 shows an example how XBRL works.

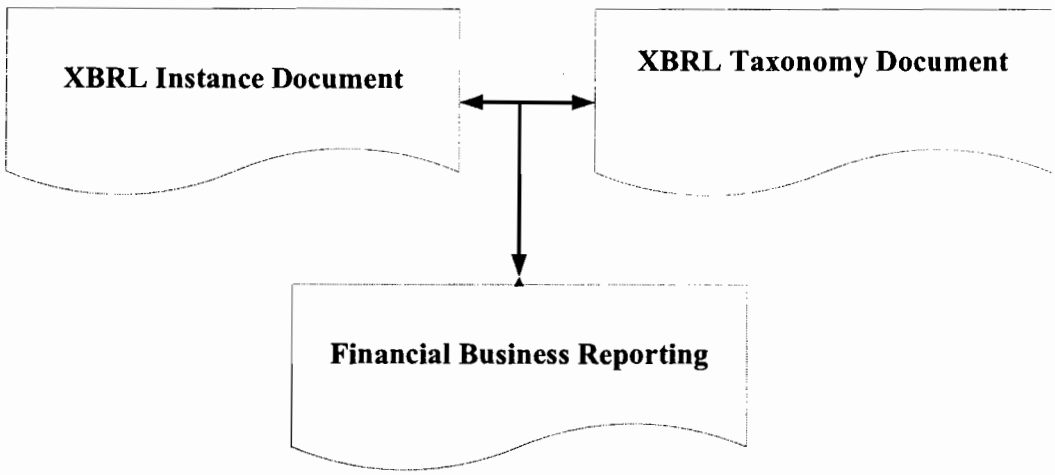


Figure 2. 1

How XBRL Works

The goal of XBRL is to develop an XML-based framework that can be used to create instance documents that can be then presented in different presentation formats. It

is not about establishing new standards for accounting; it is trying to standardize the XML-based tags (financial reporting supply chain) that are used in exchange, and analyze financial reporting information, regulatory filings such as annual and quarterly financial statements, general ledger information, and audit schedules (Debreceny & Gray, 2001; Saeedi et al., 2004).

To date, most of the attention on XBRL has focused on external financial reporting (International Financial Reporting Standard (IFRS), United States Generally Accepted Accounting (US GAAP) and BASEL II are examples), with the important attempt creation of the necessary taxonomies. However, a number of successful pilot projects and actual implementations have been established around the world. XBRL International has also approved XBRL for General Ledger (XBRL-GL) taxonomy that uses XML tags when data are captured within an organization's general ledger accounting system (Bovee et al., 2002; Saeedi et al., 2004).

2.2.2 Why XBRL?

The financial data that some companies using nowadays such as HTML or PDF (text) typically needs to be re-keyed in order to use it in a data-analysis program. Information coded in XBRL can be instantly and accurately exchanged between systems without any need for re-keying of information. Financial data consumers can search across online XBRL documents and convert XBRL documents into other formats. XBRL technology can therefore make it easier for financial data consumers to access and compare financial information, both over time and among companies. XBRL

enables the financial data consumers by using standard tags for business reporting terminology. The concepts are in the XBRL taxonomies. Companies often use different names to describe the same concepts (for example, accounts receivable, receivables, and trade accounts receivables (Selamat & Rawashdeh, 2009; 2010).

2.2.3 The Current Financial Reporting on the Internet

The Internet has changed dramatically the way individuals and corporations communicate and conduct business, for several reasons, such as low costs and international access. Research (Debreceny & Gray, 2001; Saeedi et al., 2004) clearly indicates the ubiquity of Web sites for public companies. In a broad sense, the Web is loosely interlinked data warehouse that contains an unprecedented amount of information. Financial information of corporations on the Internet is posted in a number of different formats, including HTML and PDF. Most of these formats are often inaccessible by automated search engine indexing programs or other automated analytic software, upon which individuals and intelligent agents rely (Debreceny, Gray & Rahman, 2002).

HTML format currently also does not support searching, manipulation of information without downloading it onto a spreadsheet with search and manipulation capabilities (Shin, 2003). In addition HTML also has a number of problems with web pages that effectively preclude it from information delivery that conforms to a robust schema. As Bosak and Bray (1999) noted, HTML language is not extensible as it does not allow the creation of new tags for specialized tasks.

2.2.4 Potential Benefits of XBRL

Consumers adopt XBRL because of the benefits it potentially brings to their works and these benefits are briefly outlined next. After the invention of double-entry bookkeeping, XBRL becomes the next most significant development in financial reporting (Vasal & Srivastava, 2002). It is considered to be a tool that will offer participants in business reporting supply chain the following benefits: (1) remove manual data transfer; (2) produce fewer errors and higher quality data; (3) expedite real-time preparation of financial information; (4) retrieve data easily; and (5) reduce information processing cost (Nel & Steenkamp, 2008).

XBRL tagging processes can decrease time spent manually finding and preparing data and enhance data quality through automating all data exchanges among disparate software systems (Willis, 2005). The electronic receipt of data increases the validity of data subsequently delivers standardized information to consumers (Willis, 2005). In short, XBRL can be considered a crucial tool of enhancing transparency, comparability and accountability (Debreceny et al., 2002; Hodge et al., 2004). In addition to automation of financial reporting, the use of XBRL could also reduce the cost of capital and facilitate further standardization of international reporting standards (Premuroso & Bhattacharya, 2008), facilitate continuous auditing (Troshani & Doolin, 2007) and support for tailor-made extraction of data and comparability between companies (Beattie & Pratt, 2003). Thus, XBRL is expected to substantially improve the efficiency of the entire information supply chain (Boyd & Teixeira, 2004).

Furthermore, XBRL provides the consumers with a standard format to define and express financial information (Hoffman & Strand, 2001). Which enables reduction in information processing costs (Debreceny et al., 2002) and improvement in information delivery, information sharing and information processing (Brown & Willis, 2003; Pinsker & Wheeler, 2009). Similar to commercial organizations, XBRL also offers the stock markets the possibility to create electronic services to improve market efficiency by providing rich information to consumers in a cost effective and transparent manner (Li & Crews, 2006). This effective information inflow and outflow in turn enhance data sharing between consumers (Lai et al., 2007). All these benefits increase consumers' trust and confidence in interactive data (Troshani & Rao, 2007). For example, XBRL offers direct benefits to auditors as it can be utilized to speed up the auditing process and allows data drilling; hence, removing threats of traditional auditing (Higgins & Harrell, 2003).

Therefore, it can be argued that the benefits of XBRL justify its adoption and use. It is argued that the use of XBRL will transform and affect almost every aspect of global reporting environment (Premuroso & Bhattacharya, 2008). Therefore, in order to harvest its full potential, it is appropriate to comprehend the deployment and adoption of such emerging technologies among consumers.

2.3 THE STATE OF XBRL ADOPTION AND USAGE RESEARCH

2.3.1 Adoption Studies

The factors that drive the adoption of new technologies such as XBRL are complex and context specific (Doolin and Troshani, 2005). These individual factors are influenced from internally and externally, by users seeking financial information. In the area of IFR, consumers depend on standards to deliver accurate, reliable and timely reporting (Debreceny & Gray, 2001; Debreceny et al., 2005; Hoffman, 2006), to reduce costs by elimination of error-prone human interaction and time consuming. It is for this reason that XBRL is being promoted as the future business and financial reporting language that will revolutionize for financial data consumers (Debreceny & Gray, 2001; Saeedi et al., 2004).

Success stories from various governmental regulators in large countries such as in the UK (Locke & Lowe, 2007) and USA (Pinsker, 2008; Premuroso & Bhattacharya, 2008) demonstrate the benefits of XBRL, especially for regulators and governments with extensive resources. However, there has been limited research into the individual adoption of XBRL standard in different. Doolin and Troshani (2005) believed that the adoption of technologies occurs initially at the organizational level, and then at the individual level, where the literature focuses more on organizations, rather than individuals. Dubelaar et al. (2003) stated that there is extraordinary growth in the number of individual financial consumers such as investors in the stock markets. Furthermore, some countries have various languages, accounting standards and organizations, which may complicate the adoption of XBRL on the individual level (Dubelaar et al., 2003).

Decision to adopt technology has a mixture of 'push' and 'pull' influences (Warren, 2004; Doolin & Troshani, 2005). Technology adoption is complex and context sensitive and various studies have been used in the past twenty years to find the contingent factors which influence technology adoption within individual context. In general, these studies seek to define the factors that influence or hinder an organization or individual's adoption of technology.

The adoption studies presented from now on cover essentially discusses of the factors that influence the slow uptake or drive the success of XBRL diffusion. An analysis of relevant literature suggests that research on the consumers' perceptions of XBRL adoption at the micro-level is needed (Troshani & Doolin, 2007; Henderson et al., 2009). Lin (2003) stated that there are four major characteristics that contribute to a high rate of XBRL adoption among organizations, namely, company size, information risk, performance, and ownership diversification. Premuroso and Bhattacharya (2008) uncovered that the factors of corporate governance, company performance, liquidity, firm size, and auditor type are responsible for the high deployment rate of XBRL between companies.

Pinsker and Wheeler (2009) examined the users' point of views of the efficiency and effectiveness of XBRL, and suggested that the perceived usefulness and perceived ease of use affect user attitudes toward XBRL adoption or acceptance. Their research propositions investigating XBRL adoption intentions use two theories from both the individual decision level and the organizational/firm level. They claimed that there is

global uncertainty regarding XBRL adoption which needs to be furthers explored. This study suggested that the perceived usefulness and perceived ease of use are the factors that are severely affecting the adoption of XBRL amongst users. In addition to some limitations such as statically validity in this study, it did not investigate minimal factors such as control factors.

Troshani and Doolin (2007) examined the driving forces of XBRL adoption within organizations. Their case studies' findings demonstrated very important findings. Such as the traditional innovation standards related factors of relative advantages, complexity, trialability and observability are play a largely negative role in XBRL adoption. They also stated that XBRL education and training, knowledge, supporting software, and readiness of XBRL have positive effect too.

Henderson et al. (2009) investigated organizational factors affecting the adoption of XBRL access through online survey. This research combined factors from two streams of prior adoption of complex information systems innovations and information technology standards researches. The combination results are the inclusion of environmental factors, organizational factors, and innovation factors in this research conceptual model. XBRL is a very complex standard, and developing and processing XBRL instance documents manually is practical impossibility. Consequently, the benefits of XBRL cannot be delivered to user without automated processing of business information by XBRL automated software tools, which are developed by software developers and distributed by vendors.

These studies (Doolin & Troshani, 2005, 2007; Ghani & Jusoff, 2009; Henderson et al., 2009) provide a basic comprehension of how XBRL works and who the major stakeholders involved in its use are. They also indicate a number of issues associated with XBRL (e.g., XBRL adoption) that require further investigation and research.

The XBRL structural design was under criticism by some researchers who argued against it. Selamat and Rawashdeh (2009) commented on it's complexity and Bovee et al. (2002) described the development process of XBRL taxonomy is arduous in sector, country and firm level. Despite these limitations and the costs incurred from XBRL implementation, literature lists many potential benefits of XBRL adoption.

In connection with the discussions of the Selamat and Rawashdeh's study, the complexity of the technology is a factor in the technological context. Complexity is regarded as "the degree to which an innovation is perceived as relatively difficult to understand and use" (Rogers 1983: 230-231). Rogers (1995) stated that although complexity may not be as important as the perceived relative advantage and compatibility factors, it potentially represents a barrier to adopting technology. Technology complexity includes the current knowledge and skills of the employees in the organization. Davidson, Robinson and Malthus (2006), for example, have found that the awareness of XBRL and availability of XBRL software is limited and this lack of knowledge and skills hinders the adoption of XBRL by chartered accountants.

2.3.2 Usage Studies

Usage is the other significant topic in the information system area and is pertinent to this research. Studies in this area have been in the form of user surveys and from the point of comparison between XBRL consumers and PDF or HTML consumers (Abdullah et al., 2009; Ghani et al., 2009; Pinsker & Wheeler, 2009). The results suggested that the users' presentation format was different when they use XBRL format (Hodge et al., 2004; Ghani et al., 2008; Pinsker & Wheeler, 2009). Although there are little studies that examine the usage of XBRL, their underpinning theories are not strong enough to support their results (Selamat & Rawashdeh, 2009).

Hodge et al. (2004) stated that many users do not use the XBRL; however the users who use XBRL are able to acquire and integrate information in their analysis tools. They concluded that using XBRL helps nonprofessional financial statement users (e.g., financial data consumers) acquire and integrate related financial statement and footnote information when making investment decisions (Hodge et al., 2004).

XBRL also allows regulators to further the standardization and harmonization of international business reporting standards (Hodge et al., 2004). In comparison to HTML and PDF users, the XBRL users need less time for information processing (Debreceny & Gray, 2001; Hodge et al., 2004; Willis, 2005). It was also observed that XBRL users utilize search engine more frequently and collect more financial reporting and footnotes data (Hurtt, Kreuze & Langsam, 2001; Hodge et al., 2004). This highlights the importance of XBRL in the process of establishing effective and efficient digital financial reporting (Selamat & Rawashdeh, 2009).

This research is important for several reasons. XBRL is unique as an innovation which means that outcomes of other similar researches may not be readily applicable to its innovation (Bergeron, 2003). As Doolin and Troshani (2005) argue, the determinants of the adoption of new innovations (e.g., XBRL) differ as the characteristics of the innovations differ. Published researches on XBRL has mainly focused on the potential huge benefits of using XBRL and the technical mechanisms by way of which XBRL works (Dipiazza & Eccles, 2002; Bergeron, 2003; Jones & Willis, 2003; Deshmukh, 2004; Doolin & Troshani, 2004). Negligible research has been conducted on the factors that influence on XBRL adoption and use from financial data consumers.

From the aforementioned discussion it can be said that there are only few attempts that have been made to examine XBRL adoption and usage between financial data consumers. Furthermore, the number of participants included in these studies was relatively small (Hodge, 2001; Dull, Graham & Baldwin 2003; Hodge et al., 2004; Doolin & Troshani, 2005). In addition, some of these studies utilized students as the proxy of their investigation (Hodge et al., 2004) and were not statistically tested to determine the differences between XBRL consumers in the practical setting. Hence, there are lacks of statistical conclusion validity in the findings (Sekaran, 2003). Another observation from previous literature analysis indicates that the existing studies examined exploratory issues related to either the adoption or usage of XBRL. None of these provides a thorough comprehension of all two components of XBRL diffusion (i.e. adoption and usage) (Selamat & Rawashdeh, 2009) from the individual financial data consumer's point of view. Therefore, both discuss on the abovementioned research

problem and lack of sufficient studies on XBRL adoption and usage provide the motivation to undertake this study.

In order to recapitulate it is clear that there is a need for a suitable theoretical or conceptual model that can be used to study the overall XBRL adoption and usage between financial data consumers (Doolin & Troshani, 2004). Given the slow uptake of XBRL adoption in many countries, this research would be useful since it would identify areas that need to focus on.

2.4 TECHNOLOGY DIFFUSION AND ADOPTION THEORIES

For the purposes of this research, the definition of diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995). The term innovation refers to an idea, practice or object that is perceived as new by an individual or other unit of adoption (Rogers, 2002). The study of diffusion contains two dimensions: (1) the adoption of a new innovation; and (2) its usage (Rogers, 2002). Therefore, this research will investigate the dimensions relevant to XBRL adoption and usage between financial data consumers.

As mentioned above (see section 2.3.1), an individual decision to adopt technology has a mixture of 'push' and 'pull' influences. Technology adoption is complex and various models, assumptions, measurements, and theories have been used in the literature to find the contingent factors which influence technology adoption

within individuals (Farr & Ford, 1990; Scott & Bruce, 1994; Chau & Hu, 2001; Troshani & Doolin, 2007; Beck et al., 2008). These include the Innovation Diffusion Theory (Rogers, 2002), Social Cognitive Theory (Bandura, 1986), Technology Acceptance Model (TAM) (Davis, 1989), TAM2 (Venkatesh et al., 2003), Theory of Planned Behaviour (Ajzen, 1991), Theory Reasoned Action (Fishbein & Ajzen, 1975), and Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003). In general, these models seek to explain the factors that influence or hinder an organization or individual's adoption of technology. Jeyaraj, Rottman and Lacity (2006) reviewed 48 empirical studies on individual and 51 studies on organizational information technology adoption published between 1992 and 2003. They focused on identifying factors that foster the adoption and diffusion of new information technology technologies. They investigated the relationship between various models and theories of technological adoption, and found that every study utilize different predictors or independent variables to investigate dependent variable. They further analyzed the overlapping factors between the various theories to find the most prominent aspects that affect the adoption of technology and concluded that the most prominent and best predictors of technology adoption are the factors relating to the individual, organization, technology and environment.

This study is concerned with identifying the factors that influence individual consumers' decisions to adopt XBRL, thus, similar to Taylor and Todd's (1995) model of technological innovation adoption, where the organizational factor will be ignored and the focus is on individuals and technological factors.

Previous literature in the XBRL area highlights that researchers have not yet investigated the adoption of XBRL from the micro-level factors point of view (Doolin & Troshani, 2007; Henderson et al., 2009). Instead, they have mainly focused on examining the macro level factors leading to XBRL adoption in an organization (Troshani & Rao, 2007; Premuroso & Bhattacharya, 2008; Henderson et al., 2009). Recent studies highlight the need to understand adoption and diffusion of XBRL from the individual point of view (Nel & Steenkamp, 2008). Limited number of adoption study at micro-level has resulted in a lack of suitable conceptual model specific to XBRL.

The adoption and usage of XBRL is viewed as one of the important areas of research within technology adoption (Doolin & Troshani, 2005). A number of social psychology and marketing theories have been modified and adopted from different areas and are used by many researchers in the area of information system (Venkatesh et al., 2003).

This was to provide a better comprehension and prediction of the use and adoption of technology in the area of XBRL (Debreceny, 2007). The theories are used the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), theory of planned behavior (TPB) (Ajzen, 1991), technology acceptance model (TAM) (Davis, 1989; Davis, Bagozzi & Warshaw, 1989), and diffusion of innovation theory (Rogers, 1995). These theories and models were further modified, changed, integrated, and extended according to the need and requirements of information system studies. For example,

Taylor and Todd (1995) introduced the use of the decomposed TPB based on the modification, integration, and diffusion of TPB. Venkatesh and Morris (2000) modified TAM by integrating gender and subjective norm factors with the original TAM model to understand the contribution of gender and social influence in the adoption of technology. Venkatesh and Brown (2001) also modified the TPB to understand the adoption of technology and investigate the drivers and barriers of the adoption of personal computers. This scenario reveals that the process of selecting suitable model or theory that befits the needs and requirements of the present research study is very problematic and critical, especially in the area of technology adoption.

According to Venkatesh et al. (2003), researchers seem to face difficulties in the process of selecting models and theories for their area of research and that they should "pick and choose" a "favored model" and largely overlook the role of substitute models. Thus, they modified and integrated the factors of eight prominent user acceptance models. This led to the emergence of the Unified Theory of Acceptance and Use of Technology (UTAUT). This model is composed of four main factors which are: (1) performance expectancy; (2) effort expectancy; (3) social influence; and (4) resource facilitating conditions. Two dependant variables are also involved which are intention and use behavior. The UTAUT model is also composed of four variables which are gender, age, voluntaries, and experience moderate key relationships between the four core factors, intention, and usage of technology (Venkatesh et al., 2003).

The above theories and models of adoption have been widely validated and

tested by many researchers in many areas and from the individual point of view. Researchers in the area of information system have also started to examine the individual adoption, and usage of technology issues due to the emergence of information and communication technologies between individuals (Venkatesh & Brown, 2001; Anckar, 2003). The main goal is to promote the use of the technology and determine the causes that impede its usage.

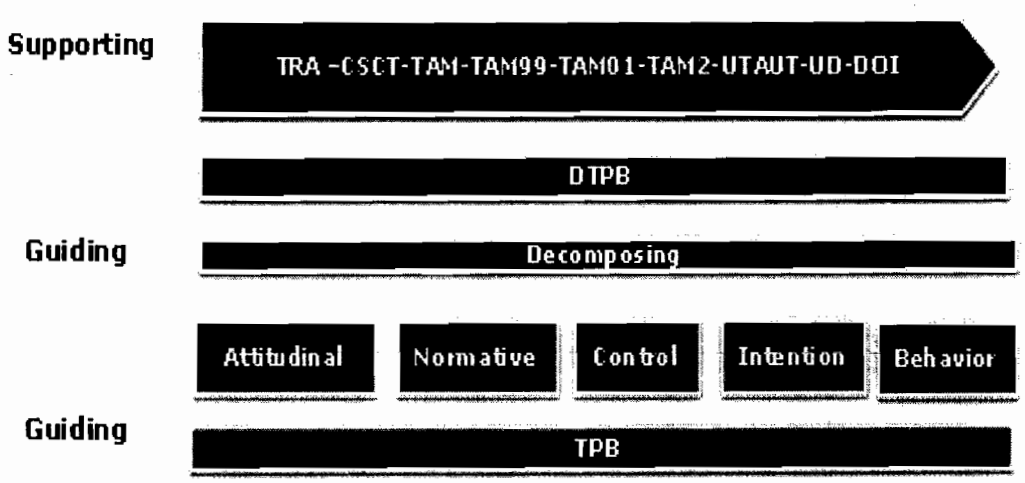


Figure 2. 2

Formation of the Research Model (Model of XBRL Adoption –MXA), Based On Eleven Theories/Model

In order to develop the conceptual model for XBRL adoption, as pursued in previous adoption studies, this research has adopted the above eleven prominent technology acceptance theories and models which are as follows: (1) DOI; (2) TRA; (3)

TPB; (4) DTPB; (5 CSCT; (6) TAM; (7) TAM 1999; (8) TAM 2001; (9) TAM 2 ;(10) UTAUT and (11) UD. The models and theories provide empirical evidence to show the practicality of the model in a real situation.

Figure 2.2 presents the overall picture of the formation of the research model (Model of XBRL Adoption "MXA"). The formation of the proposed conceptual model is based on the significant characteristics of these eleven theories/models as previously discussed. The details of how the research model is developed are discussed in the next subsections (2.4.1-2.4.11).

2.4.1 Diffusion of Innovation (DOI)

Diffusion is a term that has been defined by many researchers in this area. It refers to "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995: 5). The theory of diffusion has been used by many researchers in the area of information system to examine diffusion of information technology innovation (Taylor & Todd, 1995; Valente, 1996; Bradford & Florin, 2003; Greenhalgh et al., 2004; Young, 2006; Atwell, Schulte & Westphal, 2009). Many studies have investigated various situations in which a new set of technology has been used and showed varied degrees of successful outcome, frequently evaluated by the overall diffusion. The adoption of XBRL encounter related diffusion issues. Standardizing on a mark-up language like XBRL for exchanging information across the Internet can be considered as an innovation when compared to traditional methods of making business. This innovation must be diffused since business

is conducted electronically and more toward technology adoption nowadays. In this case, the consumers have to be updated with latest technology since businesses in the 21st century may be hindered by technological development if they are not well equipped with the necessary technological background.

Rogers (1995) defines theory of diffusion as the processes by which the patterns of adoption are described, explained, and assists to understand whether and how new invention and implementation of technology is successfully used. It has been used by many researchers to investigate the adoption and use of technology (Troshani & Doolin, 2007; Melville & Ramirez, 2008; Pinsker, 2008; Wei & Zhang, 2008). This theory has been implemented to examine a variety of factors that are claimed to determine the adoption and use of technology (Rogers, 1995). It is also used to determine the sources of information and communication channels of technology throughout the Internet (Nilikanta & Scammel, 1990).

Theory of innovation diffusion has been used widely since 1950's to explain the innovation and decision process. This was the fashion till an accredited innovation-decision process was introduced by Rogers (Rogers, 1971; Rogers, 1995). This type of innovation-decision process refers to the decision made and passed by individuals based on: (1) first knowledge of an innovation; (2) forming an attitude toward the innovation; (3) a decision to adopt or reject; (4) implementation of the new idea; and (5) confirmation of this decision.

In the persuasion stage Rogers (1995) states that there are five attributes that persuade an individual to adopt innovation which are relative advantage, compatibility, complexity, Trialability and absorbability.

According to Rogers (1995), the perceived relative advantage refers to the degree to an innovation is comprehended in terms of being better that the idea it succeeds. Also, it relates to the perceived relative advantage that is often stated in economic profitability but the perceived relative advantage dimension may be evaluated using other methods. On the other hand, Rogers (1995) states that compatibility refers to the degree in which an innovation is comprehended constantly with the existing values, related precedent experience, and requirements and receivers. But complexity relates to the degree to which an innovation is comprehended as comparatively difficult to comprehend and utilize. An innovation complexity is negatively associated with its rate of adoption. Trialability refers to the degree to which an innovation might be tested on limited basis. While absorbability relates to the degree to which the outcome of an innovation is visible to others. This theory of innovation is one of the most recognized theories related to the adoption of new technology till today.

Information system researchers have integrated and modified intentions and innovations theories and models through combining concepts to comprehend the characteristics of innovation (Rogers, 1995). These modifications of intentions and innovations are based on theories such as TRA (Moore & Benbasat, 1991) and TPB (Taylor & Todd, 1995; Chau & Hu, 2001).

It is wise to consider such concepts when conducting a research study in this area since a number of studies have used innovation characteristics for being beneficial vary widely. This helps to integrate and factor a model from other technology theories and models without any difficulties.

The above DOI particular is suitable in this research because it intends to investigate the diffusion of new innovation that is XBRL. Relative advantage, compatibility and complexity are proposed with demographic factors such as gender, age and education by the theory of diffusion and innovations to present the correlation of innovations so as to determine the level of adoption of an innovation (Rogers, 1995). Thus, this concept of diffusion of innovation is very essential to examine XBRL adoption.

2.4.2 Theory of Reasoned Action (TRA)

This theory originated from the social psychology and was first used by (Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980). It was introduced to provide a theoretical basis for predicting social behaviors. Since then, the theory has been used by many researchers in the area of adoption such as Chang (1998), Davis et al. (1989), Chang et al. (2008) and Selamat and Rawashdeh (2009). These scholars have used TRA theory in the process of technology adoption and have given a basis for a number of modified adoption models (Davis, 1989; Taylor & Todd, 1995; Karahanna & Straub, 1999). It is a predictor model that uses individuals' intention as a basic predictor in the obtained behavior. This means that if an individual wishes to do something he/she will

possibly do it. But if an individual does not intend to do, he/she is likely not to do it (Ajzen & Fishbein, 1980). Theory of reasoned action proposes that there are two basic influencers of intention. These are as follows:

- Attitude toward the behavior – an individual's positive or negative feelings (evaluative affect) about performing the target behavior (Ajzen & Fishbein, 1980).
- Subjective norms – the person's point of view that most people who are important to him think that he should or should not perform the behavior in question (Ajzen & Fishbein, 1980).

According to Ajzen and Fishbein (1980), an attitude toward the behavior is what the individual earlier attitude toward doing that behavior. This theory proposes that individuals think of the result of their decision before making a decision. There is an attitude established concerning the entire decision and the object in which the decision is made about. In addition, TRA proposes that the influence of personal intention is considered as "subjective norms" that is established by "the person's belief that specific individuals or groups think he should or should not perform the behavior and his motivation to comply with the specific referents" (Ajzen & Fishbein, 1980:8). The decision, prediction and thought of the outsiders or influencers play a very important role in the subjective norms. The connection between these ideas is depicted in Figure 2.3.

In short TRA is drawn from a set of behavioral beliefs by the potential adopter about the resulted behavior and outcome. It is the subjective probability of the behavior

that will result in a specific result. The results are very specific such as using the system will save time compared to current methods (Mathieson, 1991). An outcome is evaluated by rating the desirability of the results or outcome. As this research intends to investigate the behavior towards XBRL, TRA's items can be considered as a supporting framework when developing the proposed conceptual model for this research.

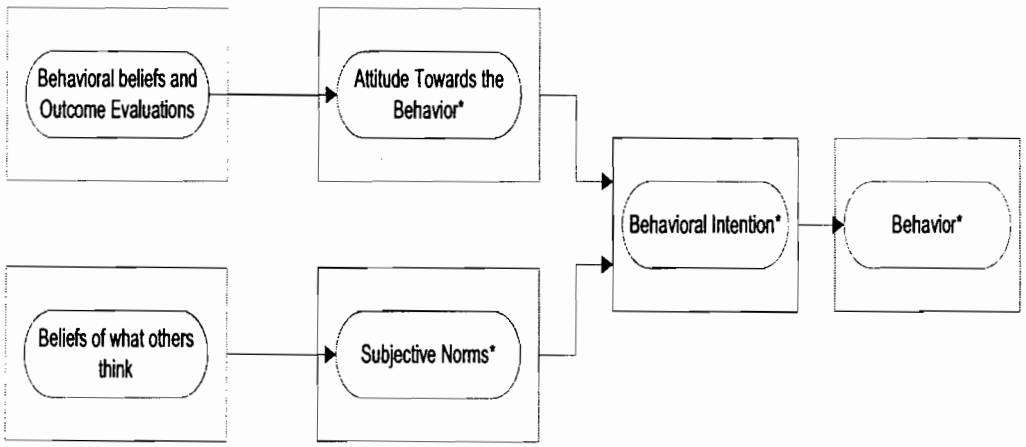


Figure 2. 3

The Theory of Reasoned Action [Source: Ajzen and Fishbein (1975)]

2.4.3 Theory of Planned Behavior (TPB)

This theory is an extended form of TRA, which was developed to overcome the TRA's limitations that dealt with an incomplete volitional control (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). After Ajzen (1985) has realized that TRA contains some empirical significances and variations than predicted, he modified the TRA by integrating a third determinant that took into consideration the perceived ease or difficulty of performing the behavior (Ajzen, 1991). This was known as "perceived

behavioral control" (Figure 2.4). This theory has been implemented productively in a wide range of settings and technologies (Mathieson, 1991; Taylor & Todd, 1995; Legris, Ingham & Collerette, 2003; Herrero Crespo & Rodriguez del Bosque, 2008). It is widely adopted and adapted by information system researchers to the study of information technology adoption, implementation, and use (Benbasat & Zmud, 1999). The concept of perceived behavioral control relates to the personal point of view of the presence or absence of necessary resources and opportunities to perform the behavior (Ajzen & Fishbein, 1980).

According to the TPB, human action such as an individual's adoption or use of a technology (i.e. XBRL) is affected by the following three types of beliefs: first, behavioral beliefs that create a favorable or unfavorable attitude toward the behavior; second, normative beliefs that produce perceived social pressure or subjective norms; and third, control beliefs that generate perceived behavioral control (Ajzen, 1988; 1991; 2002). The aforementioned three types of factors (i.e. attitude toward the behavior, subjective norms, and perception of behavioral control) lead to the formation of a behavioral intention (Ajzen, 1988; 1991; Ajzen, 2002). The more favorable the attitude and subjective norm and the greater the perceived control by potential adopters (e.g., financial data consumers), the stronger should be the person's intention to carry out the behavior in question (Ajzen, 1988; 1991; 2002). Finally, if the consumers have strong actual control over the behavior, they are more likely to execute their intentions in favorable circumstances. This indicates that intention is an immediate antecedent of behavior (Ajzen, 1988; 1991; 2002). In addition to intention, it is also useful to consider

perceived behavioral control as a direct antecedent of behavior (Ajzen, 2002). This is because to the extent that perceived behavioral control is stronger, it can serve as a substitute for actual control; hence, it can contribute to the prediction of the behavior in question (Ajzen, 1988; 1991; 2002). Figure 2.4 is a diagrammatic illustration of the TPB.

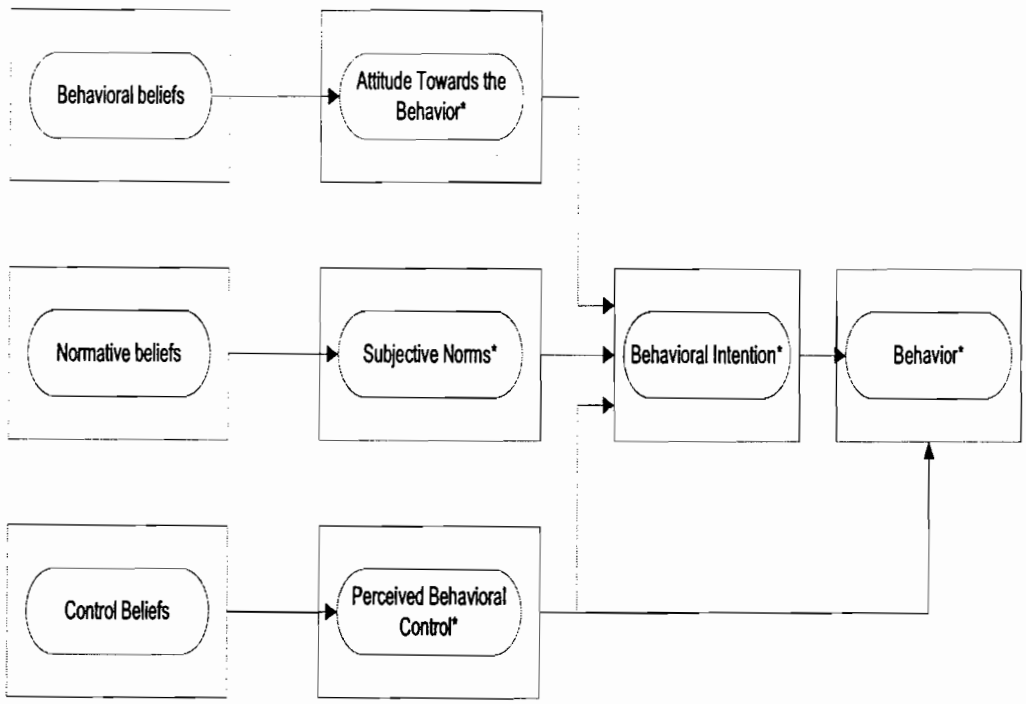


Figure 2. 4

The Theory of Planned Behavior TPB [Source: Ajzen (1985)]

Although the TPB does not describe the process of implementation in a specific context, "it has a high degree of predictive validity and can be used to identify areas of concern for a specific context" (Benbasat & Zmud, 1999). According to the information

system literatures, TPB can serve as an effective diagnostic tool when examining information technology adoption or acceptance and usage (Benbasat & Zmud, 1999). Therefore, the TPB can be considered as a guiding framework when developing the proposed conceptual model for this research.

2.4.4 Decomposed Theory of Planned Behavior (DTPB)

Decomposed theory of planned behavior (Figure 2.5) was introduced by Taylor and Todd (1995) and its aim is to increase the predictability of TPB. They provided a wider range of comprehension of behavioral intention by emphasizing the factors that are most probably impact system application from both design and strategies of use. Decomposed theory of planned behavior explores and investigates the dimensions of the subjective norms such as social influence and perceived behavioral control through decomposing them into certain belief dimensions.

Specifically, the DTPB was intended to identify particular salient beliefs that might impact information technology implementation (Taylor & Todd, 1995). Based on this model, attitudinal, normative and control beliefs are de-composed into multi-dimensional belief that can be used throughout a diversity of settings. By emphasizing on those specific beliefs, the theory evolved to be more managerially pertinent, relating to specific factors that might impact adoption and implementation of technology. These factors may be operated through system design and use of strategies. This is discussed in later sections (sections in this thesis). Therefore, the conceptual model of XBRL adoption adopts the decomposed structure of attitude, subjective norms and perceived

behavioral control factors. However, the factors of these are not quite similar to Taylor and Todd's (1995) study. This is because the context and subject of the two studies differ from each other on several dimensions, each of which may have a critical impact on the results.

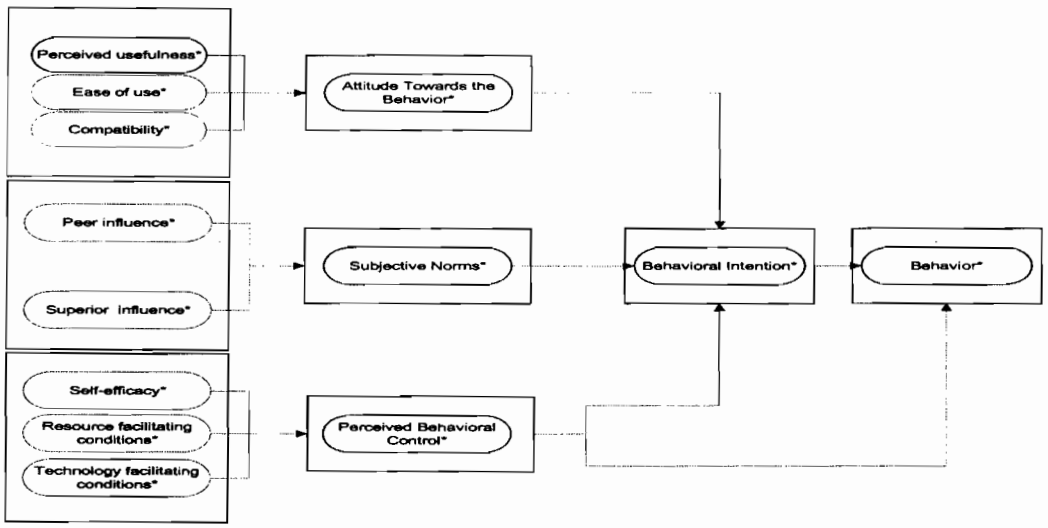


Figure 2. 5

The Decomposed Theory of Planned Behavior [Source: Taylor and Todd (1995)]

2.4.5 Compeau Social Cognitive Theory (CSCT)

Social cognitive theory was introduced by Bandura (1986) and proposes that human actions should be considered as the result of dynamic interplay of personal, behavioral, and environmental impact. It is related to the process of how individuals comprehend the results and outcomes of their own behaviors and how they modify their environment and the personal factors they have that alter succeeding behaviors. Bandura

(1986) stated that the foundation of CSCT is as follows: (1) personal factors, cognition, affect, and related biological events; (2) behavior; and (3) environmental influences that establish interactions that lead to a triadic reciprocally. In short, CSCT is a notion based on both social learning and social cognition whereby it detaches from common up-to-date social learning theories and focuses on the comprehension that cognition has a crucial role in individual capability to establish reality, self-regulate, encode information, and perform behaviors.

Compeau and Higgins (1995) expanded Bandura's (1986) theory and proposed CSCT. They added new dimension and significance to the concept of self-efficacy which refers to the beliefs that an individual has about oneself and his/her ability to achieve particular behavior. Bandura (1986) suggested triadic reciprocal process between individuals, environment, and behavior. In other words, individual behaviors affect each other. The CSCT model takes into consideration this idea to highlight that the influence of factors in the TRA and TPB models is interactive in nature. Compeau and Higgins (1999) define interactive nature as the connection between self-efficacy and expected results, affect, anxiety, and the usage in which it is difficult to draw a conclusion concerning casual relationship. In other words, uncovering determining factors for the relationship between self-efficacy and predicted results are a complicated issue.

This supports the notion of controlling the adoption of XBRL in the area of accounting. The next section will discuss this in details. According to Compeau and

Higgins (1999), there is strong experimental evidence that supports the role of the concept of self-efficacy in the adoption of technology in relation to innovations. Therefore self-efficacy is included in this research conceptual model.

2.4.6 Technology Acceptance Model (TAM)

Technology Acceptance Model consists of social psychology elements to provide predictive value for computer usage, including generic information system adoption. It was established by Davis et al. (1989) and was primarily based on TRA and TPB. Later this model was extended and simplified by Davis (1989).

Technology Acceptance Model provides high recognition of system characteristics by affecting the "attitude towards behavior" factor. It does not include other factors such as social norms. Davis (1989) stated that subjective norms had no significant influence on personal intentions apart from the perceived usefulness and perceived ease of use (Figure 2.6). As a result, they omitted subjective norms from TAM. The main basic TAM model had a substantial empirical confirmation in a diversity of technology areas that involve computer usage (Davis et al., 1989), information system (Jackson, Chow & Leitch, 1997), information system implementation (Lucas, Swanson & Zmud, 2007), software application, various Internet applications such as e-mail and a number of web-applications (Gefen & Straub, 1997). Many researchers (Venkatesh et al., 2003; Amoako-Gyampah & Salam, 2004; ErnestChang & Heng, 2006; Porter & Donthu, 2006; Park, Lee & Cheong, 2008; Teo, 2009) have tested and extended this model because it involves a variability of specific

areas of adoption. These results have important implications for potential XBRL adoption and diffusion among consumers. The perceived usefulness, perceived ease of use, acceptance and usage aspect of XBRL is primarily connected to a proposed XBRL adoption model. Specifically, in the midst of Hodge et al.'s (2004) findings that indicate XBRL-enabled investors are better than non-XBRL users at acquiring and integrating financial statement information.

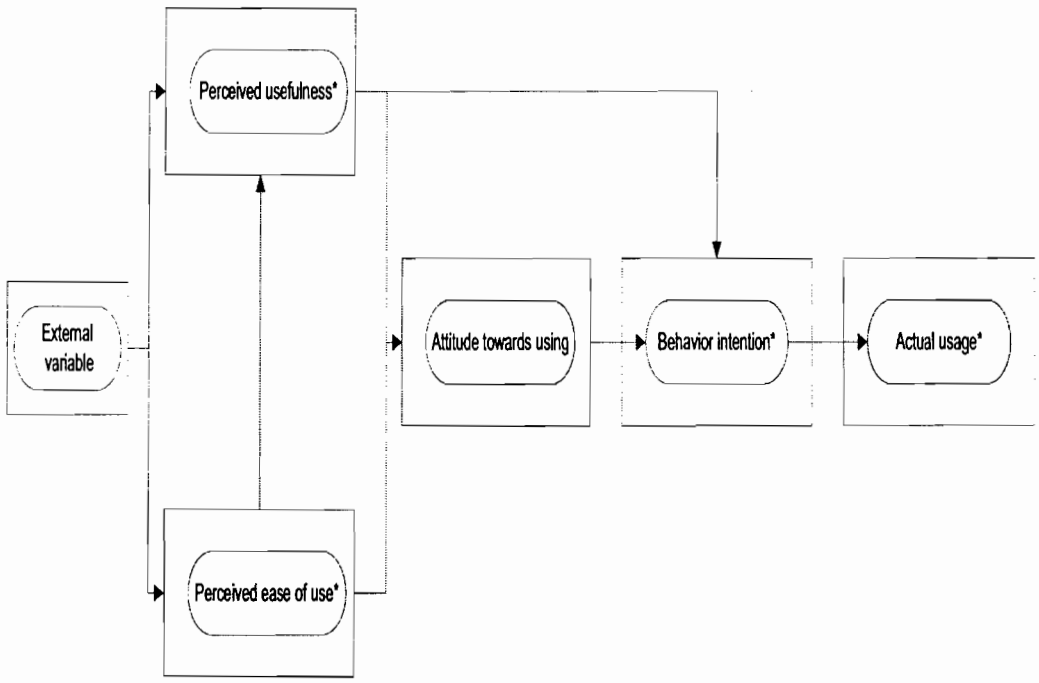


Figure 2. 6

The Technology Acceptance Model [Source: Davis et al. (1989)]

As mentioned above, many researchers have tested and extended TAM and issues related to TAM are discussed in the next sections. The next sections (sections

2.4.7 and 2.4.8) will also provide a discussion on the attempt to establish encompassing models such as TAM2 and UTAUT (Venkatesh & Davis, 2000; Venkatesh et al., 2003).

2.4.7 Extended Technology Acceptance Model 1999

The basic TAM has two well verified extensions that are perceived usefulness and perceived ease of use. Figure 2.7 depicts the extension made to TAM by (Malhotra & Galletta, 1999).

The extension to TAM was made to take into consideration related social influences in which they refer to individual acceptance and implementation behavior in the organizational usage of new information technology such as collaborative systems and e-commerce systems (Malhotra & Galletta, 1999). Under extended TAM, the term "psychological attachment" (Malhotra & Galletta, 1999) was introduced to evaluate the individuals' emotional interaction with the implementation of new technology (Malhotra & Galletta, 1999). Both of them attempted to test the psychological reaction of individuals in an organization to the introduction of an innovation and the psychological reaction influences on personal attitude and behavioral intention.

Malhotra and Galletta (1999) stated that the individuals who perceive use of information system to be congruent with their values are likely to be committed and enthusiastic in their system use. However, individuals who perceive such use merely as a means to obtain rewards and avoid punishments are likely to be compliant – pro forma and uninvested – in their system use. In short, the commitment of consumers to the use

of data and information system is in tandem with the function of the perceived fit of the system implementation to the consumers' values.

On the other hand, Matheison and Chin (2001) made another extension to TAM model. They integrated another factor called as "perceived resources." The perceived resources factor is based on the TPB factor of "perceived behavior control." Matheison and Chin (2001) define "perceived resources" as believes that individuals have in terms of the personal and organization resources required to implement information system. Figure 2.8 depicts the extension made to TAM by Matheison and Chin (2001).

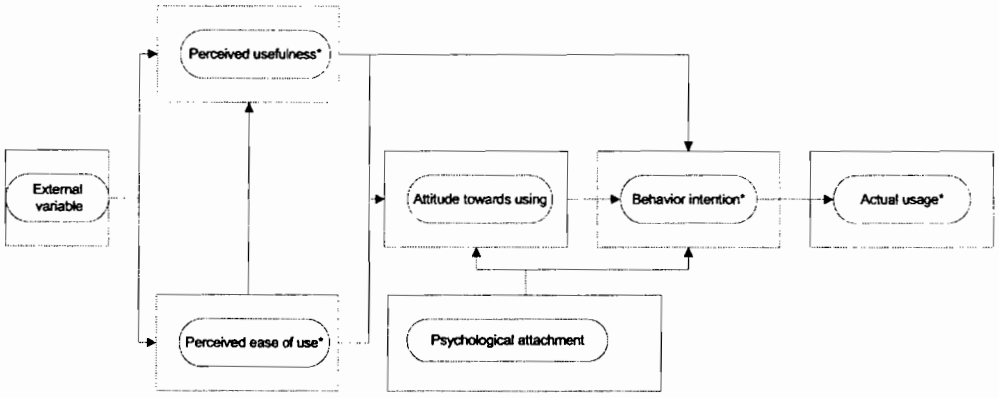


Figure 2. 7

The Extended Technology Acceptance Model [Source: Malhotra & Galleta (1999)]

The extended TAM particulars (perceived usefulness, perceived ease of use and perceived resources) are suitable in this research because they intend to investigate the diffusion of new innovation that is XBRL. Thus, they are included in this research conceptual model.

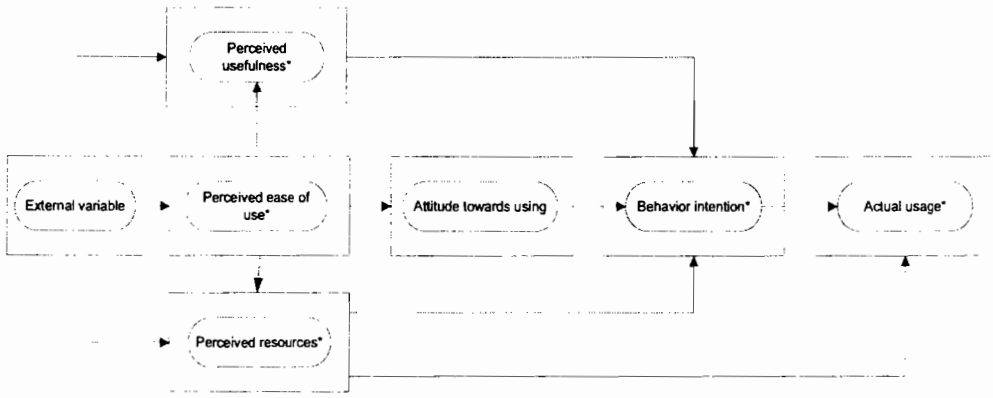


Figure 2. 8

The Extended Technology Acceptance Model [Source: Mathieson & Chin (2001)]

2.4.8 Technology Acceptance Model 2

Venkatesh and Davis (2000) put forward a decomposed version of TAM which they coined as TAM2 (Figure 2.9). One of their objectives was to give better comprehension of the determinants of perceived usefulness for organizational interventions that would increase user acceptance and usage of new systems. Thus, they incorporated subjective norm into TAM2 – emulated the studies undertaken by Malhotra and Chin (1999) and Hartwick and Barki, (1994). In the case of Hartwick and Barki (1994), they found that subjective norm had an important effect on intention in mandatory situations but not in voluntary situations.

In other words, TAM2 postulates that the effect of subjective norm compliance on utilization, over and above perceived usefulness and perceived ease of use, will occur in mandatory but not voluntary system usage settings (Venkatesh & Davis, 2000). In

addition to this, Venkatesh and Davis (2000) introduced another factor called "image", which also influences perceived usefulness. They assume that subjective norm will positively influence image if important people of a social group at work believe that he/she should carry out a behavior (e.g., using a system) so that his/her standing can be elevated. In order to differentiate between mandatory and voluntary usage settings, Venkatesh and Davis (2000) introduced voluntary as a moderating variable whereby it is defined as the extent to which potential adopters perceive the adoption decision to be non-mandatory (Venkatesh & Davis, 2000). They also assume that voluntary moderates both social norm and image.

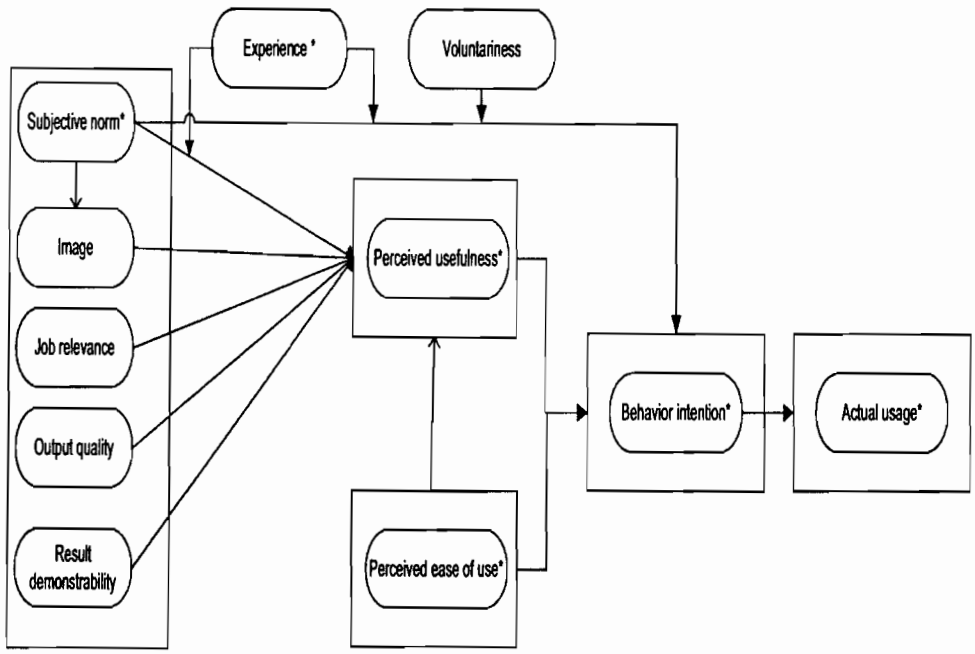


Figure 2. 9

The Technology Acceptance Model 2 [Source: Venkatesh & Davis (2000)]

In order to recapitulate there is a need to consider some of TAM2's items as a supporting framework when developing the proposed conceptual model for this research. This is because of the strong role that subjective norm can play in determining the behavior towards XBRL adoption. Thus, subjective norm and experience are incorporated in the proposed MXA.

2.4.9 Unified Theory of Acceptance and Use of Technology (UTAUT)

This model was introduced by Venkatesh et al. (2003) and was established as a result of the combination between TAM, TAM2 and six other socio-psychological models, including TRA and TPB. Venkatesh et al. (2003) conducted a study to compare eight socio-psychological models and established a unified model that incorporated components across the eight models (refer to Figure 2.9). The unified model was then further validated, tested, and evaluated by conducting case studies in four organizations within a period of six months. Thereafter, UTAUT was further validated and confirmed as a model through the analysis of data collected from two additional organizations. The experimental outcomes from UTAUT outperformed the precedent models (Venkatesh et al., 2003). The UTAUT model has four moderating and facilitating components that are gender, age, experience and voluntary of use. It has also four casual components that are performance expectancy, effort expectancy, social influence and facilitating conditions.

In short, UTAUT is a very successful model in terms of studying the individuals' intention of technology adoption. UTAUT is a very successful model in terms of studying the users' intention of adoption and usage of technology, its application is yet

to be investigated for consumers within the financial data context. In this study; there is a need to consider of UTAUT as a supporting framework when developing the proposed conceptual model for this research.

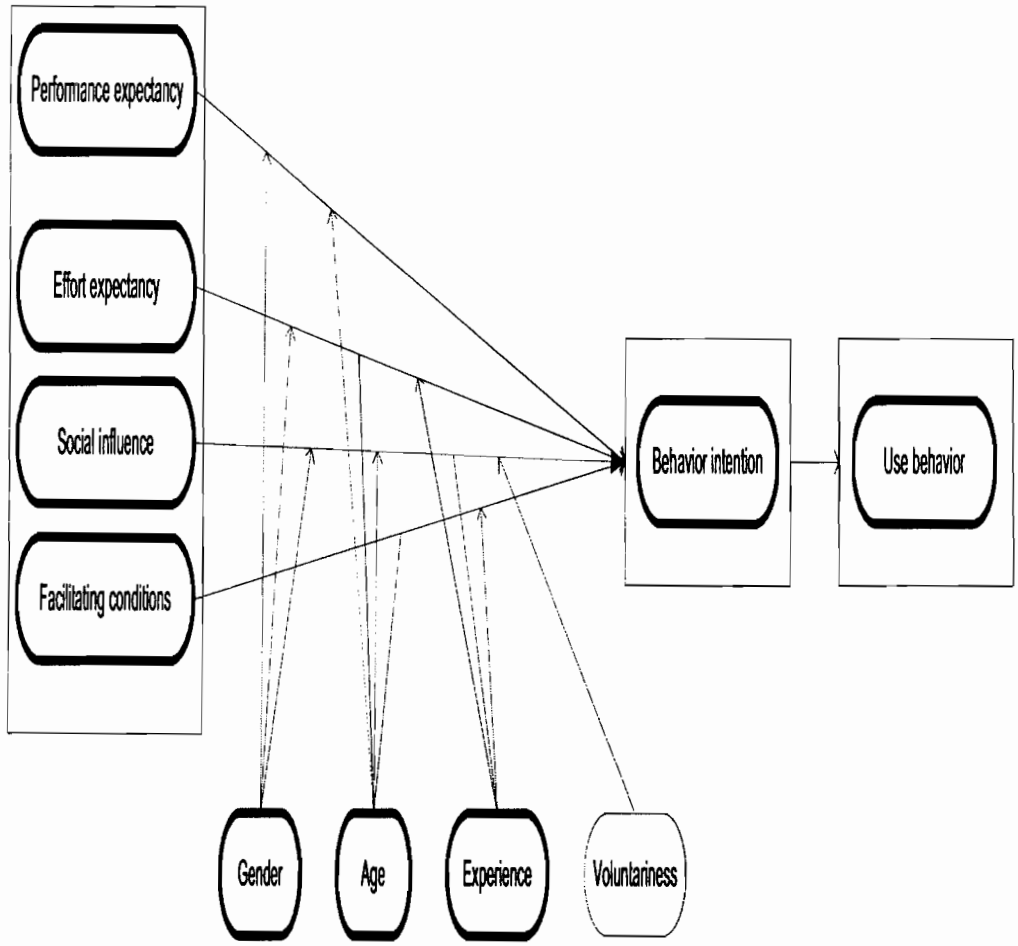


Figure 2. 10

The Unified Theory of Acceptance and Use of Technology [Source: Venkatesh et al. (2003)

2.4.10 Use Diffusion Model (UD)

Interestingly, the objective of any interactive data standard such as XBRL is to establish usage of the standard. A research model such as TAM, DTP, DTPB and UTAUT are taken into consideration as the last step in the research model. The use diffusion model is used to investigate XBRL usage among financial data consumers to achieve a better comprehension and determine the factors that play a crucial role in differentiating levels of use diffusion. The model is guided by three basic factors which are as follows: (1) use diffusion determinants which include social dimension, technological dimension, personal dimension and external dimension; (2) use diffusion patterns which involve the typology of individuals containing of two factors so called the variety of use and rate of use; and (3) use diffusion outcomes in which they compose the perceived impact of technology, satisfaction with technology and interest in future technologies (Shih & Venkatesh, 2004).

Since UD model puts emphasis on the use of technology by financial data consumers, its components which include rate of use and variety of usage would be beneficial to determine the usage of XBRL.

2.4.11 Model Applied to Study XBRL Adoption and Diffusion

The model of adoption of technology in the organizations was applied to investigate technology adoption between the organizations (Henderson et al., 2009). According to this model, technology adoption in the organizations is determined by a

number of factors. These include the organizational factors such as the managerial and personnel resources, the firm's existing technical infrastructure, and the financial resources; and innovation factors such as compatibility, complexity, and perceived benefits of use (Henderson et al., 2009). Some of the factors included in this model is also useful to study XBRL adoption in this research. However, these are others of factors that do not provide insights to the phenomenon of diffusion between financial data consumers; these only shed light on the part of adoption. Furthermore, this model was constructed to study technology adoption only, it did not consider usage; as such detailed factors need to be adjusted for XBRL adoption between financial data consumers. Therefore, this research considered the majority of DTP, DTPB, DOI, TAMs, UD and factors as its attitudinal belief dimensions.

2.5 DEVELOPMENT OF CONCEPTUAL MODEL

Taylor and Todd (1995) stated that there are two basic criteria for the selection of a successful model. Firstly, a suitable model should be parsimonious in which it has the ability to provide good predictions and meet expectations. Secondly, a suitable model should have enough contribution in the point of view, comprehension of the occurrence within investigation as well as contain suitable predictive ability. The second criterion is utilized for formulating the conceptual model of this study since XBRL diffusion needs predictive ability and contribution in the point of view of the phenomenon.

The formulation of the conceptual model of this study involves factors from eleven different theories and models in the area of information system and information

technology, which are discussed in chapter 2 (e.g., DOI, TRA, TPB, DTPB, CSCT, TAM, TAM1999, TAM2001, TAM2, UTAUT and UD). Some of these theories and models have advantages and benefits in certain areas and others have good applications in different ones. Thus, to develop the conceptual model of this research, the selection of theories and models is based on their ability to predict and increase XBRL adoption and usage in the practical setting. This in turn provides insights to comprehend and perceive different stages of XBRL diffusion. Less significant factors is extracted after the validation process to sustain the explanatory of the model. With all these discussion, the next section will discuss the development of the conceptual model of this research.

2.6 PROPOSED CONCEPTUAL MODEL

The term "conceptual model" was first used by Norman (2002) to describe how a system is. It allows the researcher to formulate a logical sense of the link between many factors which have been recognized as significant to the research problem (Norman, 2002). Developing such a conceptual model helps the researcher to postulate or hypothesize and test certain relationships and ultimately improve comprehension of the situation. In short, the conceptual model discusses the interrelationships among the variables that are considered important to the study (Selamat et al., 2008). It is essential to understand what a variable means and what the differences between the variable are (Selamat et al., 2008). After the conceptual model has been formulated, the testable hypotheses are developed to examine whether the formulated theory is valid or not (Sekaran, 2003).

This research conceptual model assumes that behavioral intentions are determined by three essential types of factors (Ajzen, 1991; Rogers, 1995; Taylor & Todd, 1995; Venkatesh & Brown, 2001). The factors are as follows: (1) attitudinal factors in which it involves five core factors as independent variables, namely, perceived usefulness, perceived ease of use, relative advantage, compatibility and complexity; whereby, they represent the financial data consumers' favorable or unfavorable evaluation of the behavior in question (i.e. adoption of XBRL); (2) normative factors includes two core factors as independent variables, namely, peer and superior influence; whereby, they reveal the perceived influence and peer pressure to perform the behavior in questions (i.e. adoption of XBRL); and (3) control factors includes five core factors as independent variables, namely, training, English language, knowledge, self-efficacy, and facilitating conditions resources ; whereby, they expose the perceived control over the personal or external factors which might assist or restrict the behavioral performance (Ajzen, 1991; Rogers, 1995; Taylor & Todd, 1995; Venkatesh & Brown, 2001). Figure 2.11 shows conceptual model of XBRL adoption of attitudinal, normative and control factors with XBRL behavior intention (XBI) and XBRL behavior adoption (XAB) (Figure 2.11).

It is argued that the above three classes of variables will assist in predicting the technology behavior intention to adopt and use technology (i.e. XBRL), which in turn is used to predict the actual technology (i.e. XBRL) adoption behavior (Ajzen, 1991; Rogers, 1995; Taylor & Todd, 1995; Venkatesh & Brown, 2001, Selamat et al., 2008). In addition, the present research also assumes that XAB can also be explained by the

demographic features (age, gender, education, experience and type of industry, and country) of the financial data consumers and adopters as well as nonadopters (refer to Figure 2.12).

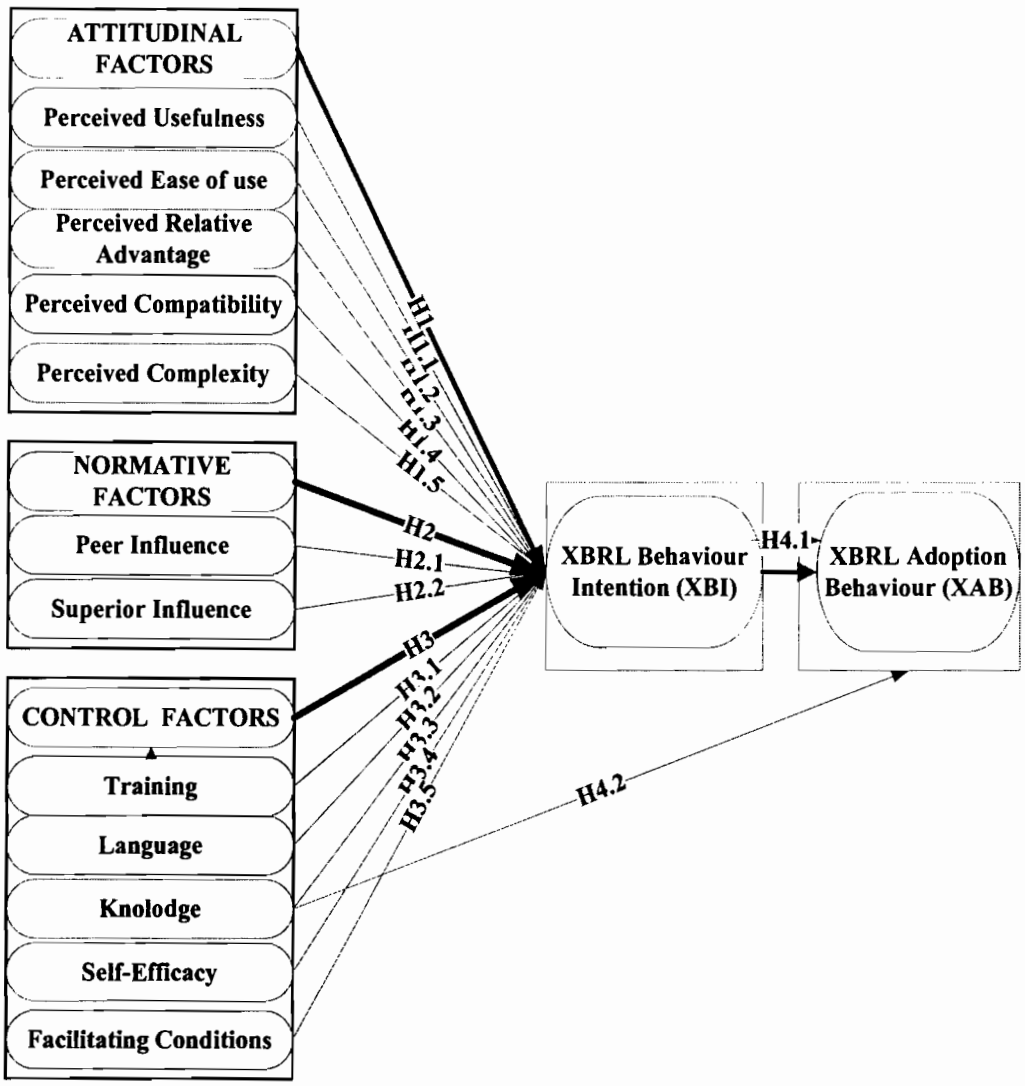


Figure 2. 11

Conceptual Model of XBRL Adoption (MXA) [adapted from Taylor and todd, 1995)

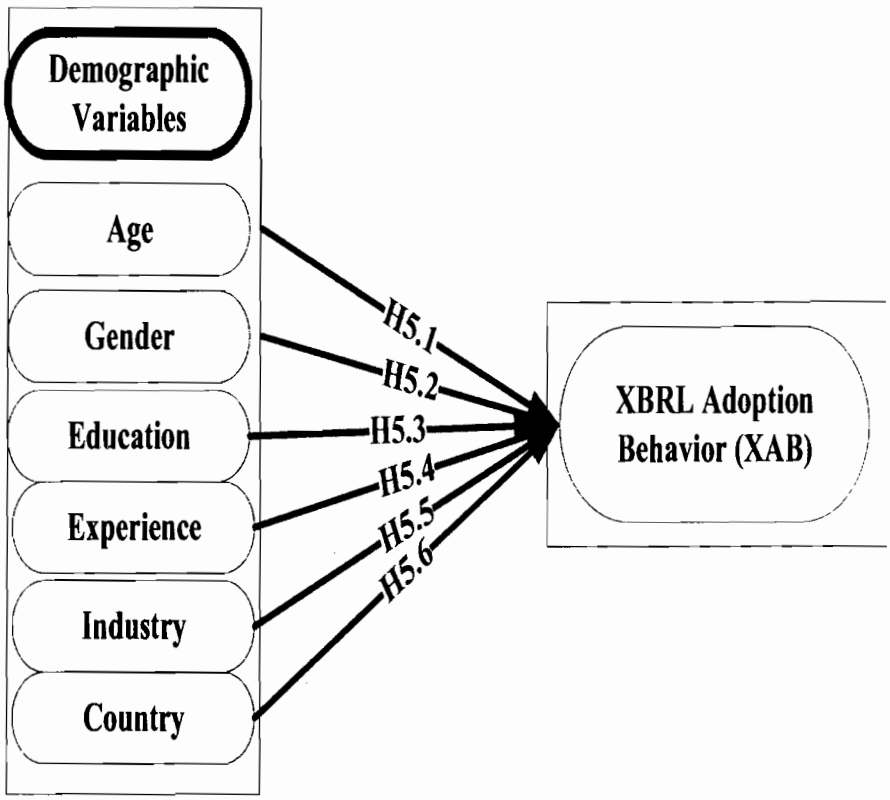


Figure 2. 12

Effect of Demographic Variables on XBRL Adoption Behavior[adapted from Selamat et al.,2008]

The definition of each factor is provided in Table 2.1. The following section will offer detailed discussions of each factor and the theoretical justification for including them in the model.

The usage components of the suggested conceptual model postulates that the XAB determines the following variables: (1) rate of IFR use, i.e. the total time spent

using the IFR, the frequency of IFR usage; and (2) usage variety that is the diverse situations in which IFR is used, i.e. activities conducted by using IFR (Sugai, 2007). Figure 2.13 presents usage of XBRL.

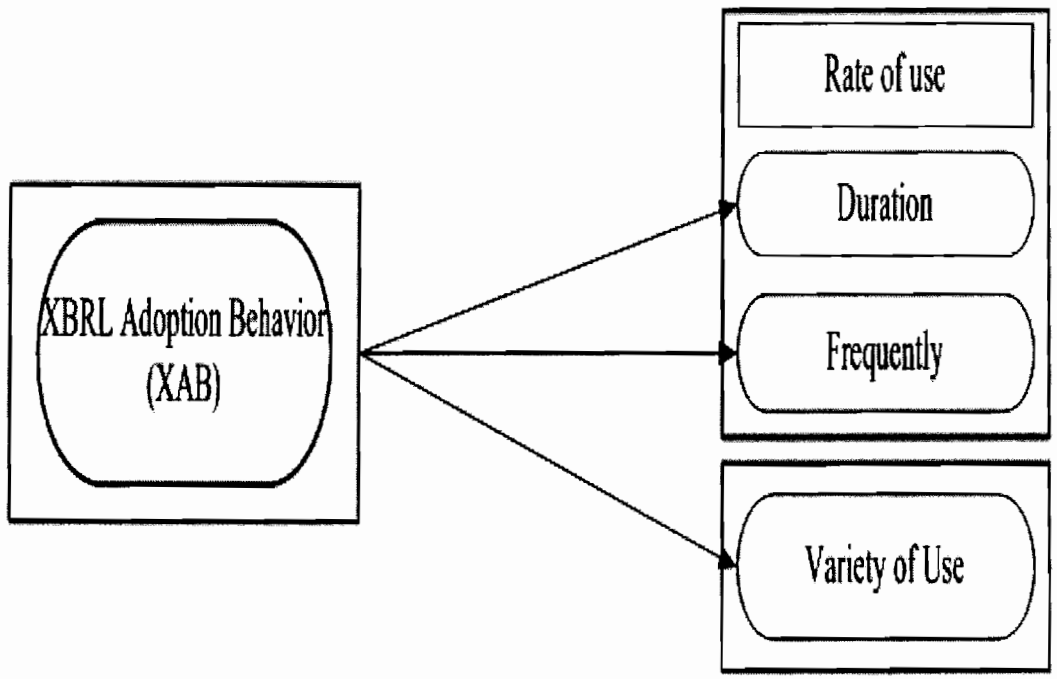


Figure 2. 13

Factors to Examine Usage of XBRL[addapted Selamat et al.,2008]

The factors in Table 2.2 represent independent variables (IV) and dependent variables (DV) of this research. The relationship between IVs and DVs creates hypotheses of this research. The summary of IVs, DVs and hypotheses is provided in Table 2.2.

Table 2. 1

Definition of factors and sources

Factors	Definition
XBRL Behavioral Intention	It is defined as a consumer's intention to use (or intention to continue the current usage) and makes use of XBRL in the future. (Ajzen, 1988; 1991; Taylor & Todd, 1995).
Usefulness	It refers to the degree to which a consumer believes that using XBRL would enhance his/her job performance. (Ajzen & Fishbein, 1980).
Ease of Use	It refers to the degree to which a consumer believes that using XBRL would be free of effort (Ajzen & Fishbein, 1980).
Relative Advantage	It is defined as the degree to which XBRL is perceived as being better than its predecessor HTML & PDF. (Moore & Benbasat, 1991; Rogers, 1995).
Compatibility	It refers to the degree to which an XBRL is perceived as being uniformity with the existing values, past experiences and needs of potential adopters (Rogers, 1995).
Complexity	It refers to the degree to which an XBRL is perceived as difficult or easy to comprehend (Rogers, 1995).
Peer influences	Peer influences are defined as the perceived influences from friends and family to adopt and use (or not to adopt and use) XBRL services (Venkatesh & Brown, 2001; Brown & Venkatesh, 2003).
Superior influences	Superior influences are defined as the perceived influence of pressure from important sources such as bosses and managers to adopt and use (or not to adopt and use) XBRL services (Rogers, 1995; Brown & Venkatesh, 2003; Venkatesh & Brown, 2001).
Training	The term training refers to the acquisition of skills as a result of the training of practical skills and knowledge that relate to XBRL.
Knowledge	Knowledge is defined as the perceived level of knowledge about XBRL, its risks and benefits (Rogers, 1995; Venkatesh & Brown, 2001).
Self-efficacy	Self-efficacy is defined as the perceived ability or skill to operate IFR (XBRL or HTML & PDF) without the assistance of others (Ajzen, 1985, 1991; Taylor & Todd, 1995).
Resource facilitating conditions	Facilitating conditions resources is defined as the perceived level of resources when using of XBRL (Ajzen 1985; 1991).

Table 2. 2

Summary of research hypotheses

HN	IV	DV
H1	Overall Attitudinal factors (OAF)	XBRL Behavioral intention (XBI)
H1.1	Perceived usefulness (PU)	XBRL Behavioral intention (XBI)
H1.2	Perceived ease of use (PE)	XBRL Behavioral intention (XBI)
H1.3	Perceived Relative Advantage (PRA)	XBRL Behavioral intention (XBI)
H1.4	Perceived Compatibility (PC)	XBRL Behavioral intention (XBI)
H1.5	Perceived Complexity (PX)	XBRL Behavioral intention (XBI)
H2	Overall normative factors (ONF)	XBRL Behavioral intention (XBI)
H2.1	Peer Influence (PI)	XBRL Behavioral intention (XBI)
H2.2	Soupier Influence (SI)	XBRL Behavioral intention (XBI)
H3	Overall control factors (OCF)	XBRL Behavioral intention (XBI)
H3.1	Training (TR)	XBRL Behavioral intention (XBI)
H3.2	English Language (EL)	XBRL Behavioral intention (XBI)
H3.3	Knowledge (KN)	XBRL Behavioral intention (XBI)
H3.4	Self-Efficacy (SE)	XBRL Behavioral intention (XBI)
H3.5	Facilitating Conditions Resources (FCR)	XBRL Behavioral intention (XBI)
H4.1	XBRL Behavioral intention (XBI)	XBRL Adoption Behavior (XAB)
H4.2	Knowledge (KN)	XBRL Adoption Behavior (XAB)
H5.1	Age (AGE)	XBRL Adoption Behavior (XAB)
H5.2	Gender (GEN)	XBRL Adoption Behavior (XAB)
H5.3	Education (EDU)	XBRL Adoption Behavior (XAB)
H5.4	Experience (EXP)	XBRL Adoption Behavior (XAB)
H5.5	Type of Industry (IND)	XBRL Adoption Behavior (XAB)
H5.6	Country (COU)	XBRL Adoption Behavior (XAB)
H6.1	XBRL Adoption Behavior (XAB)	Duration (DUR)
H6.2	XBRL Adoption Behavior (XAB)	Frequency (FRE)
H6.3	XBRL Adoption Behavior (XAB)	Variety usage (VAR)

2.7 RESEARCH HYPOTHESES

Based on the information illustrated in Figure 2.11 and Table 2.2, this section discusses the hypotheses of this research. The hypotheses are arranged according to the factors in the proposed conceptual model, namely, attitudinal factors, normative factors, and control factors.

2.7.1 Attitudinal Factors

The term attitude refers to the positive or negative feelings of an individual when completing target behavior, such as XBRL adoption and use (Ajzen, 1985; 1991; Fishbei & Ajzen, 1975; Taylor & Todd, 1995). Generally, the adoption and acceptance of technology theories or models involving TRA, TPB, and DTPB explain the connection between the attitudinal factors and behavioral intentions (Ajzen, 1985; 1991; Fishbei & Ajzen, 1975; Taylor & Todd, 1995). If the attitude of an individual concerning the technology is positive, then the individual has the possibility of establishing an intention to execute the behavior (Lee, 2000; Chan & Lu, 2004). In the case of XBRL, it can be postulated that if the comprehension of the financial data consumers concerning the attitudinal factor is positive, then there is a potential that they will adopt XBI (Ajzen, 1985; 1991; Fishbei & Ajzen, 1975; Taylor & Todd, 1995). Thus, the following hypothesis is developed:

H1: Overall attitudinal factors have a significant influence on the XBRL behavioral intention (XBI).

Taylor and Todd (1995) decomposed attitude into five factors to achieve deep and better comprehension of attitude. The decomposition process was carried out through five perceived innovation attributes, namely, relative advantage, compatibility, complexity, trialability, and observability [based on Rogers' (1995) DOI]. In addition, Taylor and Todd (1995) decomposed the attitudinal belief to identify particular salient believes that might impact information technology into three kinds of factors that are perceived usefulness, perceived ease of use and perceived compatibility. Following Venkatesh and Brown (2001) also decomposed the attitudinal belief to study the adoption of the personal computer into three types of factors, namely, utilitarian outcomes, hedonic outcomes, and social outcomes. In accordance with the earlier discussion on theories' decomposition, the present research decomposes attitude into five factors, namely, perceived usefulness, perceived ease of use (Taylor and Todd, 1995), compatibility (Taylor and Todd, 1995; Rogers, 1995), relative advantage and complexity (Rogers, 1995). These factors are predicted to give impact on the attitude towards behaviors of XBRL adoption and use among financial data consumers. The next subsections 2.7.1.1 to 2.7.1.4 will provide a detailed discussion on the attitudinal factors of this research.

2.7.1.1 Perceived Usefulness

It is the first attitudinal factor in which refers to the "*degree to which a person believes that using a particular system would enhance his/her job performance*" (Davis, 1989). Under various TAM models (Malhotra & Galletta, 1999; Venkatesh & Davis, 2000; Mathieson, Peacock & Chin, 2001) and DTPB (Taylor & Todd, 1995), perceived

usefulness was hypothesized as core factor of behavioral intention. It was also found that it is the core factor of usage behavior (Adams, Nelson & Todd, 1992; Dishaw & Strong, 1999; Luarn & Lin, 2005; McCloskey, 2006; Strong, Dishaw & Bandy, 2006; Amoako-Gyampah, 2007; Carr, 2007; Huang & Chuang, 2007; Ma & Liu, 2005; Chang et al., 2008; Petter, DeLone & McLean, 2008). Perceived usefulness is similar to that of perceived characteristics (Rogers, 1995; Venkatesh et al., 2003). XBRL has several characteristics that enable the consumers to gain several benefits such as real time information processing, effective error detection, and quicker analysis of data. In addition, the consumers can gain time and cost savings in the workplace and in turn leads to lower audit fee or more value-added services to the client (Barac, 2004; Flowerday, Blundell & Von Solms, 2006). All these benefits highlight to the consumers the usefulness of XBRL, which ultimately can motivate them to adopt and use it in their daily activities. Thus, it is suitable and rationale to include perceived usefulness as the core determinant of behavioral intention within this research. In turn, it is expected that perceived usefulness will significantly determine intention behavior in XBRL adoption. The proposed hypothesis is as follows:

H1.1: Perceived usefulness has a significant influence on the XBRL behavioral intention (XBI).

2.7.1.2 Perceived Ease of Use

This factor is very significant and pertinent to the perceived usefulness factor (Davis, 1989). According to Davis (1989) perceived ease of use "*refers to the degree to*

which a person believes that using a particular system would be free of effort". The term was hypothesized as the core factor of behavioral intention in a number of XBRL models and theories, involving various TAM models and DTPB. Researchers (Adams et al., 1992; Dishaw & Strong, 1999; Gefen & Straub, 2000; Luarn & Lin, 2005; McCloskey, 2006; Strong et al., 2006; Amoako-Gyampah, 2007; Carr, 2007; Huang & Chuang, 2007; Ma & Liu, 2005; Chang et al., 2008; Petter et al., 2008) have used the factor perceived ease of use to predict the behavior intention. Perceived ease of use is similar to that of complexity of perceived characteristics (Rogers, 1995; Venkatesh et al., 2003).

In accordance with the notion of various theories and models on XBRL, perceived ease of use is argued as an essential factor that influences XBRL behavioral intention. In the information technology areas, there are many researches (Pankko, 1983; Lessiter et al., 2008; Ghani, Laswad & Tooley, 2009) who have found no significant differences between consumers in their technological perceived ease of use point of view. However, not much is known about technological perceived ease of use among XBRL consumers (Selamat & Rawashdeh, 2009). Research on XBRL financial data consumers' view on technological perceived ease of use will offer insights into the adoption, use, or even rejection of XBRL and give a better comprehension of the factors that influence the development and growth of XBRL (Selamat & Rawashdeh, 2009). Taking into consideration the benefits that XBRL provides, it is predicted that individuals who perceive XBRL as a method that is easy to be used will adopt and use XBRL. Thus, the following hypothesis is proposed:

H1.2: Perceived ease of use has a significant influence on the XBRL behavioral intention (XBI).

2.7.1.3 Relative advantages

According to Rogers (1995), the relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Rogers' (1995) DOI theory proposes that the perceived comparative benefit of an innovation is positively pertinent to its rate of adoption and use. Many earlier experimental research studies have revealed that perceived relative advantage is an essential factor that plays a crucial role in determining the adoption of an innovation (Taylor & Todd, 1995; Lee, 2009). Similarly, when compared to HTML & PDF, XBRL offers faster access to data, faster processing of data, always-on access to the data, royalty free, and provides a number of advantages, multi-functional use, develops informational access, and has a potential to establish real-time financial reporting and analysis to its users (Selamat & Rawashdeh, 2009).

These benefits give convenience and satisfaction to XBRL consumers and adopters. Taking into account the benefits of XBRL, it is predicted that the person who perceive XBRL as beneficial will use and adopt XBRL (Selamat & Rawashdeh, 2009). Thus, the following hypothesis is proposed:

H1.3: Perceived relative advantage has a significant influence on the XBRL behavioral intention (XBI).

2.7.1.4 Compatibility

Rogers (1995) defines compatibility as the degree to which an innovation is perceived as being uniformity with the existing technologies and past experiences of potential adopters. XBRL can be implemented as wrappers of older technologies to provide interoperability of new technologies with legacy systems (Hoffman, 2006). Financial data consumers that have experiences of using Electronic Data Interchange (EDI), American Standard Code for Information Interchange (ASCII), HTML and building distributed systems may find that these experiences are very valuable in using XBRL.

XBRL-enabled software methods are XBRL specification based tools (Hoffman, 2006). Any modification in the new system technologies creates serious compatibility issues between software method that depend on earlier or past version and modification that depend on new version (Hoffman, 2006). A usually high re-development cost is incurred and leads to a wasteful effort and non-standard software methods. All these factors can motivate the adoption and use of XBRL. Doolin and Troshani (2005) stated that: "Major potential XBRL adopter said, we are not going to get involved in this [XBRL]. We'll wait and see until it stabilizes and then we'll do [adopt] it." Taking into consideration the earlier discussion of features of technologies, it would be anticipated that financial data consumers who recognize XBRL as compatible tool with different systems would become the adopters and user of XBRL. This argument leads to the following hypothesis:

H1.4: Perceived compatibility has a significant influence on the XBRL behavioral intention (XBI).

2.7.1.5 Complexity

Complexity is another term that relates to the use of XBRL and new technologies. Complexity refers to the degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 1995). Although XBRL is designed to provide financial data consumers and adopters with easy and simple financial data, but, as with any innovation and technological system designed to smoothen working, it also appears with possible complexity. The complexity is mostly due to its taxonomies (the XBRL taxonomy frequently changes) (Hoffman, 2006). The diversion between USA accounting standards and those of other countries is one of the outstanding complexities that XBRL has. In other words, both USA GAAP and IFRS contain varied tag that provides the cost and confusion of using and adopting XBRL (Debreceny, 2007). For XBRL-based system to be successfully implemented, reduction of complexity appears to be one of the crucial problems that face the use of XBRL. This leads to the following hypothesis in this research:

H1.5: Perceived complexity has a significant influence on the XBRL behavioral intention (XBI).

2.7.2 Subjective Norm Factors

The term subjective norm factors relates to the user point of view in which high

percentage of people that are essential for them consider that they should not perform the behavior in question (Ajzen, 1985; 1991; Fishbei & Ajzen, 1975, Lee, 2009; Taylor & Todd, 1995; Venkatesh and Brown, 2001). Subjective norm is originated from TRA, TPB, DTPB and UTAUT models whereby it is used as a distinct factor and considered as directly connected with behavioral intention. This is due to the belief that an individual's behavior is related to the view of what other people consider of what he/she should perform (Lee, 2009). Based on the guidelines of the TPB, it is proposed that the stronger the recognized social influence is the higher intention that an individual will use XBRL. Thus, the following hypothesis is proposed:

H2: Overall normative factors have a significant influence on the XBRL behavioral intention (XBI).

From the above discussion it can be seen that the term social influence is used interchangeably with subjective norm. It is defined as a social process in which the member of a social network influence other's behavior (Rice & Shook, 1990; D'Ambra & Rice, 2001). Venkatesh & Brown (2001) found that family and friends are the most essential determinants of personal computer purchasing behavior. Likewise, it is anticipated that XBRL consumers are potentially to be influenced by their family members, colleagues and friends. This is undertaken by informing and exhibiting to the consumers the advantages that can be obtained through the use and adoption of XBRL.

In order to recapitulate it can be said that social influence is exerted through messages and signals that help in the process of forming view on XBRL (adapted from

(Venkatesh & Brown, 2001; Pfeffer & Salancik, 2003; Lu, Yao & Yu, 2005; Yi et al., 2006)). Based on the proposition of earlier research studies, normative belief is decomposed into two different classes which are as follows: (1) peer influences; and (2) superior influences (Oliver & Bearden, 1985; Venkatesh et al., 2003; Shih & Fang, 2004). This view is in tandem with DTPB. The definition and description of each class are dealt with in the next two subsections.

2.7.2.1 Peer Influences

In this research, peer is defined as user's friends, colleagues, relatives and family members (Lee, 2009). It is argued that an individual's intention to use and adopt XBRL may be influenced by subjective norm such as peer pressure. In other words, social influence caused by friends, colleagues, and family members in the form of conversation or other pertinent forms (Venkatesh & Brown, 2001), may help in establishing point of view with regards to the adoption and use of XBRL. Bearing the findings of the earlier and past research studies, this research argues that XBRL consumers and adopters are influenced by their social networks with positive messages. Thus, the following hypothesis is developed:

H2.1: Peer influences have a significant influence on the XBRL behavioral intention (XBI).

2.7.2.2 Superior Influences

Rogers (1995), Venkatesh & Brown (2001) found that top management and

hand, to investigate the adoption of personal computers from the individual context, Venkatesh & Brown (2001) categorized perceived behavioral control into five specific barriers, which are rapid change in technology, declining costs, high cost of personal computers, ease/difficulty of use and requisite knowledge of the use of personal computers. Since XBRL taxonomy is not changing rapidly, declining rapid change is believed to be not related factor to the use and adoption of XBRL; thus, not included in the present research conceptual model. In a way similar to the DTPB, the factors that can hinder the adoption of XBRL are as follows: (1) knowledge; (2) English language; (3) training; (4) self-efficacy; and (5) facilitating conditions resources). The next subsections 2.7.3.1 to 2.7.3.5 will discuss the justification for embedding those five factors in this research conceptual model.

2.7.3.1Training

Training is an essential part in the development and growth of any industrial sector (Troshani & Rao, 2007; Abrahao & Poels, 2009; Ghani et al., 2009). According to Xia and Lee (2000), training plays a significant role in the adoption and use of innovation. Their findings verified the significance of expected consequences of use of technology, indicating that training programs could be utilized to enhance perceived ease of use and usefulness (Troshani & Rao, 2007; Abrahao & Poels, 2009; Ghani et al., 2009). Thus, it is interesting to examine whether Trainig is an obstruction or not in the use of XBRL. Thus, the following hypothesis is proposed in this research:

H3.1: Training has a significant influence on the XBRL behavioral intention (XBI).

2.7.3.2 English Language

English is not considered as an official language by most of the governmental sectors in different countries. Today the common language is English. As a result, most of the training modules (printed or electronic version) for XBRL are in English. In turn, the status of English as an official or second language in one country can facilitate the use of Internet by the consumers nationwide to obtain necessary financial data and information. Moreover, some research studies by (Sukkar & Hasan, 2005; Wahid, 2007) uncovered that slow information technology diffusion in developing countries is related to linguistic barriers. In addition to this, it was suggested that non-English language is a hinder in the Internet usage since it is dominated by English (Sukkar & Hasan, 2005; Wahid, 2007). Thus, it is interesting to examine whether non-English language is an obstruction or not in the use of XBRL. In order to assist in this process the following hypothesis is formulated:

H3.2: English Language has a significant influence on the XBRL behavioral intention (XBI).

2.7.3.3 Knowledge

The adoption of an innovation depends mainly on the degree of awareness of its benefits among the consumers (Rogers, 1995; Nel & Steenkamp, 2008). Selamat and Rawashdeh (2009) uncovered that most of XBRL consumers and adopters aware of its advantages (e.g., faster, cost, and accuracy) and importance to meet their needs and

requirements. Therefore, it is postulated that to increase the adoption and use of XBRL, the consumers and adopters must aware of its advantages. If they are not aware of the advantages of adopting XBRL, they are more likely not to use due to lack of perceived needs. Thus, the following hypothesis is developed:

H3.3: Knowledge has a significant influence on the XBRL behavioral intention (XBI).

2.7.3.4 Self-Efficacy

The term self-efficacy is created by Bandura (1977; 1986; 1995, 2006) in explaining his social learning theory. It is defined as an individual possesses the capability to carry out a specific behavior. The notion of self-efficacy is pertinent to perceived ability (Selamat & Rawashdeh, 2010). This study defines self-efficacy as an individual's self-confidence in his/her ability to perform behavior (adopted from Taylor & Todd, 1995). In the information system area, self-efficacy is considered as an important predictor of personal computer behavior – in determining an individual's behavioral intentions and real behavior (Downey, Papageorgiou & Stough, 2006).

As the adoption of XBRL requires personal computer and the Internet, being familiar with them is considered crucial. In other words, greater degree of self-efficacy in personal computer and the Internet results in higher level of behavioral intention and XBRL adoption and usage (Compeau & Higgins, 1995). In order to achieve this, adequate training and experience must be provided to the consumers (Downey et al., 2006).

Self-efficacy is an important determinant of perceived behavioral control in DTPB (Taylor & Todd, 1995). In addition, self efficacy is a significant determinant of behavior in intention, adoption, and usage (Taylor & Todd, 1995). Venkatesh et al. (2003) found that computer self-efficacy has no influence on behavioral intention. However, self-efficacy is included in this research conceptual model because it is an important factor of behavioral adoption and usage (Taylor & Todd, 1995; Venkatesh et al., 2003). Based on this view, it is expected that the financial data consumers provided with basic personal computer, Internet and XBRL-based Web services or local applications skills are more likely to adopt XBRL. Thus, the following hypothesis is developed:

H3.4: Self-efficacy has a significant influence on the XBRL behavioral intention (XBI).

2.7.3.5 Facilitating Conditions Resources

Facilitating conditions resources is also one of the factors that should be considered when adopting and usage of XBRL. According to Venkatesh et al. (2003), facilitating conditions resources is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. Facilitating conditions factors are categorized as a straight predecessor of behavior intention and usage in DTPB, in which the facilitating conditions should warn the management about the potential hinders of technological usage and adoption (Taylor & Todd, 1995).

Limayem and Hirt (2003) stated that facilitating conditions are pertinent to the actual usage and adoption of Internet -based teaching and training. In short, it can be said that facilitating conditions factor is a direct factor of intention behavior among consumers. Doolin and Troshani (2005) found that the adoption and use of XBRL are effectively influenced by the limited resources available for promoting its adoption. They also found that high cost is a basic obstacle in hindering the use and adoption of XBRL. In addition to this, limited software tool that support XBRL is also contributes to slow adoption of XBRL (Hoffman, 2006). Software tools are perceived to be important as they enable potential adopters to easily assess the characteristics of technology (e.g., XBRL) (Rogers, 1995).

In order to recapitulate, it can be seen that the adoption and use of XBRL requires strong facilitating conditions resources. In order to observe this phenomenon in the practical setting, the following hypothesis is formulated:

H3.5: Facilitating conditions resources have a significant influence on the XBRL behavioral intention (XBI).

2.7.4 Dependent Variables

Theory of planned behavior considers two dependent variables in it, namely, behavior intention and behavior in question (Ajzen, 1991). These two dependent variables have been adopted and used by most of the information system researchers to forecast technology adoption and usage (Davis, 1989; Ajzen, 1991; Venkatesh &

Brown, 2001). The findings showed that behavioral intention is a mediating variable between the predictors and actual behavior (Morris & Venkatesh, 2000; Venkatesh & Morris, 2000). Furthermore, the course from the behavioral intention to behavior is very essential in TAM, TPB, and DTPB models. Therefore, behavioral intention is supposed to have a direct influence on the adoption or usage (Ajzen, 1991). In order to be in tandem with the previous studies and the guiding theories or models, the present research proposes that XBI as a mediating dependent variable and XAB as an ultimate dependent variable. Thus, the following hypothesis is formulated:

H4.1: The XBRL behavioral intention (XBI) has a significant influence on the XBRL adoption behavior (XAB).

Apart from behavioral intention, earlier research studies have also used control factor as a direct predictor of behavior (Ajzen, 1991; Venkatesh & Brown, 2001). The studies found a significant correlation between behavior and used control factors (e.g., knowledge) (Ajzen, 1991). The findings and results from a number of innovation usage and adoption research by (Taylor & Todd, 1995; Morris & Venkatesh, 2000; Venkatesh & Morris, 2000; Venkatesh et al., 2000; Venkatesh & Brown, 2001; Venkatesh et al., 2003).

The knowledge factor was revealed to be significant in forecasting adoption behavior (Herrmann, Kienle & Reiband, 2003; Jones & Gupta, 2004). Taylor and Todd (1995) support this view by saying that the knowledge is critical in supporting the use of technology. In other words, the lack of knowledge represents barrier to XBRL usage.

Within the area of information system also reveal that behavioral intention and control factors are suitable predictors for the real adoption or usage behavior. Thus, the following hypothesis is developed:

H4.2: Knowledge has a significant influence on the XBRL adoption behavior (XAB).

2.7.5 Demographic Variables

Key demographic variables such as age, gender, education and experience (Harrison & Rainer, 1992; Rawashdeh et al., 2011) offer significant information regarding the characteristics of the target population. For example, these variables have been included in previous studies that examined the adoption of information communication technologies, such as the computer (Carveth & Kretchmer, 2002; Venkatesh, Speier & Morris, 2002), the Internet (Anderson & Tracey, 2001; Carveth & Kretchmer, 2002) and XBRL (Henderson et al., 2009; Rawashdeh et al., 2011), and their subsequent impact on consumers.

Further, the aforementioned social variables have also been applied to investigate software piracy (Solomon & O'Brien, 1990), technology adoption (Carveth & Kretchmer, 2002; Venkatesh et al., 2002), e-government adoption (Huang, D'Ambra & Bhalla, 2002) and demographic differences amongst information system professional (Holmes, 1997). Additionally, the previous reserches (Gefen & Straub, 1997; Venkatesh & Brown, 2001; Pearson et al., 2002) also highlighted the role of several external variables such as, demographic characteristics on the decomposed belief structure and,

ultimately, adoption and usage.

Since home computers, the telephone, and access to the Internet can be placed in the same technology cluster (Rogers, 1995), the demographic variables that have been employed to study one technology can also be used to study others (Rogers, 1995). Therefore, the demographic variables such as age, gender, education, experience, country and industry that were utilized to examine home computer adoption in the Internet can also be employed to study XBRL adoption.

The abovementioned demographic variables have also been widely examined within the accounting information system discipline. There are other demographic and geographic variables such as disability, ethnicity, marital status and geographic locations that may provide useful information (Rice 1997; Gilligan & Wilson, 2003) on studying of adoption. However, due to feasibility reasons (face-to-face interviews would have been required, but this is beyond the scope of this research) these variables were not included in this study.

The study of the aforementioned variables was termed as segmentation, which involves the breakdown of the total broad and varied markets into homogenous, distinct, accessible, stable and large groups (Rice 1997; Gilligan & Wilson, 2003). Therefore, a study of the demographics of potential adopters may assist the policymakers and XBRL International by identifying the various segments' specific needs and constraints. In short, demographic factors are considered relevant in this study and thus included in the

conceptual model. The detention and description of each demographic variable is offered in the following six subsections.

2.7.5.1 Age

According to Finch (1986), age can be used as an independent variable to discuss a specific social grouping, social process, or piece of individual or collective attitudinal. A number of research studies within the area of information system have highlighted the importance, direct, and moderating influence of age on the behavioral intention, usage and adoption behaviors (Morris & Venkatesh, 2000; Venkatesh et al., 2003). Venkatesh et al. (2000) observed that the major age group that adopts and uses computers in the USA ranges between 15 and 17 years old, and then followed by 26 to 35 years old. However, age divergence is expected to influence the adoption and use of XBRL. The youth and middle age groups are assumed to be more associated with XBRL adoption compare than old age group. Thus, the following hypothesis is developed:

H5.1: There is a significant difference between the adopters and nonadopters of the various age groups.

2.7.5.2 Gender

Gender is considered as an important variable in social research (Miller et al., 2006; Morgan, 1986). According to Jackson and Scott (2001), gender is related to the hierarchical separation between man and women, inserted in both social institution and social practices. It can be used as a descriptive and explanatory factor (Morgan, 1986).

The role of gender in the use and adoption has been examined by many research studies (Tribunella & Tribunella, 2006; Arnold et al., 2008; Ghani et al., 2009). The findings showed that gender has a vital role in the use and adoption of technology, either from the organizational or individual contexts. Venkatesh et al. (2000) found that males personal computer more than females and in turn proposed that gender is one of the most essential factors when investigating personal computer usage and adoption from the individual context. Anderson et al. (1999) also found that there is an explicit gender divergence in the adoption and usage of personal computer and telephone call. All these findings motivated the researcher to propose the following hypothesis:

H5.2: The adopters of XBRL will be more from male than female gender.

2.7.5.3 Education

The educational factor has a vital role too in the usage and adoption of innovations. For instance, there is a significant relationship between employee education and tendency to adopt and use technologies (Warren, 2004). According to Agarwal and Prasad (1999) and Laforet and Li (2005), the educational level or background was shown to be antecedents of perceived usefulness and perceived ease of use. Consequently, the consumers who possess different educational level and background might show divergent point of view, comprehension, thoughts in relation to the use and adoption of XBRL. Therefore, educational level and background is examined as a separate variable. Previous researches proposed that individuals who have higher educational qualification incline to adopt and use new technologies (Finch, 1986;

Rogers, 1995). Venkatesh et al. (2000) supported this view by saying that there is a positive interrelation between level of education, technology ownership and usage. This is because through education an individual possess necessary skills to use and adopt technologies successfully more than the unskilled ones.

The importance of education does not only remain in its influence whether to accept technologies or not but also it affects human capital since it determines the competence to use and adopt XBRL within the firm. Doolin and Troshani (2005) stated that: "It's easier to use XBRL-enabled software tool when you understand the fundamental technology underneath it because you know what it can and can't do when you try to push it." Therefore, dedicated technological tasks such as taxonomy expansion, growth, maintenance, configuration, and set-up of XBRL-enabled applications would be the area of consumers specializing in information technology.

Doolin and Troshani (2005) found that education is the essential driver of XBRL adoption in Australia. Thus, it is suggested that education can be used as an independent variable that provides details on the divergence between XBRL adopters and nonadopters. In order to accommodate this, the following hypothesis is developed:

H5.3: There is a significant difference between the adopters and nonadopters of XBRL in different levels of education.

2.7.5.4 Experience

Experience refers to the extent to which consumers have used the new technology. The Internet financial reporting experience refers to the experiences that consumers have while interacting with Internet presentation format. This definition of experience consists of many studies that have investigated specific aspects of the electronic financial reporting experience: The perceived ease of use and usefulness of the XBRL (Henderson et al., 2009), the quality of information and technical performance of the website (Saeed & Abdinnour-Helm, 2008), the effectiveness of the search process (Hodge et al., 2004), the effect of presentation format on decision quality in a digital reporting environment (Ghani et al., 2007).

Similar to the above studies, it is possible that XBRL adoption is influenced by factors such as consumers' experience and familiarity with presentation format. This strand of research on the presentation format experience makes it clear that the characteristics of a presentation format are important item that influence whether consumers are able and willing to use XBRL. Positive user experience is antecedents for a situation wherein consumers can decide to make use of XBRL and easily use XBRL to prepare, processes, and analyzing financial reports. In order to include this, the following hypothesis is developed:

H5.4: There is a significant difference between the adopters and nonadopters of XBRL in different levels of experience.

2.7.5.5 Type of Industry

In this research, industry refers to the people or companies engaged in a particular kind of commercial enterprise. It is described as the manufacturing of a good or service within a category (Ogbonna & Harris, 2005). Here, the type of industry has been categorized into different criteria such as agriculture, forestry, fishing and hunting mining, quarrying, and oil and gas extraction utilities, construction manufacturing, wholesale trade retail, trade transportation and warehousing, information, finance and insurance, real estate and rental and leasing professional, scientific, and technical services, management of companies and enterprises, administrative and support and waste management and remediation services, educational services, health care and social assistance arts, entertainment, and recreation, accommodation and food services and other services (except public administration) public administration (Henderson et al., 2009). The type of industry has an important role too in the usage and adoption of innovations (Henderson et al., 2009). For instance, there is a positive connection between type of industry and tendency to adopt and use new innovations (Ogbonna & Harris, 2005). Type of industry is related to be antecedents of perceived usefulness and perceived ease of use. Consequently, the individual who works in information industry might show high capability in relation to the use and adoption new of innovations. Therefore, type of industry is examined as a separate variable. In order to achieve this, the following hypothesis is developed.

H5.6: There is a significant difference between the adopters and nonadopters of XBRL in different types of industry.

2.7.5.6 Country

Country of work refers to the fact that each user has a location that must be specified in any country. For this research, the term country of work refers to the country where the user works and lives. This variable is important for future studies to compare XBRL adoption in different countries.

In addition, the XBRL-public also allows this research to expand the sampling frame into a global scale (Selamat & Rawashdeh, 2010). This is because the members of XBRL-public are from different countries. The finding could assist future studies that intend to assess and compare XBRL adoption in different countries. In order to achieve this, the following hypothesis is developed

H5.6: There is a significant difference between different countries regarding XBRL adoption behavior (XAB) between the adopters and nonadopters of XBRL.

2.7.6 XBRL Usage

The proposed conceptual model of this research considers a variety of XBRL use and rate of use as dependent variables. It is expected that the independent variable XBRL adoption behavior (XAB) will differentiate between the variety and rate (Shih & Venkatesh, 2004) of IFR use between XBRL and HTML & PDF consumers. This research conceptualizes usage as having two equally important dimensions, variety and rate (Shih & Venkatesh, 2004). Variety refers to the different ways in which the product (e.g., XBRL and HTML & PDF) can be used. Usage rate refers to how often the product (e.g., XBRL and HTML & PDF) is used, regardless of the variety of applications for

which it is used. In order to illustrate this with an example, consider two consumers, both of whom use the XBRL two hours a day. The first consumer uses XBRL only for preparing related work (e.g., to prepare financial reports); the second uses XBRL for generating related work, tax filling, internal reports, central banks and governments. Both have the same usage rate, but the second consumer exhibits greater usage variety. Following the previous study on technology usage (Shih & Venkatesh, 2004), this research postulates the following hypotheses on XBRL use:

H6.1: XBRL adopters will spend less time in using Internet *financial reporting than nonadopters.*

H6.2: XBRL adopters will use Internet financial reporting services more frequently than nonadopters.

H6.3: XBRL adopters will use a higher number of Internet *financial reporting services more than nonadopters.*

2.5 SUMMARY

Firstly, this chapter presents an overview of XBRL. It also, reviews the literature about XBRL adoption and usage, then various technology adoption and diffusion related theories and models including the DOI, TRA, TPB, DTPB, various TAM, UTAUT and UD. The analysis proposes that although none of the theories and models could be applied directly to examine the XBRL adoption and usage, integrating factors across the models will be more suitable and will assist in providing a coherent comprehension of the research problem. Therefore, the most suitable theories and models such as various

TPB and DTPB have been used to be as the main guiding framework for current research. Also, there is a need to consider some of the items of DOI, TRA, CSCT, TAM, various TAM, TAM2, UTAUT and UD as a supporting framework when developing the proposed conceptual model for this research.

Secondly, this chapter also identifies factors that are expected to predict the intention to adopt XBRL, which ultimately explains the XBRL adoption behavior. The XBRL adoption behavior is expected to be different in terms of rate and variety of information exchange across the Internet between XBRL and standard consumers. Using these factors, a conceptual model of XBRL diffusion is developed. The suggested conceptual model is based on the assumption that the attitudinal, normative and control factors, are responsible for influencing the intention to adopt XBRL, which in turn is expected to predict XBRL adoption behavior. The proposed model also includes factors to investigate whether XBRL financial data consumers differ from traditional standard consumers when determining the usage of XBRL.

CHAPTER 3

RESEARCH FRAMEWORK AND METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of the research methodology used within information system area, which leads to the selection of a suitable research methodology for guiding the validation of the conceptual model. In order to validate the suggested conceptual model and to obtain required data, a quantitative research approach was employed through a survey research methodology. Positivism paradigm was adopted as a philosophical foundation for this study. Data were collected using online survey via the homepage of the XBRL Network. The reasons for the selection of the underlying philosophical, type of research methodology and data collection method are explained and justified within this chapter. Finally, section 3.10 concludes the chapter.

3.2 RESEARCH METHODOLOGY

The previous sections formed a conceptual model that is aimed at examining XBRL adoption and usage from the context of financial data consumers. Next sections aim to provide an overview of the research approaches utilized within this research. In order to understand the research topic, validate and understand the conceptual model and to obtain required data, a quantitative research was employed.

3.3 UNDERLYING EPISTEMOLOGY

The way a researcher perceives the world, to a great extent, determines their philosophical assumptions about that world, which in turn are intrinsically connected to any underlying research epistemology (Myers, 1997). Epistemology refers to the assumptions one makes about one's knowledge of reality and how one obtains and/or understands that knowledge. This research provides enough empirical evidence of propositions, quantifiable measures of variables, hypothesis testing and deducing the inferences concerning the phenomena from the sample to the population, the positivist epistemology was found to be more appropriate for this research.

3.4 QUANTITATIVE RESEARCH

The data utilized in this research are collected using survey methods and represent values and levels of theoretical factors (Myers, 1997; Straub et al., 2004; Dwivedi, 2007) such as perceived usefulness, perceived ease of use, perceived relative advantage, perceived compatibility, perceived complexity, peer influence, superior influence, knowledge, English language, training, self-efficacy, facilitating conditions resources and behavioral intentions. The data that was collected in this research belongs to the quantitative category than qualitative.

3.5 RESEARCH APPROACH

When conducting any research, selecting an appropriate method is a critical issue (Dwivedi, 2007). In the information system area, several attempts have been made to review and classify research approaches (Galliers & Land, 1987; Orlikowski & Baroudi,

1991; Galliers, 1992; Nandhakumar & Jones, 1997; Mingers, 2001, 2003; Choudrie & Dwivedi, 2005). Galliers (1992) introduced taxonomy of dominant information system research methodologies. That considered a range of positivist and interpretive research methodologies including experiments, surveys, case studies, theorem proving, forecasting, simulation, reviews, action research and futures research. Orlikowski and Baroudi (1991) offered a philosophically reflective paper with a North American perspective. In this paper, the focusing was on classifying published information system research according to the used epistemologies, and it was observed that although positivism research was prevalent, critical epistemology research was also beginning to emerge. Similar to Orlikowski and Baroudi (1991), a recent classification by Mingers (2003) also classified information system research methods into three classes, including critical research. Straub et al. (2005) have divided positivist research in two categories, namely quantitative positivist research such as lab and field experiment and field study, and non-quantitative positivist research, for example case study and participative research.

Previous information system literature indicates that different terms are used for the same research methods (Mingers, 2003). For instance, the terms 'survey' and 'questionnaire' are used indistinguishably (Mingers, 2003). Contrastingly, the terms 'case study' and 'interviews' are used synonymously, although they are distinct from each other (Mingers, 2003). Bearing this in mind, it was felt that it was necessary to clarify the various terms that are used for different types of research approaches. For this purpose, the researcher adopted Mingers' classification and description of research

approaches (Mingers, 2003). This classification is followed for two reasons: (1) Mingers' research is the most recently published work; and (2), it encompasses a variety of research approaches associated with all three epistemological standpoints, namely positivist, interpretivism and critical. Positivist research methods include observations, measurements, surveys, questionnaires, instruments, laboratory and field experiments, statistical analysis, simulations, and case studies. On the other hand interpretivism research methods contain of qualitative content analysis, interviews ethnography, participant observation, and grounded theory. Finally, for the critical standpoint it involves intervention and change, employing methods such as action research, critical theory, and consultancy (Mingers, 2003).

Choudrie and Dwivedi (2005) studied the articles that compare the methodologies used in the information technology and information system adoption area. The analysis of the articles indicates that the researchers investigating technology adoption used two main research approaches, namely the survey and case study. No other approaches were employed to investigate the use or adoption of technology.

The review of the previous literatures also proposes that research on XBRL adoption in the context of consumers has just begun to emerge. XBRL researchers have mainly focused on the organizational issues. From the review it can be observed that survey methodology as expected is dominant in the study of XBRL adoption either from organizational or user point of view. The tools used to conduct a survey consist of the mail, telephone, Delphi, face-to-face interviews and online questionnaires. For the

purpose of investigating the adoption of XBRL from the consumers' point of view, online survey seems to be the most suitable one.

3.6 SURVEY AS A SELECTED RESEARCH METHODOLOGY

In this section, the justifications for survey as data collection method will be presented. This is followed by the discussion on adoption of online survey.

3.6.1 Why Survey is Chosen

From the previous discussion, it can be concluded that although a range of research approach is available to information system researchers, the survey as a research approach is widely employed for examining technology adoption related issues. The select of approach seems to communicate with the unit of analysis. When the researchers and scholars selected the organization as a unit of analysis, the case study was favored. In researches connected to persons, the survey approach was favored. According to Gilbert (2001), this can be due to several reasons such as save of cost, time and accessibility. The degree to which a researcher can be part of the context being studied is also a factor that plays an important role in determining a research approach (Dwivedi, 2007). Within the consumers' context, it is difficult for a researcher to be a part of the context; therefore, the survey approach would be more feasible than others, such as ethnography and observations. Furthermore, the aim of this research is to study XBRL adoption and diffusion of individual user's point of view. Hence, to obtain a full picture of the research problem and the collection of data from a large number of

potential adopters and from different consumers of the IFR, survey approach is better.

The selection of the survey methodology of this research is also affected by the type of model used in the study of XBRL adoption and diffusion research. The conceptual model of XBRL that is proposed in this chapter contains several research hypotheses that need to be tested before concluding this study. This requires quantitative data and statistical analysis in order to test research hypotheses. In order to achieve this, it is essential to collect quantitative data on a number of variables including demographics and thereafter perform a regression analysis to validate the relationship. Thus, it is logical to adopt survey as a research approach and collect data that may help the regulators to understand the attitudinal behavior of potential adopters in order to encourage and promote XBRL adoption.

Based on the aforementioned reasons, the survey method is considered as the most appropriate and feasible research approach to conduct this study. The next section provides details on type of survey that is used to execute this research.

3.6.2 Online Survey

When discussing about the nature or mode of data collection tools administration, surveys may be described as person-administered, telephone administered, self-administered (such as mail) or online (fax, e-mail or web) (Grossnickle & Raskin, 2001; Burns & Bush, 2002). All modes have a range of advantages and disadvantages, which are described in many previous research articles

(Grossnickle & Raskin, 2001; Burns & Bush, 2002), and the choice of suitable mode depends on many factors. These factors include situational characteristics (budget, completion time frame), task characteristics (difficulty, sensitivity of topic) and respondent characteristics (diversity, incidence rate) (Grossnickle & Raskin, 2001; Burns & Bush, 2002).

An online survey is suitable for this research since it is investigating consumers' behavior point of view on the adoption and usage of XBRL (Rawashdeh et al., 2011). The use of online survey is growing in popularity in both commercial and academic research for many reasons (Kaplowitz, Hadlock & Levine, 2004), such as fast transmission and rapid response time, a accepted sample is easy to obtain, cost savings in distributing and receiving surveys, ability to reach geographically diverse respondent groups, ease of data entry, flexibility and control over the format, and convenience (Kaplowitz, Hadlock & Levine, 2004). Although there are some disadvantages for online survey, however, the nature and purpose of this research highlight that online survey is the most appropriate one.

Since the Internet is accessible by very large numbers of people at one time, once a survey is placed on a XBRL network website, it has the potential to be completed by potential users of XBRL in a short period of time. For this study, the use of the XBRL network website allows access to the most appropriate (correct) respondents, which are potential visitors to XBRL network website. It would be very difficult and very time consuming to obtain a sample of the appropriate respondents by any other means.

The questionnaire was posted on the home page of the XBRL Network web site together with general information about the research. The survey also was administered automatically as a live link for two months between 11 February and 11 April 2010. The next section 3.6.3 present details on the strategy that is used to undertake this research. This is followed by a detailed discussion on different aspects of online survey methodology from the context of XBRL adoption and usage.

3.6.3 Research Strategy

Figure 3.1 shows the research strategy which was adopted to examine XBRL adoption and usage between consumers. The strategy is similar to research that was adopted in the information system area (Taylor & Todd, 1995). The conceptual model of XBRL adoption and research hypotheses guided the selection of online survey of this research. Since the context of this research differs from the previous studies, the survey instruments must be validated before the data collection. Therefore, the development of survey instrument was the next step of this research, which was carried out in four stages, namely, exploratory survey, content validity, pre test and pilot test. Gradual development and validation of these four stages are utilized to overcome the constraints and to improve the content and reliability of the questionnaire (Davis, 1989; Moore & Benbasat, 1991; Nandhakumar & Jones, 1997).

Other important issues are sample selection, instrument administration and analysis of data. Detailed justifications of these issues are presented in the remaining sections of this chapter. After determining the sample, the development and validation of

the questionnaire were undertaken (Chapter 4). This is followed by the data collection and analysis (Chapter 5) and the confirmation of the hypothesis and the refinement of the conceptual model (Chapter 6). Finally, the conclusion, contributions and limitations is outlined in Chapter 7.

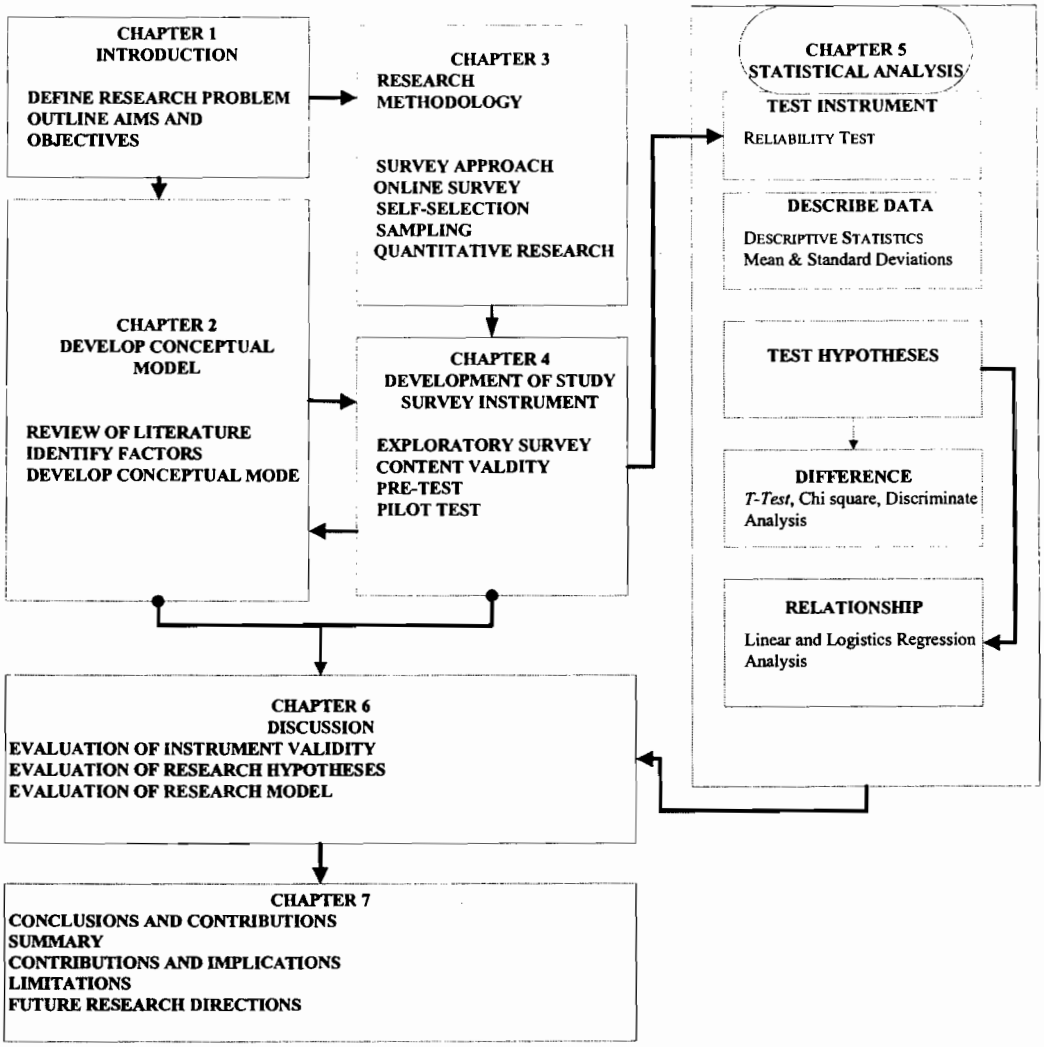


Figure 3 1

Research Strategy to Examine XBRL Adoption and usage

3.6.4 Survey Research Methodology

Before proceeding further, it is beneficial to clarify the term 'survey'. Most of the information system research methodologies (Orlikowski & Baroudi, 1991; Galliers, 1992; Mingers, 2001, 2003; Nandhakumar & Jones, 1997) use the term 'survey' as a methodology in which a number of data collection methods, such as online, e-mail, mail, telephone and interviews are available and can be used for data collection purposes. However, Straub et al. (2005) have denoted the term 'survey' as a data collection technique along with others such as interviews within the field study as a research approach. This study adopts the first view that denotes the survey as a research methodology (Orlikowski & Baroudi, 1991; Galliers, 1992; Mingers, 2001, 2003; Nandhakumar & Jones, 1997). The survey as a research methodology is the most widely accepted view and is older in its acceptance within the research community. Therefore, within this study, the term survey refers to research methodology and is used to conduct this research. In turn, questionnaire is utilized as an instrument for data collection. Online survey is a system to distribute the questionnaire to collect data from the financial data consumers (Shannon et al., 2002).

According to Fowler (2008), there are three essential elements of survey research methodology, which are sampling, data collection and development of instrument. He suggested that it is obligatory for a good survey design to combine all the three elements. In order to assess the advantages and disadvantages from this research point of view, different aspects of the sampling and data collection are discussed in the next

section. The third element, which is instrument development, is briefly introduced in section 3.8 and a detailed description of it is presented in the next chapter (Chapter 4).

3.7 SAMPLING

Data were collected via an online survey of financial data consumers. The benefit of using actual IFR and real financial data consumers for this research is that the ecological validity of the study is enhanced (Hoffman & Novak, 1996). Selecting the websites for the online survey platform is based on the degree of scope, consumers' type and nature of access. The ideal site is the one that the user could use for information collection purposes. Once the site is selected, the consumers would be invited to participate in the research.

The invitation for financial data consumers to collaborate in the study was published by the XBRL Public Discussion Groups and Accounting Web Discussion Groups, as the groups have a worldwide conducting among actual and potential XBRL adopters. A total of 166 responses were received and some responses were not completed and thus eliminated. The invitation to join the research was then published in the form of text link on the homepage of XBRL Network website (Appendix A). The responses went directly to the web-hosting company assigned to the study, which could be accessed by the researcher in real time.

Though the XBRL has not penetrated all levels of IFR consumers, this is not a concern for this study. The interest of this research is studying the XBRL consumers,

rather than generic users. The sampling unit that is appropriate for this research is IFR consumers who have used the IFR more than once. However, the use of convenience sampling to obtain the sampling unit may results in sampling errors due to selection bias.

There are two types of sampling methods, probability-based and non-probability based. Probability sampling is a method that ensures each unit has the same chance of being included in the sample frame, while non-probability sampling uses other criteria such as accessibility or voluntary participation (Kalton, 1983). Non-probability based sampling, in particular convenience-based sampling, was adopted in this research. This is to be in tandem with the previous researches (Hoffman & Novak, 1996; Sheehan, 2001). The method is categorized as 'unrestricted self-selected survey' participation. An unrestricted self selected survey is publicized via open invitations on portals, email links, or through dedicated survey sites (Sheehan, 2001). As stated, data were collected from individual consumers who had previously used the particular IFR at least once and the access to the survey started from February 11, 2010 to April 11, 2010.

Self-selection sampling is a non-probability sampling technique in which individuals identify their agreement to participate in the study. Due to institutional policies, electronic websites (e.g., XBRL International) do not disclose e-mail addresses of their members; therefore, self-selection sampling was used for inviting potential adopters to participate in the survey. Self-selection sampling is a technique that broadcasts an invitation message and waits for responses voluntarily submitted by people (Wright, 2005). It is a suitable methodology for collecting data by online data or

via an online questionnaire because no contact detail of a potential adopters is available.

In order to recapitulate, self-selection sampling in this study was undertaken by using online survey along with a plain language statement (Appendix F) and a web address (hyperlink) of the e-questionnaire server. The researcher distributed the invitation message to a group of selected XBRL-public and Accounting Web consumers. The invitation e-mail contained brief information about the survey. Privacy and ethics issues in this study are clearly explained in the e-mail. The invitation message also invited the respondents to read the plain language statement if they would like to know more about this study. From the invitation, recipients of the e-mail could freely choose whether they would like to participate in the survey or not.

3.7.1 Sample Size for the Online Survey

Since this research aims to investigate XBRL adoption from the perspective of XBRL financial data consumers, the sample population of this research are any individuals who use and consume the Internet financial data, and have the tendency to accept and use XBRL in his/her work. The population refers to the targeted group of individuals that is of interest of the study. Sampling can be difficult when the size of a population is unknown as is common in online survey. A sample is a subset of the population that is selected for the study.

The sampling unit of this research was the financial data consumers. Because the sampling frame is unknown, the researcher was unable to calculate response rates and

discuss the representativeness of the study population in detail (Bhaskaran & LeClaire, 2009).

3.7.2 Response Rate

According to Deutskens and Ruyter et al. (2004) the response rate cannot be calculated if the sampling frame was unknown. The percentage of consumers who respond to the survey (opened it) is considered the response rate (Kaplowitz et al., 2004). In order to calculate the response rate, the following equation is used (multiply the answer by 100% to get the percentage):

Response Rate = (Number who completed the entire survey / Number of participants who started this survey) ×100%

In the above formula, the number of completed surveys is the number of responses from XBRL adopters and nonadopters. The resulting total response rate will be presented and discussed in chapter 5.

3.8 INSTRUMENT DEVELOPMENT AND VALIDATION

Survey is the collection of data from a given population for the purpose of analysis a particular issue, which is a critical dimension of the quality of survey estimates (Fowler, 2008). This critical dimension of the measure is depending upon the reliability where the answers correspond to what is measured (Straub et al., 2004). Therefore, the guarantee of reliability and validity of the research instrument is critical

for this survey-based research. The sensitivity of the instrument provides the precision of the survey estimates.

Sekaran (2003) argued that the researchers can use the instruments that are already reputed to be good rather than laboriously developed their own measures. For efficiency reasons, however, researchers prefer using previous instruments rather than developing a new one. This does not mean that the researchers are avoiding prior validation controversies. However, if important changes are made in the existing instrument, it is very important to revalidate the content and factor of reliability of the modified instrument (Straub et al., 2004). It is important to ensure the goodness of measures such as revalidate the content, factor and reliability of the modified instrument (Straub et al., 2004).

In the absence of a questionnaire and if the development of a new questionnaire process for establishing theoretical factors and examining of the robustness is required, then all validities must be applied in more detail (Straub et al., 2004; Dwivedi, 2007). According to Straub et al. (2004) this step is the centre of the demonstration of the usefulness of the new instrument and represents a significant contribution to scientific practice in the area. Although the factors used in this research belong to established theories and models, they require the development of new measures. This is because the unit of analysis for this research, XBRL, differs from the precedent technologies such as personal computer. Therefore, examining XBRL requires creating new items or making important changes in the existing items and using subsequent validating measures to

ensure a high level of reliability and validity. Thus, the researcher decided to develop and validate the questionnaire for this research before commencing to data collection. Since developing and confirming the goodness of an instrument is a long process that includes exploratory survey, content validity, pre-test and pilot test, a complete chapter (Chapter 4) is devoted to provide a description of its development and validation.

3.9 DATA ANALYSIS

The collated data are analyzed using SPSS version 12. The reason for selecting the SPSS is to facilitate the calculation of all necessary statistics, such as descriptive statistics, reliability test (e.g., Cronbach's alpha), t-test, discriminate analysis, analysis of variance (ANOVA) and linear and logistic regression analysis (Dwivedi, 2007). Furthermore, SPSS is readily available and easy to use so and most importantly it can be learnt within a short period of time. Moreover, there are several books that can be referred by the researcher in order to know how to use SPSS for presenting and interpreting data (Dwivedi, 2007). Data analysis was undertaken using a technique similar to that adopted by Taylor and Tood (1995), Dwivedi (2007), Selamat et al. (2008) and Rawashdeh et al. (2011).

According to Straub et al. (2004), developing a new questionnaire need to be validated statistically by using various methods such as reliability test (internal consistency) to confirm the reliability of measures. In addition, such test can be used to validate convergence and discrimination (Straub et al., 2004). Based on the recommended guidelines, a questionnaire has high internal consistency (i.e. it is reliable)

if the estimated Cronbach's coefficient alpha is above 0.70 (Straub et al., 2004). All these guidelines were used to validate the questionnaire of this research (Chapters 4 and 5).

In order to clarify the relationship between the independent and dependent variables and test the conceptual model of XBRL, linear and logistic regression tests were used. The purpose of linear regression analysis was to examine the level of significant associations (Dwivedi, 2007) exist between the independent variables (i.e. attitudinal, normative and control factors) and the dependent variable (XBI).

Multiple linear regression technique is usually used to clarify the nature of the relationship if each of the independent and the dependent variables is ordinal or scale (Weisberg, 2005; Dwivedi, 2007). However, linear regression test cannot be used in the case of the variable is nominal or categorical (e.g., yes or no) (Weisberg, 2005; Dwivedi, 2007). Logistic regression test was used in this research to clarify the relationship between aggregate measure of independent variables (i.e. XBI) and the categorical dependent variable such as XAB (discontinuous variable). It was undertaken using a technique similar to that adopted by Dwivedi (2007) and Selamat et al. (2008).

In order to analyze nominal variables (for example demographics, rate of XBRL use) the calculation of response frequency (e.g., frequency, percent, valid percent and cumulative percent) was undertaken using a technique similar to that adopted by Dwivedi (2007). According to Venkatesh & Brown (2001), the logic of using the above

mentioned statistics is because previous information system researchers utilized different tools for analyzing response frequencies and percentages. In order to test the statistical significance of demographic differences (nominal variables) of the XBRL adopters and nonadopters, the chi-square (Chi-square) test is considered to be the most suitable method significance (Brace, Kemp & Snelgar, 2003; Dwivedi, 2007).

If all the items are internally consistent such as high reliability then they can be used to build a scale, such as aggregate measure, in the following two ways (Moore & Benbasat, 1991). The first is to build a scale that includes summing or averaging the mean of the items that load highly on a certain factor (Moore & Benbasat, 1991). The second is to build a scale such as aggregate measure, which requires the consideration of the score of factors (Moore & Benbasat, 1991). Moore and Benbasat (1991) argued that since the importance weight of an item in a scale is based on its loading on the factor, its scores may be considered more exact than averaging means.

However, the use of factor scores for building scales such as aggregate measures is less preferred method (Moore & Benbasat, 1991). Moore and Benbasat (1991) stated that factor scores are often less interpretable and generalizable than using the first methodology that involves summing or averaging the mean of items (Moore & Benbasat, 1991).

Since there are a number of studies, for example Taylor and Todd (1995) and Dwivedi (2007), that used average as a means of building aggregate measures and its

application (Moore & Benbasat, 1991, Dwivedi, 2007), hence, the average responses to individual items was used to develop aggregate measures for each factor in this research.

Once the scale is produced, it will be in a ratio rather than an ordinal. In order to examine the differences, a parametric test such as t-test and analysis of variance (ANOVA) is the most suitable one. Karahanna, Straub, and Chervany (1999) applied this methodology (parametric test and t-test and) on the factored aggregate measures by averaging the mean of individual items.

In order to decide if two means can be taken from both independent respondent groups, which differ a lot from each other, it is suitable to apply an independent-measures t-test (Hinton, Brownlow & McMurray, 2004). The respondents in this research consist of users of XBRL and traditional presentation format. Thus, t-test is suitable to examine the difference in type of usage between them, or males and females group. Analysis of variance rather than t-test was used in case of more than two conditions, or groups of an independent variable are compared (Sekaran, 2003).

3.10 SUMMARY

This chapter presents an overview of the research methodologies that have been used within the information system area. Thereby, a suitable research methodology for guiding this particular research was selected. Quantitative research is more suitable than a qualitative one to validate and understand this research conceptual model. An overview of the different issues on available research methodologies in the information

system area and justifications for the selection of the survey as a research methodology are presented. Once it was determined that a survey methodology is a suitable methodology to conduct this research, a detailed explanation of the different aspects of the survey methodology has been presented. The use of self-selection sampling as a main source of sample selection in this study is considered the most suitable one.

The data collection technique used in this investigation was the electronic method (i.e. via website). The motivations for the above mentioned choice are discussed and issues concerning to data analysis are discussed in detailed. The statistical analysis techniques such as t-test, ANOVA, chi-square test ($\chi 2$), discriminate analysis, linear regression analysis and logistics regression analysis are found to be suitable to be used for data analysis.

This chapter comprehensively discussed two out of three important components of survey research methodology. On the other hand, the third instrument development is briefly covered. The next chapter (Chapter 4) will discuss the development and validation of the questionnaire that is fundamental for a reliable data collection.

CHAPTER 4

DEVELOPMENT OF STUDY SURVEY INSTRUMENT

4.1 INTRODUCTION

This chapter aims to describe the development of a survey instrument designed to investigate XBRL diffusion within the financial data consumer contexts. The following four phases were carried out in the development of a reliable questionnaire for this research: (1) description of XBRL adoption behavior, some peer influence factors that have been identified based on review of literature and then a decision upon how to define them in an exploratory study approach; (2) validation of content was performed on the item pools that resulted from the exploratory study, the purpose of this phase was to ensure the representativeness of items to a particular factor domain; (3) pre-test on the resulting survey instruments in order to determine if the questions are understandable to the participants and to obtain feedback for improvements; and (4) the final phase of the instrument development process was a pilot test of the questionnaire using respondents whose backgrounds were similar to the final study's target population to affirm the reliability of measures.

The next section 4.2 briefly re-visits the conceptual model and presents a list of the factors contained in the different phases of the validation process. Then, an overview of the questionnaire establishment process is presented in section 4.3. The first phase of the validation process (i.e. the exploratory study) is discussed in section 4.4. This is followed by the validation of content process in section 4.5. The questionnaire testing

process includes the pre-test and pilot test and their descriptions are provided in sections 4.6 and 4.7 respectively. Finally, the summary and conclusions are discussed in section 4.8.

4.2 CONCEPTUAL MODEL

The factors contained in this research conceptual model were adapted from the DTPB (perceived ease of use and perceived usefulness) (Taylor and Todd, 1995), and DOI (perceived compatibility, perceived complexity and perceived relative advantage) (Rogers, 1995) and the TPB/DTPB (behavioral intention, social influence, facilitating conditions resources, self-efficacy) (Ajzen, 1991; Taylor & Todd, 1995).

The proposed conceptual model suggested that the dependent variable which is behavioral intention towards XBRL adoption is affected by a number of independent variables which contain the attitudinal (perceived ease of use, perceived usefulness, perceived relative advantage, perceived compatibility and complexity), normative (peer and superior influence), control factors (training, English language, knowledge, self-efficacy and facilitating conditions resources) and demographic (age, gender, education, experience, country and type of industry) variables. List of the factors contained at each phase of validation is provided in Table 4.1. These factors are defined and illustrated in and the relationship between them is provided in chapter 2.

Straub et al. (2004) argued that if the content of questionnaire is adapted from the existing questionnaire then there is no need to validate it. However, if there are changes

in the questionnaire, then the adapted questions or subject to a stringent validation process (Straub, Boudreau & Gefen, 2004). Emulating Straub et al. (2004) and Dwivedi, Choudrie and Brinkman (2006), the adoption-connected items were validated using the above four phases of validation which are exploratory study, content validity, pre-test and pilot test.

Table 4. 1

List of factors included in the various phases of e-mail questionnaire vlidation

NO	Factors	Exploratory study	Content Validity	Pre-Test	Pilot Test
1	XBRL Behavioral Intention (XBI)	☒	☑	☑	☑
2	Perceived Relative Advantage (PRA)	☑	☑	☑	☑
3	Perceived Usefulness (PU)	☑	☑	☑	☑
4	Perceived Ease of Use (PE)	☑	☑	☑	☑
5	Perceived Compatibility (PC)	☑	☑	☑	☑
6	Perceived Complexity (PX)	☑	☑	☑	☑
7	Peer Influence (PI)	☑	☑	☑	☑
8	Superior Influence (SI)	☑	☑	☑	☑
9	Facilitating Conditions Resources (FCR)	☑	☑	☑	☑
10	Training (TR)	☑	☑	☑	☑
11	English Language (EL)	☑	☑	☑	☑
12	Knowledge (KN)	☑	☑	☑	☑
13	Self-efficacy (SE)	☑	☑	☑	☑
14	XBRL Usage (XBRL Services)	☒	☑	☑	☑

The usage items were not included in the first phase, but subjected to validation in the content validity, pre-test and pilot test phases. Since of adding this diminution to the questionnaire requires change to the length of the questionnaire, as such it will decrease the response rate in this phase. Therefore, this factor was considered starting from the phase of content validity and onwards.

4.3 QUESTIONNAIRE DEVELOPMENT PROCESS

According to Straub et al. (2004), there is a lack in standard validation method and different studies have used different validation approaches. Therefore, this research has adopted a validation method similar to the information system studies of Davis (1989) and Moore and Benbasat (1991) that focus upon the questionnaire establishment process and broadly cited by a number of researchers such as Moody, Sindre, and Brasethvik (2003) and Tojib and Sugianto (2006). This research intended to establish and validate the questionnaire according the following phases: (1) exploratory study; (2) content validity; (3) pre-test; and (4) pilot test. The description of each phase is offered in sections 4.4, 4.5, 4.6 and 4.7.

4.4 THE EXPLORATORY SURVEY

4.4.1 Research Method

The goal of this in-depth phase is to identify the factors that influence the behaviors of adoption and non-adoption. This is due to identify, the significant factors

that could be adjusted to measure perceptions in the later steps. XBRL adopters were asked to respond to the attitudinal, normative and control connected questions (Appendix B). Contrastingly, the XBRL nonadopters were required to answer questions connected only to the control factors. This was undertaken by using skip logic which redirects user to another page automatically and unconditionally. A number of suitable items were gathered, established and modified to ensure compatibility with the definition of the attitudinal, normative and control factors. The definition for all the factors is illustrated in Table 3.1. A list of factors contained in the exploratory study and connected items are provided respectively (Table 4.1).

The exploratory study data were gathered from the members of XBRL public group. The selection of the targeted population was made according to the availability of the sample. Since a reliable sample frame that is the XBRL group is easily accessible, the researcher decided to conduct the survey within this group. The structure of the sample frame (XBRL public groups) required the selection of a self selection sampling approach that collected the representative data from the targeted population.

In order to collect data from the targeted members and within a limited time frame and resources, a self-administered questionnaire is considered to be the most appropriate way for developing the survey instrument because it addresses the issue of reliability of collected data by reducing and removing the differences in the way the questions are asked (Cornford & Smithson, 2006).

The questionnaire applied in the exploratory study has a total of 44 questions (Appendix B). This questionnaire was adapted initially from Taylor and Todd (1995), Shih and Venkatesh, 2004) and Dwivedi et al. (2006). These questions were divided into three broad categories: (1) multiple choice questions covering the social attributes (demographic variables) including age, gender, education, experience, country and type of industry; (2) Likert scale (1-5) questions that were designed to address the issues connected to the factors of XBRL adoption; and (3) an open-ended question to obtain any other factors that were not covered in the questionnaire regarding their decision of using XBRL or not.

The final questionnaires with a covering letter were sent via an email link. The collected data was analyzed using SPSS version 12. The analysis focused upon calculating the importance of the attitudinal, normative and control factors using the mean and standard deviation. In order to measure the internal consistency of the items, the reliability of scale was estimated.

4.4.2 Findings

From all questionnaires that were sent by email link to XBRL public group, 13 questionnaires were received within the specified periods. One out of 13 received questionnaires was considered incomplete. Previous research conducted by Ding (2008) and Blount (2009) also have the same number of respondents, with 13 usable responses.

4.4.2.1 Descriptive Statistics

Descriptive statistics were used in this research to describe the basic features of the data. These provided simple summaries about the sample and the measures.

4.4.2.2 Attitudinal Factors

Among the attitudinal factors, perceived usefulness scored the highest rate one (M = 4.73, SD = 0.27), followed by perceived relative advantage (Table 4.2). The perceived complexity factor was found least important with a mean score of 3.29 and a standard deviation of 1.13.

Amongst the five perceived usefulness items, exchange data (PU2) (M = 4.83, SD = 0.38) and overall of using XBRL will be advantageous (PU5) (M = 4.83, SD = 0.38) were rated as equally important. They were rated most strongly. XBRL is helpful in improving my work (PU3) (M = 4.5, SD = 0.67) (Table 4.3) was considered least important within this category (Table 4.3). The second strongest factor was perceived relative advantage that had a rating of M = 4.71, SD = 0.39 amongst the attitudinal factors that consisted of six items (Table 4.2). Amongst the five items, XBRL specifications are royalty free was rated most strongly (PRA4) (M = 4.91, SD = 0.28) (Table 4.4)., while the factor of XBRL has advantage over e-traditional standard (PRA5) (M = 4.5, SD = 1) (Table 4.4) was considered least important within this category (Table 4.4).

Table 4. 2

Descriptive statistics of overall attitudinal, normative and control factors

Items	N	Mean	Std. Deviation
Perceived Usefulness (PU)	12	4.7333	0.27414
Perceived Ease of Use (PE)	12	3.4167	0.92524
Perceived Relative Advantage (PRA)	12	4.7167	0.39505
Perceived Compatibility (PC)	12	3.8056	0.95831
Perceived Complexity (PX)	12	3.2917	1.13735
Peer Influence (PI)	12	3.5278	0.73110
Superior Influence (SI)	12	3.8750	1.11038
Training (TR)	12	4.1538	1.62512
English Language (EL)	12	3.0000	1.08012
Knowledge (KN)	12	3.6538	1.34450
Self-Efficacy (SE)	12	3.2308	1.58923
Facilitating Conditions Resources (FCR)	12	3.5714	2.26779

Table 4. 3

Descriptive statistics of perceived usefulness items

Items	N	Mean	Std. Deviation
PU5	12	4.8333	0.38925
PU2	12	4.8333	0.38925
PU4	12	4.7500	0.45227
PU1	12	4.7500	0.45227
PU3	12	4.5000	0.67420

The third factor is the perceived compatibility that had a rating (M = 3.80, SD = 0.95) amongst the attitudinal category (Table 4.2). This factor consisted only three items and amongst the three items, XBRL is compatible into my work style (PC2) (M = 3.91,

SD = 1.16) was considered to be the most important, while XBRL is compatible well with the way I work (PC1) (M = 3.75, SD = 1.05) and setup of the XBRL is compatible with the way I work was rated equal average (PC3) (M = 3.75, SD = 0.96) (Table 4.5).

Table 4. 4

Descriptive statistics of perceived of relative advantage items

Items	N	Mean	Std. Deviation
PRA4	12	4.9167	0.28868
PRA1	12	4.8333	0.38925
PRA3	12	4.7500	0.45227
PRA2	12	4.5833	0.51493
PRA5	12	4.5000	1.00000

Table 4. 5

Descriptive statistics of perceived compatibility items

Items	N	Mean	Std. Deviation
PC2	12	3.9167	1.16450
PC3	12	3.7500	0.96531
PC1	12	3.7500	1.05529

The fourth factor from the attitudinal category is perceived ease of use that had a rating of M = 3.41, SD = 0.92 on a 1-5 point Likert scale (Table 4.2). This factor consists of only two items, of which one items was for instructions for using implementations, which scored an above average score (PE1) (M = 3.75, SD = 1.05), and the second was difficult to learn how to use the XBRL (PE2) (M = 3.08, SD = 1.08) (Table 4.6).

Table 4. 6

Descriptive statistics of perceived ease of use items

Items	N	Mean	Std. Deviation
PE1	12	3.7500	1.05529
PE2	12	3.0833	1.08362

The fifth factor from the attitudinal category 'perceived complexity' was rated below average (M = 3.29, SD = 1.13) (Table 4.2). This factor consisted of only two items, of which one item was for XBRL Taxonomy (PX1), which scored an above average score (M = 3.33, SD = 1.43), varied "tag" of U.S GAAP and IFRS (PX2) (M = 3.25, SD = 1.35) (Table 4.7).

Table 4. 7

Descriptive Statistics of Complexity items

Items	N	Mean	Std. Deviation
PX1	12	3.3333	1.43548
PX2	12	3.2500	1.35680

4.4.2.3 Normative Factors

The normative dimension contains of only two factors, peer influence and superior influence. Three items represented the first factor peer influence (M = 3.52, SD = 0.73) and the second superior influence contained two items that were rated slightly above average (M = 3.87, SD = 1.11) (Table 4.2). Amongst the items of the peer influence factor, influence from colleagues (PI2) was found most important (M = 4.16, SD = 0.93), while family influence (PI3), which scored a less average score (M = 2.5, SD =

1.50). Amongst the items of the superior influence factors, influence from bosses (SI1) was considered most important (M = 4.16, SD = 1.11). The lowest rated item was influence from managers (SI2) (M = 3.58, SD = 1.24) (Table 4.8).

Table 4. 8

Descriptive statistics of peer and superior items

Items	N	Mean	Std. Deviation
SI1	12	4.1667	1.11464
PI2	12	4.1667	0.93744
PI1	12	3.9167	0.90034
SI2	12	3.5833	1.24011
PI3	12	2.5000	1.50756

4.4.2.4 Control Factors

The control dimension was formed mainly with five factors: Training, English language, knowledge, self-efficacy and facilitating conditions resources. The findings explained indicate that training was a key barrier hindering the financial data consumers from adoption of XBRL (Mean = 4.15 on a five point scale and SD = 1.62) (Table 4.2). The English language factors consists two items and was considered as less important overall within this category (M = 3, SD = 1). English language was considered undecided (M = 3) in regards of hindering participants from adoption of XBRL (Table 4.2).

The second strongest control factor was knowledge that had a rating of M = 3.65, SD = 1.34 (Table 4.2). A lack of knowledge on XBRL was considered more important

(KN1) (M = 3.65, SD = 1.34) than the second item that referred to knowledge about the usage and benefits of XBRL (KN2) (M = 3.46, SD = 1.61) (Table 4.9). A single item represented the self-efficacy factor, which was the lack of skills when using the XBRL (SE1) (M = 3.23, SD = 1.58). Self-efficacy was considered as influential factor in regards of hindering participants from adoption of XBRL (Table 4.2).

Table 4. 9

Descriptive statistics of control items

Items	N	Mean	Std. Deviation
TR1	12	4.1538	1.62512
KN1	12	3.8462	1.34450
KN2	12	3.4615	1.61325
FCR2	12	3.2500	1.42223
SE1	12	3.2308	1.58923
FCR6	12	3.1538	1.34450
EL1	12	3.0000	1.08012
FC R8	12	2.9231	1.44115
FCR1	12	2.8462	1.34450
FCR7	12	2.7692	1.42325
FCR4	12	2.6923	1.65250
FCR3	12	2.6154	1.32530

The facilitating conditions dimension contained six factors. XBRL availability (FCR2) (M = 3.25, SD = 1.42), was perceived to be important. XBRL is not too costly (FCR3) (M = 2.61, SD = 1.32), which was rated less influential than the first one within this category (Table 4.9).

4.4.3 Reliability Test

In order to test the reliability (internal consistency) of the scales of the study, a reliability test was checked using Cronbach's alpha. The Cronbach's Alpha values for all but three factors are presented in Table 4.10. The value of reliability (alpha) differs from the various factors. Since three factors training, self-efficacy and superior influence were represented only by one item each, it was not possible to calculate their reliability. Of the residual nine factors, there are only five factors had value of Alpha above 0.60 (Table 4.10), which is the minimum acceptable level for the exploratory study (Straub et al., 2004).

Table 4. 10

Reliability of measurements

Factors	N	Number of Items	Cronbach's Alpha (α)
Perceived Usefulness (PU)	12	5	0.47
Perceived Ease Of Use (PE)	12	2	0.66
Perceived Relative Advantage (PRA)	12	5	0.70
Perceived Compatibility (PC)	12	3	0.88
Perceived Complexity (PX)	12	2	0.49
Peer Influence (PI)	12	3	0.26
Superior Influence(SI)	12	2	0.87
Training (TR)	12	1	n/a
English Language (EL)	12	1	n/a
Self-Efficacy (SE)	12	1	n/a
Knowledge (KN)	12	2	0.78
Facilitating conditions Resources (FCR)	12	7	0,48

Amongst the attitudinal factors, the minimum value of Alpha (0.47) was connected with the perceived usefulness factor. The maximum value of reliability within this category was 0.88, which was for the perceived compatibility. This indicates that

only three attitudinal factors satisfied the criteria of internal consistency. In regarding the two normative factors, peer influence gained the minimum value at all 0.26, which is considered not acceptable (Straub et al., 2004).

Amongst the five control factors, knowledge gained the highest value of Alpha (Alpha = 0.78) for reliability. This was followed by facilitating conditions Resources with value of Cronbach's Alpha (Alpha = 0.48). The training, English language and self-efficacy factors did not meet the criteria for calculating the value of Cronbach's Alpha (Table 4.10).

4.4.4 Limitations and Further Improvement

For the exploratory study phase, the main limitation was lack of studies that had established and used the scale to measure XBRL adoption among financial data consumers from the perspective of attitudinal, normative and control factors. Such unavailability forced the researchers to develop the questionnaire from the early phases due to the need to overcome the following issues: (1) need of new factor and new items; and (2) low reliability. These issues were solved using content validity, pre-test and pilot test.

4.4.5 Need of New Items

The three factors, training, English language and self-efficacy was assessed using one item each. This caused some challenges for the reliability. Therefore, this restriction

was mitigated during the next tests and one more additional item was added in each factor. The other limitation to the exploratory survey was the lack of a dependent variable that could be utilized to measure the intentions of respondents when using XBRL. This variable is also important when examining how independent variables affect a respondent's intention to adopt XBRL. This forced the researchers to include an additional factor called 'behavioral intention' from the theory of planned behavior (Ajzen & Fishbein, 1980).

4.4.6 Problem of Estimating Reliability

From the exploratory study findings, it was found that although the estimated mean value of many factors (e.g., perceived usefulness) was high, the reliability (Cronbach's Alpha) was low. Also, the estimated mean value of the peer influence factor was high, but its reliability value was lowest than any other factor. These differences in estimated values required an additional validation of the questionnaire content. In order to further validate the questionnaire and to define how representative the items for factor were (Straub et al., 2004), it was decided that the content validity approach to be employed. The information system literature suggests that it is an important and highly recommended practice to conduct content validity in instances of new questionnaire development and also even if existing scales have to be applied for the establishment of any new object (Straub et al., 2004). Since this condition applies to this research as well, this was an additional reason for conducting content validity (Selamat & Rawashdeh, 2010). Content validity followed the exploratory study and its application in this research is described in the next section.

4.5 CONTENT VALIDATION

Content validity is defined as the extent to which an empirical measurement reflects a specific domain of content which an empirical measurement will be generalized (Straub et al., 2004). Generally, content validity includes the estimate of new questionnaire. This is to ensure that the questionnaire that aims to measure XBRL adoption and usage includes all the essential items and deletes unfavorable items (Kitchenham & Pfleeger, 2002).

Although only two approaches that comprise judgmental and statistical are available to determine content validity, its application is unique to each study (Chang, Torkzadeh & Dhillon, 2004). The implementation of content validity is different in terms of when it is used, how it is performed and how many experts judged the content. The judgment approach to create content validity includes literature reviews and then follow-ups with the expert. The item validation is dependent upon a high degree of compatibility between experts' judges on the items in question. In this case, content validity is judgmental in nature (Davis, 1989; Boudreau, Gefen & Straub, 2001; Straub et al., 2004). Lawshe (1975) presented a quantitative approach of content validity and this approach depends on the calculation of statistical validity ratio.

In order to conduct content validity using judgmental approach requires the researchers to collaborate with the experts to simplify the validation process. Therefore, it is sometimes coined as 'face validity' (Wacker, 2004). However, it is not always

possible to get adequate experts to discuss a particular research topic in one country, which was the case of this research. Alternatively, the questionnaire can be sent to the experts by using quantitative approach. A quantitative approach was considered more suitable for this research compared to the judgmental approach (Lawshe, 1975). Since XBRL diffusion studies are relatively new in nature, there are still few academic experts in this field. Furthermore, the experts are scattered all over the world. Therefore, quantitative approach was adapted when measuring content validity. The next subsection will discuss this in details.

4.5.1 Research Method

In the information system research, quantitative approach is commonly used when validating the questionnaire (Lewis, Snyder & Rainer, 1995). This is used in the following way: First, pertinent items from the existing literature on technology adoption and diffusion are determined. This guides the construction of the questions in questionnaire (Lewis, Snyder & Rainer, 1995). Then, a group of experts from the academia and/or industry (called a content evaluation panel) who are connected to the desired research area is selected. Third, every member of the content evaluation panel is then supplied with the questionnaire constructed in step 1. The content evaluation panel members are asked to respond independently to each item in the questionnaire. The items are developed using a 3-point Likert-type scale where: the first option is not necessary, the second option is useful but not essential and the third option is essential (Figure 4.1).

The responses from the overall panel lists are then collected. This step also involves counting items that are related and essential. Fifth, the content validity (Lawshe, 1975) for each item is calculated using the formula of content validity ratio = (n-N/2) / (N/2), where n is the number of panel that rate "3 = essential" for each item and N is the total number of participants. Finally, the content validity ratio value for each item is investigated using the standard table developed by Lawshe (1975) (Table 4.11).

If the evaluated content validity ratio value is greater than or equal to the standard value, then the item is agreeable otherwise it is deleted. According to Lawshe (1975), the value of content validity ratio range from -1 to 1. The significance level based upon the number of experts rating the item as essential. A sufficient number of experts that are needed to rate each item is at least five.

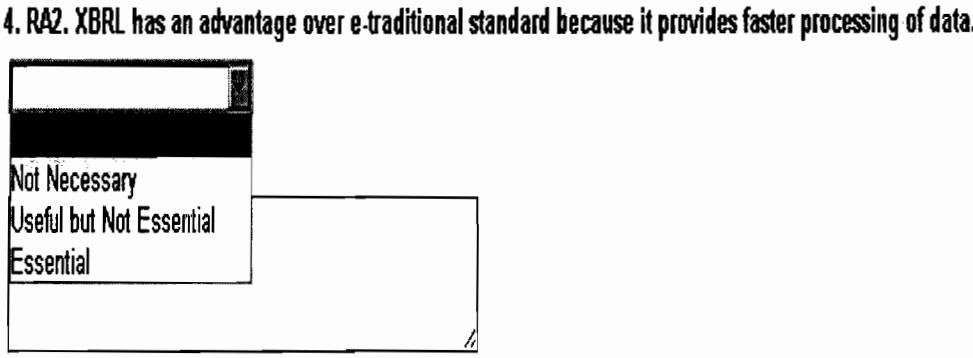


Figure 4. 1

The Likert Scale items in the content validity questionnaire

The steps were followed to evaluate the content of XBRL diffusion questionnaires. A sample of items for each factor was identified using a comprehensive review of literature on general technology adoption areas, XBRL adoption and diffusion. The literature review guided the classification of 42 adoption entries and 32 entries for the usage connected factors. A content validity of the questionnaire (Appendix C) was then created using a 3 -point Likert-type scale.

The experts identified earlier have experiences in the XBRL diffusion. A total of 11 experts were identified on the basis of their experience in the XBRL. The questionnaire was then sent to them via email link to expedite the process. The purpose of the study and instructions to complete the questionnaire were mentioned in the covering E-mail. The experts were asked to rate each item in relation to the different factors of XBRL diffusion on a 3-point Likert-type scales: "1 = not necessary"; "2 = useful but not essential"; "3 = essential" and adding their comments at the end of each question. They were also asked to indicate comments if the items were understandable or not, required rewording or need to be re-considered. The responses were then gathered by counting the rating for "essential" for each item.

Finally, the content validity ratio was calculated using Lawshe's Content. Validity Ratio (CVR) approach. This process was conducted for each item. According to this formula, a minimum CVR value of 0.59 is required for 11 panel members (Table 4.11). The list of factors, along with their related content validity ratio values, is offered in Tables 4.13 and 4.14. Subsections 4.5.2 discuss this in details.

Table 4. 11

The minimum values of the content validity ratio

Number of Panelists (N)	Minimum Value	Number of Panelists	Minimum Value
5	0.99	12	0.54
6	0.99	14	0.51
7	0.99	15	0.49
8	0.75	20	0.42
9	0.78	25	0.37
10	0.62	30	0.33
11	0.59	35	0.31
12	0.56	40	0.29

4.5.2 Findings from Content Validation

The final content validity for the questionnaire is provided in the Appendix C. The result for the content validity ratio of adoption factors and usage factors are illustrated in tables 4.12, 4.13, 4.14 and 4.15. There were 42 adoption items and 32 usage items in the questionnaire. 39 out of 42 adoption items were significant, whereas 23 out of 32 usage items were considered essential (Table 4.19).

Table 4.15 depicts the average content validity ratio and average mean for the whole items of each factor. The average content validity ratio for the 14 factors was between the minimum value of 0.45 and maximum value of 1 (Table 4.15). This shows that most of the items scored a high level of content validity, while one item scored low level of content validity, which means that some of items are representative of a construct universe (Table 4.15).

Table 4. 12

Summary of content validity ratio

CVR	AI	UI
0.99-1	0	0
0.89-0.98	0	0
0.79-0.88	28	8
0.69-0.78	0	0
0.59-0.68	8	15
0.49-0.58*	0	0
0.39-0.48*	1*	3*
0.29-0.38*	0	0
0.19-0.28*	0	0
0.09-0.18*	2*	1*
0-0.08*	0	0
Total	39	27
TEI	36	23
RLH	(3)	(5)
Grand Total	42	32
Legend: * = Not Significant, RLH = Items that rated essential by less than half participants, AI = Adoption Items, UI = Usage Items, Total of Essential Items (TEI)		

The experts also highlighted several proposals on the formulation and the decomposition of some of the items, and added some new items. For the perceived ease of use, the experts opined that it would be better to drop item PE3. The experts also advised the elimination of PI3 item for peer influence. For the perceived compatibility, the experts opined that it would be better to drop item FCR7. Although an item EL1 and EL2 were suggested to be removed, the researcher decided to maintain them because most of the experts are English native speaker and thus there exist a bias. The experts also recommended that FCR3 item is categorized under compatible factor and not under facilitate condition resources.

Table 4. 13

Content validity ratio of adoption factors

No	Items	n	CVR	No	Items	n	CVR
1	XBI1	10	0.818182	22	PI1	10	0.818182
2	XBI2	10	0.818182	23	PI2	5	-0.09091
3	XBI3	10	0.818182	24	PI3	10	0.818182
4	PRA1	10	0.818182	25	SI1	10	0.818182
5	PRA2	9	0.636364	26	SI2	9	0.636364
6	PRA3	9	0.636364	27	KN1	10	0.818182
7	PRA4	10	0.818182	28	KN2	10	0.818182
8	PRA5	10	0.818182	29	TR1	10	0.818182
9	PU1	9	0.636364	30	TR2	10	0.818182
10	PU2	9	0.636364	31	EL1	8	0.454545
11	PU3	10	0.818182	32	EL2	4	-0.27273
12	PU4	10	0.818182	33	SE1	10	0.818182
13	PU5	10	0.818182	34	SE2	10	0.818182
13	PE1	6	0.818182	35	SE3	10	0.818182
15	PE2	10	0.818182	36	FCR1	9	0.636364
16	PE3	6	0.090909	37	FCR2	9	0.636364
17	PC1	10	0.818182	38	FCR3	4	-0.27273
18	PC2	9	0.636364	39	FCR4	10	0.818182
19	PC3	10	0.818182	40	FCR5	10	0.818182
20	PX1	10	0.818182	41	FCR6	10	0.818182
21	PX2	10	0.818182	42	FCR7	10	0. 818182

The above suggestions were included in the questionnaire. The experts also pointed out that, for the final questionnaire, the 7- point Likert scale would be more suitable in comparison to the 5-point Likert scale. This is because the 7- point Likert scale values are broadly spread compared to the 5-point Likert scale and the participants have more choices to select. This alleviates bias resulting from the respondents selecting a neutral value. Therefore, 7-point Likert scale is considered to be the most suitable Likert scale for the current study.

The findings also indicate that the content validity experts rated the items that were adopted from the exploratory study (conducted in phase 1) and from the previous

study on XBRL adoption in the USA (Henderson et al 2009) and Australia (Doolin & Troshani, 2004) as essential. Also, most of the items adopted from the general technology adoption studies were rated essential (Davis, 1989; Taylor & Todd, 1995). Therefore, the content validity practice confirms that the items investigated in the exploratory studies are important to understand the consumers' XBRL adoption behavior.

Table 4. 14

Content validity ratio of usage factors

Items	n	CVR	Items	n	CVR
S1	9	0.636364	S17	9	0.636364
S2	9	0.636364	S18	10	0.818182
S3	9	0.636364	S19	10	0.818182
S4	9	0.636364	S20	9	0.636364
S5	9	0.636364	S21	10	0.818182
S6	9	0.636364	S22	10	0.818182
S7	9	0.636364	S23	10	0.818182
S8	10	0.818182	S24	5	-0.09091
S9	9	0.636364	S25	2	-0.63636
S10	10	0.818182	S26	8	0.454545
S11	9	0.636364	S27	6	0.090909
S12	9	0.636364	S28	3	-0.45455
S13	10	0.818182	S29	8	0.454545
S14	10	0.818182	S30	3	-0.45455
S15	10	0.818182	S31	5	-0.09091
S16	10	0.818182	S32	8	0.454545

The experts who evaluated the content of the questionnaire come from different countries such as South Africa, the UK, China, Jordan, the USA, Australia, Spain and France. Therefore, the content of the questionnaire is not specific to any one country. It is considered essential to have a mix of countries, as a comparative study of the pre-test questionnaire and validation of the questionnaire in a number of contexts, such as the South Africa, the UK, China, Jordan, the USA, Australia, Spain and France.

Table 4. 15

Summary of factors, total number of items, and number of significant items, content validity ratio and average mean

Factors	TI	SI	ACVR	AM
XBR Behaviour Intention	2	2	1	2.77
Relative Advantage	5	5	0.74	2.61
Perceived Usefulness (PU)	5	5	0.74	2.61
Perceived Ease Of Use (PE)	2	3	0.81	2.72
Perceived compatibility	3	1	0.75	2.63
Perceived complexity	2	2	0.81	2.72
Peer Influences	3	2	0.81	2.72
Superior Influences	2	2	0.72	2.59
Knowledge	1	1	0.81	2.72
Training	1	1	0.81	2.72
English Language	1	0*	0.45*	2.72
Self-efficacy	1	1	0.81	2.61
Facilitating conditions	7	5	0.69	2.63
Usage	32	23	0.63	2.45
Legend: * = Not Significant, TI = Total number of items, SI = Number of significant items, ACVR = Average content validity ratio, AM = Average mean				

4.5.3 Limitations Encountered During Content Validation

Whilst conducting the content validity for the XBRL adoption survey, there were three limitations that were faced: (1) locating the XBRL experts; (2) accomplishing content validity of questionnaires with the experts located in various places; and (3) the length of the content validity survey. Since research in XBRL diffusion from the consumer's point of view is new, the participating experts were small in numbers. However, the problem was controlled by considering experts located in various countries such as the USA, the UK, Australia, Canada, Jordan and China.

The following limitation was the distance between researcher and experts and the absence of face-to-face contact with the experts. This problem became clear when most

of the experts initially perceived that the questionnaire sent to them by e-mail link was the final one. This led to confusion when assessing the content of the questionnaire content. In order to control this problem, some emails were sent to each expert's queries to explain the content validity phase of the questionnaire.

The final limitation was the length of the content validity questionnaire. Initially, the length was thirteen pages long. This discourages many experts from participating in the content evaluation round. However, after re-sending (several times) the questionnaire, some experts agreed to participate. In order to complete the process of developing questionnaire that will be used to investigate XBRL diffusion, the next step was to perform a pre-test and pilot test of the questionnaire.

4.6 PRE-TEST

A pre-test of the questionnaire was conducted with 20 XBRL International members. Previous research conducted by Grigorovici and Constantin (2004); Roig, Garcia, Tena and Monzonis (2006) and Lim and Teo (2009) also have the same number of respondents, with only 20 usable responses.

The participants were asked to answer the questions as well as provide comments define whether the questions were grammatically correct and understandable and to indicate further improvements. The participants proposed that the items for one factor should be separated and measured in the same direction. This suggestion was considered carefully and in turn changes were made wherever applicable. The following is an

example of such a change:

The item for the preceded complexity 'before pre-test' was:

1. The XBRL specifications contain varied "tag" (USA GAAP and IFRS).

The item for the preceded complexity factor 'after pre-test' was:

1. The XBRL taxonomies contain varied "tag" (USA GAAP and IFRS).

The suggestions that were provided by the content validity experts in term of rewording and adjusting of items were taken into account and reflected in the pilot questionnaire. Another issue that the participants commented at the pre-test questionnaire stage was the length of questionnaire. Initially the questionnaire was 13 pages long. The participants expressed concern about the length which ultimately could lead to low response rate. The number of page should be minimum in number but without losing the essential content. Bearing in mind the recommendations of the participants, the total length of the questionnaire was reduced to 9 pages. This was achieved by modifying the structure and format of the questions. For example the Likert scale questions were coordinated vertically (Figure 4.2). After taking into account the recommendation, the Likert scale questions were coordinated horizontally (Figure 4.3).

Besides these changes and a few spelling and typographical errors, the participants from the pre-test supported the content of the questionnaire. After incorporating all the proposed changes the length of the questionnaire was reducing to nine pages.

XBRL has an advantage over e-traditional format because it offers faster access to data

- 1= Extremely disagree
- 2= Quite disagree
- 3= Slightly disagree
- 4= Neutral
- 5= Slightly agree
- 6= Quite agree
- 7= Extremely agree

Figure 4. 2

The coordination of the Likert Scale items in the pre-test questionnaire

XBRL has an advantage over e-traditional format because it offers faster access to data

1 2 3 4 5 6 7

Figure 4. 3

The coordination of the Likert Scale items in the final questionnaire

4.7 PILOT-TEST

Moore and Benbasat (1991) started the pilot test stage after undertaking the pre-test. The primary aim of the test was to ensure that the various scales demonstrated the appropriate levels of reliability (Moore & Benbasat, 1991).

4.7.1 Research Method

The final phase of the questionnaire development was a pilot test using the participants whose backgrounds were similar to the final targeted respondents. A non-probability self-selected sampling design was used. The data was collected by using online survey software that enables distribution of the survey, data collection, and transfer of the collected data into a statistical software programs for analysis.

The initial aim of the pilot test was to ensure that the items in the questionnaire demonstrate a high level of reliability. The pilot test also enables the researcher to appraise the actual response rates. Moreover, the pilot test could highlight the difficulties that the participants could face when completing the questionnaire. For example, is the instruction extensive enough to assist the participants completely the questionnaires (Moore & Benbasat, 1991).

Nine-pages long questionnaire containing 74 questions was produced (Appendix D) from the pre-test. The questions were divided into three groups: (1) multiple choice (only one answer) type questions examining the demographics items of the participants

(questions 1-6) in section one, Internet financial reporting access types, frequency and duration of Internet financial reporting use on a daily basis (question 1-5) in section two; (2) Likert scale questions 1 (extremely disagree) to7 (extremely agree) to evaluate the perception of consumer on XBRL adoption (36 questions) whereby 21 questions in section 3 and 15 questions in section 4; and (3) Yes/No questions that defined type of purpose from using of XBRL (23 questions).

Four other issues were also questioned to ensure that the respondents understood the questionnaire (Appendix E). The four questions were: (1) Is the length of the questionnaire suitable? (2) Are the questions understandable/easy to answer? (3) Is the design of the questionnaire suitable to be completed through online website? (4) How long it took to complete the questionnaire? The responses from the participants on these four questions are presented in Table 4.17.

The online data collection was conducted on the August 31, 2009. A cover letter that contained the definitions of XBRL, HTML and PDF were provided in the questionnaire. 21 out of 27 received questionnaires were considered complete to be analyzed.

4.7.2 Findings from Pilot Test

From 21 responses, 5 (23.8%) participants still use the e-traditional presentation format. 76.2% of the respondents utilize XBRL. Considering the variety of the IFR trend, 21 participants were considered adequate for the purpose of pilot test since they

consist of different types of adopters and nonadopters of XBRL. Previous research conducted by Ngai and Gunasekaran (2004) and Chiu et al. (2009) also have the same number of respondents, with only 20 usable responses.

The mean, standard deviation (SD) and reliability (Cronbach's Alpha) resulted from the pilot-test are summarized in Table 4.16. The result show amongst that the attitudinal factors (perceived usefulness, perceived ease of use, perceived relative advantage, perceived compatibility and complexity) and perceived ease of use factor was very highly rated, with low standard deviations at a seven-point Likert scale, and the perceived compatibility was poorly rated. Amongst the normative factors, peer influence was found to be more effective than superior influence. The descriptive statistics for the control factors in relation to knowledge was very highly rated. This indicates that majority of the participants either adopters or nonadopters required knowledge for XBRL adoption and use.

The result of the reliability analysis (Cronbach's Alpha) confirmed the internal consistency of the measurement. Cronbach's Alpha for pilot test varies between 0.98 for peer and 0.72 for facilitating conditions rescores (Table 4.16). Overall the obtained value for Cronbach's alpha was above 0.70. A suggested in the previous information system studies, Cronbach's Alpha should be more than 0.60 for the exploratory study and 0.70 for the confirmatory study (Straub et al., 2004). This illustrates that the obtained Cronbach's Alpha values in this study is acceptable. This in turn affirms that the questionnaire was internally consistent and has acceptable reliability level. From the

thirteen factors, four have excellent reliability and the rest gain high reliability level. None of the factors is under the category of intermediate or poor reliability level (Table 4.16). Comparing the Cronbach's alpha values calculated from the exploratory study and pilot-test, it can be concluded that all the factors are highly reliable and internally consistent.

Table 4. 16

Summary of statistics obtained from pilot-test

Summary of Statistics Obtained from Pilot-test (N = 21)					
Factors	Number of Items	Scale Mean	Scale SD	Reliability Cronbach's Alpha (α□)	Type (Hinton *et al,* 2004)
XBRL Behavior Intention (XBI)	3	6.15	O.75	0.86	High Reliability
Perceived Relative Advantage (PRA)	5	6.3	0.2	0.82	High Reliability
Perceived Usefulness (PU)	5	6.4	0.3	0.74	High Reliability
Perceived Ease of Use (PE)	2	5.9	0.51	0.95	Excellent Reliability
Perceived Compatibility (PC)	3	6.7	0.38	0.75	High Reliability
Perceived Complexity(PX)	2	6.2	0.4	0.84	High Reliability
Peer Influence (PI)	2	5.9	0.51	0.98	Excellent Reliability
Superior Influence (SI)	2	6.7	0.34	0.93	Excellent Reliability
Knowledge (KN)	2	6.7	0.43	0.86	High Reliability
Training (TR)	2	6.8	0.45	0.84	High Reliability
English Language (EL)	2	4.6	1.07	0.87	High Reliability
Self-efficacy (SE)	3	6.9	0.14	0.75	Excellent Reliability
Facilitating Conditions (FCR)	6	6.9	0.19	0.72	High Reliability
**Usage (XBRL Tasks)	23	---	---	---	---
*Reliability is not evaluated since factor is formed of only one item					
** Reliability is not evaluated since variables are nominal (categorical) in nature					

There were several comments from the pilot participants regarding the strengths of the questionnaire. Table 4.17 shows that 18 pilot participants (85%) felt that the length of the questionnaire was suitable. 20 participants (95%) found that questions were understandable and 19 participants (90%) suggested that the design of the questionnaire

was suitable. The participants spent between 5-10 minutes to answer the questionnaire. As the results of the pilot test were considered positive, it was declared that the questionnaire does not require any modification and was considered suitable for the final survey.

Table 4. 17

Respondent perception of survey questionnaire

Respondent Perception of Survey questionnaire (N = 21)					
Questions		Frequency		Percent	
		Yes	No	Yes	No
1. Is the length of the questionnaire suitable?		18	3	85	15
2. Are the questions understandable?		20	1	95	5
3. Is the layout of the questionnaire OK?		19	2	90	10
4. How long did it take to complete the questionnaire?		Time require to complete questionnaire			
		5 Min.	8 Min.	10 Min.	
	Frequency	10	6	5	
	Percent	47	28	25	

4.7.3 Final questionnaire

The list of items for the adoption factors that will be used in the final data collection is summarized in Table 4.18. A total of 39 items were included in the final questionnaire under 13 different factors and these represented both the independent and dependent variables.

The XBRL usage part of the questionnaire was composed of 23 items, which are presented below. The participants gave positive responses to all the usage items. Consequently, a total of 23 items was included in the final questionnaire. Apart from the adoption and usage factors, sex demographic variables (e.g., age, gender, education,

country, experience and type of industry) were also included in the questionnaire (Appendix E). The theoretical justifications for including those variables are presented in chapter 2.

1. **XBRL BEHAVIOUR INTENTION (XBI) TO ADOPT XBRL**
   - BI1. I intend to adopt (or continue my current adoption) Internet financial reporting in the future.
   - BI2. I intend to use (or intend to continue use) Internet financial reporting service in the future.
   - BI3: I intend to use XBRL frequently in the future.

2. **PERCEIVED RELATIVE ADVANTAGE (PRA)**
   - RA1: XBRL has an advantage over e-traditional standard because it offers faster access to data.
   - RA2: XBRL has an advantage over e-traditional standard because it provides faster processing of data.
   - RA3: XBRL has an advantage over e-traditional standard because it offers an always-on access to data.
   - RA4: XBRL has an advantage over e-traditional standard because the XBRL code is available royalty-free.
   - RA5: XBRL has an advantage over e-traditional standard because it provides more accurate data.

3. **PERCEIVED USFULNESS (PU)**
   - PU1. XBRL is useful in making my work/job-related tasks easier.
   - PU2. XBRL provides a standard that allows business data to be exchanged among different computer systems and software applications.
   - PU3. XBRL is helpful in improving my work/job-related tasks in the workplace.
   - PU4. The advantage of the XBRL will outweigh the disadvantage.
   - PU5. Overall, using the XBRL will be advantageous.

4. **PERCEIVED EASE OF USE (PE)**
   - PE1. The instructions for using applications in the XBRL are hard to follow.
   - PE2. It is difficult to learn how to use the XBRL.

5. **PERCEIVED COMPATIBILITY (PC)**
   - PC1. Using XBRL is compatible well with the way I work.
   - PC2. The setup of XBRL is compatible with the way I work.
   - PC3. XBRL is not compatible with the software or application that I use.

6. **PERCEIVED COMPLEXITY(PX)**
   - PX1. The XBRL taxonomies are frequently changed.
   - PX2. The diversion between USA accounting standards and those of other countries is one of the outstanding complexities that XBRL has.

7. PEER INFLUENCE

- PI1. My friends think that I should use (or continue the current using) XBRL.
- PI2. My colleagues think that I should use (or continue the current using) XBRL.

8. SUPERIOR INFLUENCE

- SI1: My bosses encourage me to try XBRL.
- SI2: My managers encourage me to try XBRL

9. KNOWLEDGE

- K1. I do not have difficulty in explaining why adopting XBRL is beneficial.
- K2. I know the benefits that XBRL offer and cannot be obtained by HTML & PDF formats.

10. TRAINING

- T1. Training plays an essential role in the adoption of XBRL.
- T2. XBRL training you received has helped you to adopt XBRL.

11. ENGLISH LANGUGE

- L1. Poor English language skills hindering XBRL adoption.
- L2. MY English language skills helped me to use XBRL.

12. SELF-EFFICACY

- SE1. I clearly understand how to use the XBRL.
- SE2.I would feel comfortable using the XBRL tools.
- SE3.Learning to operate the XBRL tools is easy for me.

13. FACILITATING CONDITIONS RESOURCES

- FCR 1. My current tools are adequate to enable the use of XBRL.
- FCR 2. There is no problem of XBRL availability in my workplace.
- FCR 3. It is not too costly for me to use XBRL.
- FCR 4. The processing data by the XBRL will be not too expensive.
- FCR 5. It is not too costly to purchase new XBRL software or to upgrade my old software.
- FCR 6. I can afford to use XBRL if I want to.

List of IFR-based Web services and local applications

Category/IFR services

1. **Exchanging**
   - To exchange business information
   - To exchange of information between government departments
   - To exchange of information between other institutions
   - To exchange financial statements
   - To distribute the data between various dispersed systems
2. **Facilitating**
   - To facilitate continues reporting
   - To facilitate data transfer between different systems

3. **Generating**
   - To generate information for tax filings
   - To generate internal financial reporting
   - To generate external financial reporting
   - To generate information for financial authorities
   - To generate information for central banks
   - To generate information for governments
4. **Filling**
   - To fill of loan reports and applications
   - To fill credit risk assessments
5. **Preparing**
   - To prepare financial reports in multiple languages
6. **Automating**
   - To automate the processes of data collection
7. **Information seeking**
   - To look for data on Internet
8. **Converting**
   - To convert data among different forms (GAAP, IFRS)
9. **Archiving**
   - To archive the financial data
10. **Data quality**
    - To improve data quality
11. **Internal compliance**
    - To internal compliance processes
12. **Risk management**
    - To reduce risk management

4.8 SUMMARY AND CONCLUSIONS

This chapter discussed the establishment process for a questionnaire that was used to investigate XBRL adoption and usage in the individual consumer context. The establishment process was achieved in four phases: the exploratory study, content validity, pre-test and pilot-test. Details of each phase are described as follows. The exploratory survey phase consisted surveying the known existing questionnaires, selecting suitable items, creating required new items and then determining whether the selected items were suitable sufficient to measure the adopters and nonadopters

perceptions. The validity of the content of this phase is to create new items for each factor and then the validation of their representativeness using a questionnaire as quantitative approach. The questionnaire testing phase was divided into two phases, which contained the pre-test and pilot test. The main aim of the pre-test was to obtain comments on the questionnaire from the participants, and to improve the wording of items. The main aim of the pilot test was to confirm the reliability of items. The outcomes resulted from the pilot test questionnaire confirm a suitable level of reliability for all the factors. The final outcome of the four-phase questionnaire development process that peaked from the pilot test is 13-item questionnaire after adding three new items suggested them of participants, consisting of 36 scales, all with a high level of reliability. The final questionnaire will be used to investigate the behavioral intentions of the consumers when adopting XBRL and also its usage.

CHAPTER 5

EMPIRICAL FINDINGS: ADOPTION AND USAGE OF XBRL

5.1 INTRODUCTION

This chapter presents the research findings obtained from an online survey that was conducted to examine the adoption and usage of XBRL amongst financial data consumers. The chapter is structured as follows. Section 5.2 presents a response rate of the online survey. This is followed by section 5.3 which describes the reliability test of survey instrument. Thereafter section 5.4 discusses demographic profiles of the survey respondents. This is followed by a description of the findings relating to the adoption of XBRL. The findings relating to the adoption and usage of XBRL are then summarized in sections 5.6 and 5.7 respectively. Finally, the summary and conclusions of the chapter are provided in section 5.8.

5.2 RESPONSE RATE

Using the self-selection sampling technique, this research obtained a self-selection sample of 166 individuals started the questionnaire, however only 68 completed this questionnaire. Therefore, only the number of respondents from those 68 consumers was used for calculating the response rate.

The invitation was sent to the potential consumers of the Internet financial reports (HTML, PDF and XBRL). Only 68 usable questionnaires were returned within

the required time period, resulting in a 40.9% response rate. Response rate (R = 68 / 166 = 40.9%) is calculated according to Equation in section 3.7.2.

The usable 68 responses received were fewer than would have been ideal, but the researcher decided to continue with the research and analysis of results for several reasons. It has been decided to extend the end period of the questionnaire in order to increase of response rate. However, without existence big sample frame, it was therefore doubtful whether a higher response rate could have been achieved by any other cost effective means. The rate in terms of percentage coverage (40.9%) was a sufficient basis for preliminary conclusions. Since XBRL is relatively new technology in terms of widespread use, this might lead to a low level of knowledge. Because of this, it was anticipated at the start of the study that a non-response bias might exist with respect to potential respondents who did not know of XBRL and who would therefore not be interested in participating in the survey.

This proposition was conceivably borne out by the fact that a considerable number of people who started the online questionnaire did not read it. It is worth noting that the response rate of the potential adopters completing the online survey was 40.9%. Earlier research of this type used by Pinsker also had an extremely low response rate, with only 17 correct responses in the sample 734 (Pinsker, 2003). Nel and Steenkamp (2008) continued in their analysis of results despite of low rate in terms of percentage coverage (2.2%). Likewise, Deshmukh et al. (2006) obtained 41 responders out of 139 surveys sent (a 30% response rate). According to previous research, the low response

rate may be attributed to the fear associated with getting a virus from the file, and some of the potential respondents may not want to deal with the multiple steps involved in the completion of the survey (Dommeyer & Moriarty, 2000; Hanna et al., 2005).

5.3 RELIABILITY TEST

Table 5.1 illustrates the Cronbach's coefficient alpha values that were conducted to estimate the internal consistency of the measures. They varied between 0.98 for the knowledge factor and 0.73 for perceived usefulness factor. The Cronbach's coefficient alpha values for remaining factors are listed in the Table 5.1.

Table 5. 1

Reliability of measurements

Factors	N	Number of Items	Cronbach's Alpha (α)	Type
XBRL Behaviour Intention (XBI)	68	3	0.74	High Reliability
Perceived Usefulness (PU)	68	5	0.78	High Reliability
Perceived Ease Of Use (PE)	68	2	0.75	High Reliability
Perceived Relative Advantage (PRA)	68	6	0.73	High Reliability
Perceived Compatibility (PC)	68	3	0.80	High Reliability
Perceived Complexity (PX)	68	2	0.77	High Reliability
Peer Influence (PI)	68	2	0.80	High Reliability
Superior Influence (SI)	68	2	0.87	High Reliability
Training (TR)	68	2	0.86	High Reliability
English Language (EL)	68	2	0.83	High Reliability
Knowledge (KN)	68	2	0.98	Excellent Reliability
Self-Efficacy (SE)	68	3	0.78	High Reliability
Facilitating Conditions Resources (FCR)	68	5	0.96	Excellent Reliability
N = Sample Size				

The aforementioned values indicate that out of 13 factors, two have excellent reliability and the remaining 11 possess high reliability. None of the factors showed a moderate or low reliability (Table 5.1).

The high Cronbach's α (alpha) values for all factors implies that they are internally consistent. That means all items of each factor were measuring the same content universe (i.e. factor).

In this research factor analysis was not undertaken since the sample size was relatively small (68) as this small sample size may negatively affect the outcome of the factor analysis procedure. Factor analysis are conducted on small sample sizes (less than 300) can produce mixed results (Gorsuch, 1997). Others researchers have also suggested guidelines for the minimum sample size needed to conduct factor analysis (Guadagnoli & Velicer, 1988). They have suggested a minimum sample size of 100 to 200 observations (Guadagnoli & Velicer, 1988). Small sample sizes may cause the result of factor analysis to be unstable whereby the addition of more data may cause the variables to switch from one factor to another (Guadagnoli & Velicer 1988). The sample size of 68 lies below the suggested minimum sample size which indicates that factor analysis was not possible in this research.

5.4 PROFILE OF RESPONDENTS

Tables 5.2 and 5.3 summarize the demographic and IFR use profile of the survey respondents. From the 68 responses, 27.9% were in the 25-34 age groups, which formed the largest response category, while 45-54 age groups were the next largest (23.5%). In terms of gender, there were more male (72.1%) than female (27.9%) respondents participated in the online survey. All respondents possessed high education qualifications: 63.2% have degree, 16.2% have PhD, and 11.8 % have master degree. 8.8

% have diploma. Responses for IFR experience varied between 27.9 % for above 20 years category and 11.8 % for 10-15 years and 1 year categories (Table 5.2).

Table 5. 2

Demographic information of the survey respondents

	Freq.	%		Freq.	%
Age			**Country**		
17-24	3	4.4	Japan	2	2.9
25-34	19	27.9	Netherlands	2	3
35-44	15	22.1	USA	14	20.6
45-54	16	23.5	India	10	14.7
55-64	15	22.1	UK	1	1.5
65-74	0	0	France	6	8.8
above 75	0	0	Germany	1	1.5
Total	68	100	Spain	3	4.4
Experience			China	4	5.9
1 Year	8	11.8	Malaysia	4	5.9
2-5 Years	14	20.6	UAE	4	5.9
5-10 Years	9	13.2	Italy	3	4.4
10-15 Years	8	11.8	South Africa	4	5.9
15-20 Years	10	14.7	Singapore	4	5.9
Above 20	19	27.9	Canada	4	5.9
Total	68	100	Australia	2	2.9
Education			**Type of Industry**		
Diploma	6	8.8	Information	15	22.1
Degree	43	63.2	Finance and Insurance	16	23.5
Master (MA, Msc)	8	11.8	Professional, Scientific, and Technical	3	4.4
PH.D	11	16.2	Educational Services	6	8.8
Total	68	100	Health Care and Social Assistance	5	7.4
Gender			Accommodation and Food Services	4	5.9
Male	49	72.1	Other Services (except Public)	15	22.1
Female	19	27.9	Public Administration	4	5.9
Total	68	100	Total	68	100

The result for type of industry varied between 4.4 % for the professional, scientific, and technical services and 23.5 % for the finance and insurance. The responses come from 16 different countries: Japan 2.9%, Netherlands 3.0%, USA

20.6%, India 14.7%, UK 1.5%, France 8.8%, Germany 1.5%, Spain 4.4%, China 5.9%, Malaysia 5.9%, UAE 5.9%, Italy 4.4%, South Africa 5.9%, Singapore 5.9%, Canada 5.9%, Australia 2.9. From the 68 respondents, only 38 (52.9%) the adopters of XBRL and the remaining 32 (47.1 %) are nonadopters (Table 5.3). As shown in Table 5.3, almost half of the respondents use XBRL (52.9 %). 30.9% of respondents use IFR 3 to 5 days a week, 45.6% have been using IFR for 12 months and 16.2 % use IFR for 2 to 4 hours daily.

Table 5. 3

Adoption information of the survey respondents

Item	Freq.	%		Freq.	%
HTML & PDF Vs. XBRL			**Type of IFR Usage**		
XBRL	36	52.9	Several Times a Day	17	25.0
HTML	32	47.1	Once Every Few Weeks	20	29.4
Total	68	100	1-2 Days a Week	3	4.4
Duration of IFR Usage / Months Basis			3-5 Days a Week	21	30.9
<12 Months	31	45.6	About Once a Day	7	10.3
12-24 Months	18	26.5	Total	68	100
25-26 Months	16	23.5			
>36 Months	3	4.4			
Total	68	100			
Duration of IFR Usage / days basis					
<1/2 Hour	10	14.7	>4-5 Hour	15	22.1
1/2-1 Hour	5	7.4	>8-9 Hour	2	2.9
>1-2 Hour	8	11.8	>9-10 Hour	6	8.8
>2-3 Hour	11	16.2	Total	68	100
>3-4 Hour	11	16.2			

5.5. ADOPTION OF XBRL

5.5.1 Descriptive Statistics

Tables 5.4 and 5.5 summarize the means and standard deviations of the items related to all 13 factors included in the research conceptual framework to measure the perception of XBRL adoption. Respondents indicated their agreement for the XBI as its mean was 4.44 (SD = 0.65) (Table 5.5). The respondents gave high score to all attitudinal factors where item PE1 scored the maximum (M = 5.15, SD = 1.39) and item

Table 5. 4

Descriptive statistics

Items	N	M	SD	Items	N	M	SD
XBI1	68	4.35	.74	PI1	68	4.22	1.80
XBI2	68	4.45	.63	PI2	68	4.29	1.75
XBI3	68	4.57	.91	TR1	68	4.06	1.88
PU1	68	4.44	1.56	TR2	68	4.25	1.80
PU2	68	4.47	1.55	SI1	68	4.13	1.84
PU3	68	4.54	1.64	SI2	68	4.21	1.82
PU4	68	4.51	1.69	EL1	68	4.28	1.38
PU5	68	4.40	1.64	EL2	68	4.63	1.57
PE1	68	5.15	1.39	KN1	68	5.75	1.70
PE2	68	5.01	1.38	KN2	68	5.75	1.67
PRA1	68	4.35	1.65	SE1	68	4.01	2.05
PRA2	68	4.60	1.68	SE2	68	4.59	2.10
PRA3	68	4.24	1.68	SE3	68	4.41	1.98
PRA4	68	4.19	1.78	FCR1	68	3.97	2.04
PRA5	68	4.51	1.83	FCR2	68	4.15	1.92
PC1	68	4.06	1.61	FCR3	68	4.25	1.93
PC2	68	4.13	1.65	FCR4	68	3.88	1.94
PC3	68	4.25	1.55	FCR5	68	3.84	1.83
PX1	68	4.46	1.29	FCR6	68	4.00	2.07
PX2	68	4.59	1.60				
N: Total number of responses. M: Mean, SD: Standard Deviation							

PC1 scored the minimum (M = 4.06, SD = 1.61). In average, perceived ease of use items scored the maximum agreement whereas perceived compatibility items scored the minimum agreement please refer to Table 5.5 for details. Amongst the normative factors, peer influence rated above average (M = 4.26, SD = 1.62) and was agreed more strongly than the superior influence (M = 4.15, SD = 1.73). Amongst the control factors, knowledge (M = 5.75, SD = 1.67) was rated stronger than other control factors.

The descriptive statistics are the cumulative scores obtained from both XBRL and HTML & PDF consumers, and it is expected that the mean test score may differ for the two groups. Hence, the findings that explain the cross sectional view are summarized in the next subsection, which shows XBRL consumers' perception of having XBRL significantly higher than its HTML & PDF counterpart.

5.5. 1.1 The Difference between XBRL Adopters and Non-adopters: t-Test

Table 5.6 shows the means and standard deviations of the thirteen aggregate measures for both HTML & PDF and XBRL consumers. Table 5.6 also summarizes the results of the t-test, which tested the differences between the HTML & PDF and XBRL consumers on the investigated factors. The findings revealed that nonadopters and adopters of XBRL were significantly different on the mean test score for the thirteen factors. Although both groups (i.e. nonadopters and adopters) viewed the adoption of XBRL positively, XBRL adopters were more significant on the ten factors than nonadopters.

Table 5. 5

Summary of descriptive statistics

Factors	M	M	SD
XBRL Behaviour Intention (XBI)	68	4.44	0.65
Perceived Usefulness (PU)	68	4.47	1.18
Perceived Ease Of Use (PE)	68	5.08	1.24
Perceived Relative Advantage (PRA)	68	4.38	1.20
Perceived Compatibility (PC)	68	4.18	1.35
Perceived Complexity (PX)	68	4.51	1.33
Peer Influence (PI)	68	4.26	1.62
Superior Influence (SI)	68	4.15	1.73
Training (TR)	68	4.17	1.73
English Language (EL)	68	4.43	1.37
Knowledge (KN)	68	5.75	1.67
Self-Efficacy (SE)	68	4.34	1.71
Facilitating Conditions Resources (FCR)	68	4.01	1.80
N: Total number of responses. SD: Standard Deviation			

Table 5. 6

T-tests to examine equality of group means

Factor	Adopter			Non adopter						*P* (2-tailed)
	N	M	SD	N	M	SD	M.D	t	df	
XBRL Behaviour Intention (XBI)	36	4.72	0.66	32	4.13	0.49	0.60	55.8	67.0	0.00
Perceived Usefulness (PU)	36	4.67	1.21	32	4.26	1.13	0.41	31.1	67.0	0.00
Perceived Ease Of Use (PE)	36	5.09	1.25	32	5.07	1.24	0.02	33.8	67.0	0.00
Perceived Relative Advantage (PRA)	36	5.11	1.00	32	3.56	0.82	1.54	30.1	67.0	0.00
Perceived Compatibility	36	5.08	0.97	32	3.16	0.92	1.93	25.5	67.0	0.00
Perceived Complexity (PX)	36	4.75	1.50	32	4.23	1.07	0.52	27.9	67.0	0.00
Peer Influence (PI)	36	5.08	1.47	32	3.33	1.25	1.76	21.6	67.0	0.00
Superior Influence (SI)	36	4.42	1.86	32	3.89	1.55	0.53	19.8	67.0	0.00
Training (TR)	36	4.68	1.74	32	3.56	1.53	1.12	19.8	67.0	0.00
English Language (EL)	36	4.32	1.40	32	4.56	1.33	-0.24	26.7	67.0	0.00
Knowledge (KN)	36	5.33	1.89	32	6.22	1.26	-0.89	28.3	67.0	0.00
Self-Efficacy (SE)	36	4.43	1.61	32	4.24	1.83	0.19	20.9	67.0	0.00
Facilitating Conditions Resources (FCR)	36	3.94	1.57	32	4.09	2.05	-0.15	18.3	67.0	0.00

5.5.1.2 Discriminate Analysis

In order to determine the effectiveness of different factors for discriminating adopters from nonadopters, a discriminate analysis was conducted whereby XBRL behavioral intention and XBRL adoption were the dependant variables and other variables such as usefulness, ease of use, relative advantage, compatibility, complexity, peer influence, superior influence, training, English language, facilitating conditions resources, knowledge and self-efficacy were the predictor variables.

Table 5. 7

Tests of equality of group means

	Wilks' Lambda	F	df1	df2	Sig.
Perceived Usefulness (PU)					
Perceived Ease Of Use (PE)	1.000	0.006	1	66	0.936
Perceived Relative Advantage (PRA)	0.579	47.957	1	66	0.000
Perceived Compatibility (PC)	0.485	70.151	1	66	0.000
Perceived Complexity (PX)	0.962	2.602	1	66	0.111
Peer Influence (PI)	0.703	27.880	1	66	0.000
Superior Influence (SI)	0.977	1.582	1	66	0.213
Training (TR)	0.894	7.832	1	66	0.007
English Language (EL)	0.992	0.533	1	66	0.468
Knowledge (KN)	0.929	5.039	1	66	0.028
Self-Efficacy (SE)	0.997	0.199	1	66	0.657
Facilitating Conditions Resources (FCR)	0.998	0.115	1	66	0.736
XBI	0.790	17.551	1	66	0.000

A total of 68 cases were analyzed. The findings are summarized in Tables 5.7 and 5.8. The univariate ANOVAs revealed that nonadopters and adopters were significantly different on six predictors (Table 5.7). A single determinant function was conducted and the value of this analysis showed that nonadopters and adopters were

significantly different ($\chi 2$ (13, N = 68) = 73.50, $p < 0.001$) (Table 5.9). The correlations between the independent variables and the discriminate function indicated that XBI was the best predictor of the future adoption of XBRL, whilst perceived ease of use was found to be least useful (Table 5.11).

Overall, the discriminate function successfully predicted the outcome for 95.6% of the cases, with accurate predictions being made to the adopters was 94.4 %, where as nonadopters was 96.9 % (Table 5.10).

An Eigenvalue indicates the proportion of variance explained. The canonical relation is an association between the discriminate values and the levels of the predicted variable. A high association suggests a function that discriminates well. The present correlation of 0.842 is considered high (1.00 is perfect) (Table 5.8).

Table 5. 8

Eigenvalue

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation
1	2.440	100	100	0.842

Table 5. 9

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	0.291	73.505	13	0.000

Table 5. 10

Classification results

		Adoption	Predicted Group Membership		Total
			Yes	No	
Original	Count	Yes	34	2	36
		No	1	31	32
	%	Yes	94.4	5.6	100
		No	3.1	96.9	100
a 95.6% of original grouped cases correctly classified.					

Table 5. 11

Structure matrixes

Factors	Function
XBI	0.660
Perceived Relative Advantage (PRA)	0.546
Peer Influence (PI)	0.416
Perceived Compatibility (PC)	0.330
Training (TR)	0.221
Knowledge (KN)	-0.177
Perceived Complexity (PX)	0.127
Perceived Usefulness (PU)	0.113
Superior Influence (SI)	0.099
English Language (EL)	-0.058
Self-Efficacy (SE)	0.035
Facilitating Conditions Resources (FCR)	-0.027
Perceived Ease Of Use (PE)	-0.006

5.5.2 Demographic Differences

5.5.2.1 Age and Adoption of XBRL

It can be seen that there was clear and significant age difference between XBRL adopters and nonadopters (Tables 5.12 and 5.13). Table 5.12 represents Pearson's chi-

square test that confirmed that there was a significant difference between the ages of the adopters and nonadopters ($\chi 2$ (6, N = 68) = 20.41, $p < 0.001$) (Table 5.12). Thus, hypothesis H5.1 was accepted.

Table 5. 12

Age and XBRL adoption Chi-square test

	Value	df	p (2-sided)
Pearson Chi-Square	20.415(a)	6	0.000
a 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.41.			

Table 5. 13

Age as a determinant of XBRL adopters and nonadopters

Age Categories	Non-adopters		XBRL adopters	
	Frequency	Percent	Frequency	Percent
17-24	1	3.1	2	5.6
25-34	5	15.6	14	38.9
35-44	13	40.6	2	5.6
45-54	3	9.4	13	36.1
55-64	10	31.3	5	13.9
65-74	0.0	0.0	0.0	0.0
above 75	0.0	0.0	0.0	0.0
Total	32	100	36	100

5.5.2.2 Gender and Adoption of XBRL

Table 5.14 illustrates that amongst the nonadopters, females (12.5%) proportion was less than males (87.5%). However, within the XBRL adopters, the gap between females (41.7%) and males (58.3%) was not big. Thus, hypothesis H5.2 was accepted since there were significant differences between the genders of XBRL adopters and nonadopters (1, N = 68) = 7.158, p = 0.007) (Table 5.15).

Table 5. 14

Gender as a determinant of XBRL adopters and nonadopters

Gender	Non-adopters		XBRL adopters	
	Frequency	Percent	Frequency	Percent
Male	28	87.5	21	58.3
Female	4	12.5	15	41.7
Total	32	100	36	100

Table 5. 15

Gender and XBRL adoption (Chi-square -test)

	Value	df	P (2-sided)
Pearson Chi-Square	7.158(b)	1	.007
b cells (.0%) have expected count less than 5. The minimum expected count is 8.			

5.5.2.3 Education and Adoption of XBRL

Table 5.16 shows the educational background of the XBRL adopters and nonadopters. The findings indicate that the majority of the adopters have first degree (72.2%), followed by 16.6% who have PhD. 8.3% of XBRL adopters have master degree.

Table 5. 16

Education as a Determinant of XBRL adopters and nonadopters

Education level	Non-adopters		XBRL adopters	
	Frequency	Percent	Frequency	Percent
Diploma	5	15.6	1	2.8
Degree	17	53.1	26	72.2
Postgraduate (MA,MSC)	5	15.6	3	8.3
Postgraduate (PHD)	5	15.6	6	16.7
Total	32	100	36	100

The Pearson's chi-square test validated that there was no significant difference between the adopters and nonadopters of XBRL in terms of educational background ($\chi 2$ (3, N = 68 = 4.92, p = 0.17) (Table 5.17). Thus, hypothesis H5.3 was rejected since there are no significant difference between XBRL adopters and nonadopters (Table 5.1).

Table 5. 17

Education and XBRL adoption (Chi-square Test)

	Value	df	p (2-sided)
Pearson Chi-Square	4.923(a)	3	.178
a 4 cells (50.0%) have expected count less than 5. The minimum expected count is 2.82.			

5.5.2.4 Experience and Adoption of XBRL

The findings illustrated in Table 5.18 indicate that the number of adopters increases with the increase of experience. The Pearson's chi-square test confirmed that there was a significant difference between the experience of the adopters and

Table 5. 18

Experiences as a Determinant of XBRL Adopters and Non-adopters

Experience Categories	Non-adopters		XBRL adopters	
	Frequency	Percent	Frequency	Percent
1 year	4	12.5	4	11.1
2-5 years	4	12.5	10	27.8
5-10 years	4	12.5	5	13.9
10-15 years	8	25.0	0	0
15-20 years	8	25.0	2	5.6
above 20	4	12.5	15	41.7
Total	32	100	36	100

nonadopters of XBRL ($\chi 2$ (5, N = 68) = 20.487, p < 0.001) (Table 5.19). Thus, hypothesis H5.4 was accepted since there were significant difference between XBRL adopters and nonadopters (Table 5.19).

Table 5. 19

Experience and XBRL adoption (Chi-square Test)

	Value	df	p (2-sided)
Pearson Chi-Square	20.487(a)	5	.001
[a] 7 cells (58.3%) have expected count less than 5. The minimum expected count is 3.76.			

5.5.2.5 Industry and Adoption of XBRL

Table 5.20 presents type of industry of the XBRL adopters and nonadopters. The findings show that majority of the adopters are employees in the information sector (30.6%). This is followed by other services (except public administration) (19.4%) educational services (16.7%), health care and social assistance technical services (13.9), public administration (11.1%) and professional, scientific, and technical services (8.3%).

Table 5. 20

Industry of XBRL Adopters and Non-adopters

Industry Categories	Non-adopters		XBRL adopters	
	Frequency	Percent	Frequency	Percent
Information	4	12.5	11	30.6
Professional, Scientific, and Technical Services	0.0	0.0	3	8.3
Educational Services	0.0	0.0	6	16.7
Health Care and Social Assistance	0.0	0.0	5	13.9
Finance and Insurance	16	50.0	0.0	0.0
Accommodation and Food Services	4	12.5	0.0	0.0
Public Administration	0.0	0.0	4	11.1
Other Services (except Public Administration)	8	25.0	7	19.4
Total	32	100	36	100

Table 5. 21

Industry and XBRL adoption (Chi-square Test)

	Value	df	p (2-sided)
Pearson Chi-Square	41.241 (a)	7	0.000
10 cells (62.5%) have expected count less than 5. The minimum expected count is 1.41.			

5.5.2.6 Country and Adoption of XBRL

Table 5.22 depicts the country of the XBRL adopters and nonadopters. The findings indicate that the majority of the adopters are from the USA and India, 16.7% for each country and followed the France (8.3%).

Table 5. 22

Country as a determinant of XBRL adopters and nonadopters

Country Categories	Non-adopters		XBRL adopters	
	Frequency	Percent	Frequency	Percent
Japan	0	0.00	2	5.6
Netherlands	2	6.26	1	2.8
USA	8	25.0	6	16.7
India	4	12.5	6	16.7
UK	0	0.00	1	2.8
France	3	9.38	3	8.3
Germany	0	0.00	1	2.8
Spain	2	6.25	1	2.8
China	2	6.25	2	5.6
Malaysia	2	6.25	2	5.6
UAE	2	6.25	2	5.6
Italy	1	3.10	2	5.6
South Africa	2	6.25	2	5.6
Singapore	2	6.25	2	5.6
Kanda	2	6.25	2	5.6
Australia	1	3.10	1	2.8
Total	32	100	36	100

Responses suggested that respondents were distributed evenly among Japan, UK, China, Malaysia, UAE, Italy, South Africa, Singapore, Canada and Australia. The Pearson's chi-square test validated that there was no significant difference between country and XBRL adopters and nonadopters ($\chi 2$ (16, N = 68) = 7.14, p < 0.97) (Table 5.23). Therefore, hypothesis H5.6 was rejected since there was no significant difference between XBRL adopters and nonadopters from the country perspective (Table 5.23).

Table 5. 23

Country and XBRL adoption (Chi-square Test)

	Value	df	p (2-sided)
Pearson Chi-Square	7.142(a)	16	.970
a 31 cells (91.2%) have expected count less than 5. The minimum expected count is 0. 47.			

5.6 REGRESSION ANALYSIS

5.6.1 Regression Analysis I

Regression analysis was conducted to examine the relationship between XBRL behavioral intention (XBI) as the dependent variable and perceived usefulness, perceived ease of use, relative advantage, compatibility, complexity, peer influence, superior influences, training, English language, knowledge and self-efficacy, facilitating conditions resource, as the predictor variables. A total of 68 cases were analyzed and based on the analysis a significant model was obtained (F (12, 68) = 24.74, p < 0.001) (Table 5.25) with the adjusted R square of 0.81 (Table 5.24). The significant variables are summarized in Table 5.26. As a result, training (beta = 0.088, p = 0.224) was found not to be a significant predictor to the model.

Table 5. 24

Regression analysis I: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.919(a)	.844	.810	.28587
a Predictors: (Constant), FCR, KN, TR, PX, EL, SE, PRA, PE, SI, PU, PI, PC b Dependent Variable: XBI				

Table 5. 25

Regression analysis I: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.270	12	2.022	24.748	0.000(a)
	Residual	4.495	55	.082		
	Total	28.765	67			
a Predictors: FCR, KN, TR, PX, EL, SE, PRA, PE, SI, PU, PI, PC b Dependent Variable: XBI						

Table 5. 26

Regression analysis I: Coefficients

Model 1	US		SC	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.607	.393		-1.545	.128		
Perceived Usefulness (PU)	0.089	0.041	0.161	2.154	0.036	0.506	1.976
Perceived Ease Of Use (PE)	0.136	0.033	0.257	4.105	0.000	0.725	1.380
Perceived Relative Advantage (PRA)	0.116	0.053	0.212	2.195	0.032	0.306	3.273
Perceived Compatibility (PC)	0.110	0.042	0.226	2.626	0.011	0.385	2.600
Perceived Complexity (PX)	0.101	0.030	0.204	3.399	0.001	0.786	1.272
Peer Influence (PI)	0.082	0.033	0.203	2.496	0.016	0.429	2.328
Superior Influence (SI)	0.084	0.024	0.222	3.468	0.001	0.691	1.448
Training (TR)	0.034	0.027	0.088	1.231	0.224	0.552	1.812
English Language (EL)	0.127	0.028	0.266	4.499	0.000	0.816	1.226
Knowledge (KN)	0.096	0.026	0.245	3.695	0.001	0.648	1.543
Self-Efficacy (SE)	0.069	0.025	0.181	2.739	0.008	0.651	1.537
Facilitating Conditions Resources (FCR)	0.070	0.022	0.192	3.168	0.003	0.772	1.295

5.6.2 Regression Analysis II: After Removing Training Factor

The p-value of the training factor was not close to the significance level, thus hypothesis H3.1 was rejected. Then, the researcher decided to conduct another round of regression analysis by using other settings as above but eliminating training factor from the independent variable list.

The regression analysis was conducted to further examine the relationship between XBI as the dependent variable and perceived usefulness, perceived ease of use, relative advantage, compatibility, complexity, peer influence, superior influences, English language, knowledge, self-efficacy, facilitating conditions resource as the predictor variables. This time, the total number of independent variables incorporated in the analysis was eleven after excluding training. A total of 68 cases were analyzed from the analysis a significant model emerged ($F(11, 68) = 26.61$, $p < 0.001$) (Table 5.28). The adjusted R square was 0.80 (Table 5.27). All eleven factors included in the second round of analysis were found to be significant (Table 5.29). These include perceived usefulness (beta = 0. 171, $p < 0.026$), perceived ease of use (beta = 0.241, $p < 0.001$), perceived relative advantage (beta = 0.196, $p < 0.046$), perceived compatibility (beta = 0.251, $p < 0.004$), perceived complexity (beta = 0.207, $p < 0.001$), peer influence (beta = 0.241, $p < 0.002$), superior influence (beta = 0. 229, $p < 0.001$), English language (beta = 0.271, $p < 0.001$), self-efficacy (beta = 0.204, $p < 0.002$), and facilitating conditions resources (beta = 0.194, $p < 0.002$). Thus, hypothesis H1.1, H1.2, H1.3, H1.4, H1.5, H2.1, H2.2, H3.2, H3.3, H3.4, and H3.5 were accepted. The beta value shows that

English language and perceived compatibility have the largest impact in explaining the variations of XBI as they belong to all three categories (i.e., attitudinal, normative and control constructs).

When conducting a regression analysis, an important cause of concern is the existence of multicollinearity regression problem amongst the independent variables (Dwivedi, 2007). Multicollinearity is a problem in regression test and it appears when the predictor variables are highly associated with one another. In other word, it appears when the predictor variables incorporated in the analysis are not actually independent (Myers, 1990). The presence of multicollinearity regression problem may produce unfavorable effects to the predictive ability of the regression model specially in those cases (Myers, 1990) and causes problems when attempting to draw conclusions regarding relative contribution of each predictor variable to the achievement of a model (Brace et al., 2003). Therefore, it is essential to examine whether the multicollinearity regression problem existed in the model of this research (Dwivedi, 2007).

SPSS version 12 offers two options to examine the tolerance and variance inflation factor values for each variable to trace if the data suffers the problem of multicollinearity regression problem (Myers, 1990; Brace et al., 2003). According to Myers (1990), if the variance inflation factor value for any factors exceeds 10, then there is a strong possibility of multicollinearity regression problem amongst the factors. If detected, in order to overcome this problem, a variable with a variance inflation factor

value more than 10 needs to be eliminated (Myers, 1990). An alternative to this approach is an assessment of the tolerance value (Dwivedi, 2007). The tolerance values are another measure of the association between the independent variables and can vary between 0 and 1. As a rule of thumb, if the tolerance is less than 0.20, a problem with multicollinearity regression is suggested. The closer to zero the tolerance value is for a variable, the stronger the association between this and the other independent variables (Dwivedi, 2007). While SPSS will not include variables in a model if it has a tolerance of less than 0.0001, it has been suggested a tolerance level of 0. 01 is preferable (Brace et al., 2003).

Table 5. 27

Regression analysis II: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.916(a)	0.839	0.808	0.28718
a Predictors: (Constant), FCR, KN, PI, PX, SE, EL, PE, SI, PU, PC, PRA; b Dependent Variable: XBI				

Table 5. 28

Regression analysis II: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.146	11	2.195	26.615	0.000(a)
	Residual	4.619	56	0.082		
	Total	28.765	67			
a Predictors: (Constant), FCR, KN, PI, PX, SE, EL, PE, SI, PU, PC, PRA b Dependent Variable: XBI						

In order to discover multicollinearity regression problem, both the variance inflation factor and tolerance were performed and their results are presented in Table

5.29. Values estimated for both variance inflation factor and tolerance reveals that there is no multicollinearity regression problem in this research, which gave the researcher confidence to test hypothesis.

Table 5. 29

Regression Analysis II: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.576	0.394		-1.463	0.149		
	PU	0.095	0.041	0.171	2.283	0.026	0.512	1.955
	PE	0.128	0.033	0.241	3.918	0.000	0.757	1.321
	PRA	0.107	0.053	0.196	2.040	0.046	0.311	3.215
	PC	0.122	0.041	0.251	2.997	0.004	0.408	2.450
	PX	0.102	0.030	0.207	3.430	0.001	0.787	1.270
	PI	0.098	0.031	0.241	3.202	0.002	0.504	1.984
	SI	0.087	0.024	0.229	3.568	0.001	0.696	1.437
	EL	0.130	0.028	0.271	4.590	0.000	0.821	1.218
	KN	0.092	0.026	0.235	3.558	0.001	0.657	1.522
	SE	0.078	0.024	0.204	3.209	0.002	0.708	1.412
	FCR	0.070	0.022	0.194	3.178	0.002	0.772	1.295
a Dependent Variable: XBI								

Table 5.29 shows that the variance inflation factor (VIF) for this model varied between 1.218 for English language factors and 3.215 for relative advantage factors, which are much lower than the recommended level (Brace et al., 2003; Myers., 1990). Table 5.29 also illustrates that all predictors have a moderate tolerance of more than 0.311. Therefore, both the VIF and tolerance values indicate that the independent variables (i.e. perceived usefulness, perceived ease of use, perceived relative advantage, perceived compatibility, perceived complexity, peer influence, superior influence, knowledge, English language, self-efficacy and facilitating conditions resources)

included in this analysis did not indicate multicollinearity regression problem for any potentially related variables.

5.6.3 Regression Analysis III: Overall Control Factors and Behavioral Intentions

A new scale (i.e., aggregated measure) was created for each attitudinal, normative, and control category. The computing average of all the items for each category achieved this. The reason was to perform a regression analysis in which attitudinal, normative and control factors acted as the predictor variables and XBI as the dependent variable. A total of 68 responses were examined and from the analysis, a significant model appeared ($F(3, 68) = 100.8$, $p < 0.001$) (Table 5.31). The adjusted R square was 0.81 (Table 5.30) and all the three variables were noted to be statistically significant predictors for XBRL adoption (Table 5.32). These are the attitudinal (beta = 0.56, $p < 0.001$), subjective norm (beta = 0.36, $p < 0.001$) and control factors (beta = 0.49, $p < 0.001$). Thus, hypothesis H1, H2 and H3 were accepted.

Table 5.32 also highlighted that the VIF for the model varied between 1.001 for overall control factors and 1.16 for overall normative factors, which are much lower the recommended level (Brace et al., 2003; Myers, 1990). The predictors have a moderate tolerance of more than 0.862. Therefore, both the VIF and tolerance values indicate that the independent variables (overall attitudinal, overall normative, overall control) included in the analysis did not indicate multicollinearity regression problem for any potentially related variables.

Table 5. 30

Regression analysis III: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.908(a)	.825	.817	.28017
a Predictors: (Constant), OCF, OAF, ONF b Dependent Variable: XBI				

Table 5. 31

Regression analysis III: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.741	3	7.914	100.814	0.000(a)
	Residual	5.024	64	.078		
	Total	28.765	67			
a Predictors: (Constant), OCF, OAF, ONF b Dependent Variable: XBI						

Table 5. 32

Regression analysis III: Coefficients

Model1		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
(Constant)		-.458	.291		-1.572	.121		
Overall Attitudinal Factors (OAF)		.541	.054	.563	10.01	0.00	.863	1.159
Overall Normative Factors (ONF)		.197	.031	.360	6.396	0.00	.862	1.160
Overall Control Factors (OCF)		.350	.037	.495	9.469	0.00	.999	1.001
a Predictors: (Constant), OCF, OAF, ONF b Dependent Variable: XBI								

5.6.4 Logistic Regression

The dependent variable, which measures the XBRL adoption behavior (XAB), is nominal in nature and the values are yes and no. Yes is coded 1 if the participants use XBRL and 0 if they do not use XBRL. Therefore, it was argued that logistic regression model (Stynes & Peterson, 1984) was the most appropriate one to estimate factors which influence adoption behavior and the same is true for XBRL adoption behavior.

A logistic regression test was conducted with knowledge and XBI as the independent variables and XAB as the dependent variable. In the other words, XBI and knowledge influence XBRL adoption. A total of 68 cases were analyzed and the whole model was significantly reliable ($\chi 2$ (2, N = 68) = 33.9, $p < 0.001$) (Table 5.33). This model accounted for between 39.3% and 52.5 % of the variance in XBRL adoption (Table 5.34), and 80.6% of the XBRL nonadopters were successfully predicted. On other hand, 78.1% of the predictions for the adopters were accurate (Table 5.35). Overall, 79.4 % of the predictions were accurate (Table 5.35).

Table 5.36 presents the variables in the equation (coefficients of correlation) for each predictor variable, Wald statistics, associated degrees of freedom and probability value. The results show that both XBI and knowledge factors reliably predicted XAB.

Table 5. 33

Logistic regression: Omnibus tests of model coefficients

		Chi-square	df	Sig.
Step 1	Step	33.970	2	0.000
	Block	33.970	2	0.000
	Model	33.970	2	0.000

Table 5. 34

Logistic regression: Model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	60.063(a)	.393	.525
a Estimation terminated at iteration number 5 because parameter estimates changed by less than 0. 001.			

Table 5. 35

Logistic regression: Classification Table

Observed			Predicted		
			Adoption (XAB)		Percentage Correct
			Yes	No	
Step 1	Adoption (XAB)	Yes	25	7	78.1
		No	7	29	80.6
	Overall Percentage				79.4

The values of the coefficients of correlation indicate that the increase in each unit of XBI and knowledge factors score is connected to an increase in the odds of XAB by a factor of 17.06 and 0.397 respectively. This suggests that XBI has a larger part in explaining actual adoption than knowledge.

Table 5. 36

Logistic regression: Variables in the equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	XBI	2.837	.660	18.491	1	0.000	17.069
	KN	-.925	.285	10.512	1	0.001	.397
	Constant	-7.030	2.393	8.630	1	0.003	0.001
a Variable(s) entered on step 1: XBI, KN.							

So to recapitulate, test and refine previous hypotheses (H1, H1.1, H12, H1.3, H1.4, H1.5, H2, H2.1, H2.2, H3, H3.1, H3.2, H3.3, H3.4, H3.5, H4.1 and H4.2) in this research enable the researcher to identify factors influencing the XBRL adoption and usage amongst financial data consumers. This in turn enables the researcher to answer the first, second and third research questions: What are the factors that influence the adoption of XBRL amongst financial data consumers? Do XBRL behavioral intentions (XBI) and control factors influence the actual adoption of XBRL? Do demographic factors (i.e., age, gender, experience, education, type of industry, and country) influence the adoption of XBRL?

5.7 USAGE OF XBRL

5.7.1 Frequency of IFR use

The difference between XBRL and HTML & PDF consumers in terms of the frequency of IFR usage are in highlights Table 5.37. The results reveal clear differences and indicate that the majority of XBRL consumers (44.4%) use XBRL several times a day in comparison to 3.1% of the HTML & PDF consumers. Generally, XBRL consumers' online activities, in terms of their frequency of IFR usage, differ from HTML & PDF consumers. XBRL consumers belong to the more frequent categories, whilst HTML & PDF consumers belong to the less frequent categories (Table 5.37).

The chi-square test revealed a significant difference ($\chi 2$ (4, N = 68) = 34.41, $p < 0.001$) between HTML & PDF and XBRL consumers in terms of the frequency of IFR

usage (Table 5.38). Thus, hypothesis H6.1 was accepted since there is significant difference between XBRL adopters and nonadopters (Table 5.38).

Table 5. 37

Frequency of IFR usage

Frequency Of IFR Usage	HTML & PDF		XBRL	
	Frequency	Percent	Frequency	Percent
Several times a day	1	3.1	16	44.4
About once a day	1	3.1	6	16.7
3-5 days a week	20	62.5	1	2.8
1-2 days a week	1	3.1	2	5.6
Once every few weeks	9	28.1	11	30.6
Total	32	100	36	100

Table 5. 38

Type of IFR and frequency of IFR usage

	Value	df	p (2-sided)
Pearson Chi-Square	34.414(a)	4	0.000

5.7.2 Duration of IFR Usage

The difference between XBRL and HTML & PDF consumers in terms of total time spent in the IFR usage on a daily basis are shown in Table 5.39. Similar to the frequency of IFR usage, the obtained results show a clear difference existed between HTML & PDF and XBRL consumers. Generally, XBRL consumers increase as the number of hours decrease. Contrastingly, the numbers of HTML & PDF consumers increase as the hours increase. 15.6 % of HTML & PDF consumers spend from half to an hour, whereas there are no XBRL consumers in this category. In the 2-3 hours

category, XBRL consumers (19.4%) exceeded the HTML & PDF consumers (12.5%), where 34.4% of HTML & PDF consumers spent more than 4.5 hours on the IFR on a daily basis, in comparison to 11.1% of XBRL consumers (Table 5.39).

The chi-square test confirmed a significant difference ($\chi 2$ (7, N = 68) = 31.89, p < 0.001) between the HTML & PDF and XBRL consumers in terms of the total time spent on the IFR usage on a daily basis (Table 5.40). Thus, hypothesis H6.2 was accepted since there is significant difference between XBRL adopters and nonadopters (Table 5.40).

Table 5. 39

Duration of IFR use on a daily basis

Duration of IFR USE	HTML & PDF		XBRL	
	Frequency	Percent	Frequency	Percent
<1/2 hour	000	000	10	27.8
1/2-1 hour	5	15.6	000	000
>1-2 hour	000	000	8	22.2
>2-3 hour	4	12.5	7	19.4
>3-4 hour	8	25.0	3	8.3
>4-5 hour	11	34.4	4	11.1
>8-9 hour	000	000	2	5.6
>9-10 hour	4	12.5	2	5.6
Total	32	100	36	100

Table 5. 40

Type of IFR and duration of IFR use

	Value	df	p (2-sided)
Pearson Chi-Square	31.899	7	0.000

Thus, it can be concluded that adopters spend less time in using IFR than nonadopters and use IFR services more frequently than nonadopters. This enables the researcher to answer the fourth research question: Does the rate (frequency and duration) of IFR usage differ for the XBRL and HTML & PDF consumers?

5.7.3 Variety of IFR Use

The variety of IFR use was computed by counting how many IFR services the XBRL and HTML & PDF consumers use in average. Table 5.41 illustrates that XBRL consumers use more IFR services than HTML & PDF consumers. The results indicate that, in average, the nonadopters of XBRL use 8.4 IFR services, which is significantly lower ($t = 20.049$, $df = 67$, $p < 0.001$) than the 13.6 IFR services used by XBRL adopters. Thus, hypothesis H6.3 was accepted since there is a significant difference between XBRL adopters and nonadopters (Table 5.41).

Table 5. 41

Variety of IFR activities used by XBRL and HTML & PDF consumers

Type of IFR	N	Mean	Std. Deviation	t	df	Sig
XBRL	32	8.4688	4.70404	20.049	67	0.000
HTML & PDF	36	13.6944	2.12226			

5.7.4 Usage of IFR Services by HTML & PDF and XBRL Consumers

A total of 23 IFR services that belong to twelve different categories were included to examine the difference in the usage of the IFR by potential consumers of

HTML & PDF and XBRL (Table 5.42). These twelve categories comprised of exchanging (five FIR services), facilitating continues reporting (two IFR services), generating (six services), filling (two services), preparing financial reports (on service), automating (two services), information seeking (one IFR services), converting (one service), archiving financial data (one services), data quality (one service), internal compliance processes (one services) and risk management services (one service).

For all 23 IFR services, XBRL consumers outnumbered the HTML & PDF consumers. However, the differences between the XBRL and HTML & PDF consumers were only significant for 11 IFR services. The results reveal that the use of two out of five IFR services that were placed within the exchanges category was significantly different between both XBRL and HTML & PDF consumers. These include exchanging commission filings ($\chi 2$ (1, N = 68) = 11.8, $p < 0.001$) and exchanging of information between other institutions ($\chi 2$ (1, N = 68) = 26.6, $p < 0.001$) (Table 5.42).

Within the facilitating category, both facilitating services were found to be significantly different between XBRL and HTML & PDF consumers. These include facilitating continues reporting ($\chi 2$ (1, N = 68) = 13.2, $p < 0.001$) and facilitating data transfer between different systems ($\chi 2$ (1, N = 68) = 20.52, $p < 0.001$) (Table 5.42). Within the generating category, three out of six IFR services were found to be significantly different between the XBRL and HTML & PDF consumers. These included generating external financial reporting ($\chi 2$ (1, N = 68) = 20.14, $p < 0.001$), generating information for financial authorities ($\chi 2$ (1, N = 68) = 21.65, $p < 0.001$) and

generating information for central banks ($\chi 2$ (1, N = 68) = 5.87, p = 0.016) (Table 5.42).

Within the filling category, the use of IFR services for filling credit risk assessments only ($\chi 2$ (1, N = 68) = 22.96, p < 0.001) was found to be significantly different between XBRL and HTML & PDF consumers (Table 5.42). Within the preparing category, preparing of financial reports in multiple languages ($\chi 2$ (1, N = 68) = 0.105, p = 0.74) was found to be not significantly different between XBRL and HTML & PDF consumers. The process of automating data collection ($\chi 2$ (1, N = 68) = 4.13, p = 0.04) was found to be significantly different between XBRL and HTML & PDF consumers.

Within the information seeking category, the use IFR for searching data on the Internet ($\chi 2$ (1, N = 68) = 0.23, p = 0.62) was found to be not significantly different between XBRL and HTML & PDF consumers. For the converting category, the use of IFR services for converting data among different forms (GAAP, IFRS) ($\chi 2$ (1, N = 68) = 20.97, p < 0.001) was found to be significantly different between XBRL and HTML & PDF consumers (Table 5.42). For the archiving category, the use of services for archiving the financial data ($\chi 2$ (1, N = 68) = 1.1, p = 0.293) was found to be not significantly different between XBRL and HTML & PDF consumers (Table 5.42). Similar to that of archiving category, the use of services for data quality ($\chi 2$ (1, N = 68) = 1.26, p = 0.26) was found to be not significantly different between XBRL and HTML & PDF consumers (Table 5.42). Similar to that of data quality category, the use of IFR services for the internal compliance processes ($\chi 2$ (1, N = 68) = 0.65, p = 0.418) was

found to be not significantly different between XBRL and HTML & PDF consumers (Table 5.42). Finally, the activity placed within risk management category was found to be significantly different between XBRL adopters and nonadopters ($\chi 2$ (1, N = 68) = 4.64, p = 0.03) (Table 5.42). So, it can be concluded that there is a clear differences in IFR usage between XBRL adopters and nonadopters. This enables the researcher to answer the fifth research question: Do XBRL consumers use more IFR services than HTML & PDF consumers?

Table 5. 42

Usage of IFR services by XBRL and HTML & PDF consumers

	HTML & PDF		XBRL			$\chi 2$ Test		
Category/IFR services	Freq.	%	Freq.	%	Total %	$\chi 2$Value	df	Sig.
1. **Exchanging**								
To exchange business information	8	25	24	66.7	47.06	11.8	1	**0.001**
To exchange of information between government departments	7	21.9	12	33.3	27.94	0.798	1	0.372
To exchange of information between other institutions	2	6.3	25	69.4	39.71	26.6	1	**0.00**
To exchange financial statements	23	71.9	26	72.2	72.06	0.619	1	0.681
To exchange data between various dispersed systems	17	53.1	24	66.7	60.29	1.29	1	0.255
2. **Facilitating**								
To facilitate continues reporting	20	62.5	35	97.2	80.88	13.2	1	**0.00**
To facilitate data transfer between different systems	4	12.5	24	66.7	41.18	20.52	1	**0.00**
3. **Generating**								
To generate information for tax filings	18	56.3	24	66.7	61.76	0.778	1	0.378

Table 5.42-continue

To generate internal financial reporting	20	62.5	24	66.7	64.71	0.129	1	0.72
To generate external financial reporting	16	50	35	97.2	75	20.14	1	**0.00**
To generate information for financial	17	53.1	36	100	77.94	21.65	1	**0.00**
To generate information for central banks	12	37.5	24	66.7	52.94	5.78	1	**0.016**
To generate information for governments	15	46.9	25	69.4	58.82	2.59	1	0.107
4. Filling								
To fill of loan reports and applications	1	3.1	2	5.6	4.41	0.186	1	0.666
To fill credit risk assessments	12	37.5	34	94.4	67.65	22.96	1	**0.00**
5. **Preparing**								
To prepare financial reports in multiple languages	12	37.5	13	36.1	36.76	0.105	1	0.746
6. **Automating**								
To automate the processes of data collection	3	9.4	11	30.6	20.59	4.13	1	**0.042**
7. **Information Seeking**								
To look for data on Internet	1	3.1	2	5.6	4.41	0.237	1	0.626
8. **Converting**								
To convert data among different forms (GAAP, IFRS)	14	43.8	34	94.4	70.59	20.97	1	**0.00**
9. **Archiving**								
To archive the financial data	7	21.9	12	33.3	27.94	1.1	1	0.293
10. **Data Quality**								
To improve data quality	14	43.8	11	30.6	36.76	1.26	1	0.26
11. **Internal Compliance**								
To internal compliance processes	25	78.1	25	69.4	73.53	0.656	1	0.418
12. **Risk Management**								
To reduce risk management	3	9.4	11	30.6	20.59	4.64	1	**0.031**

5.8 SUMMARY

This chapter summarizes the findings obtained from the data analysis of the survey that was conducted to examine consumer's adoption and usage of XBRL. The findings were summarized in several sections. The first step was to calculate the response rate of the survey. The estimated response rate was 40.9%. This is followed by

the section that discusses the reliability test of this research. The reliability test confirmed that the measures are internally consistent as all factors possessed a Cronbach's alpha above 0.73.

Discriminate statistics were performed by using Wilks' Lambda test. The t-test was utilized to examine the difference between XBRL adopters and nonadopters. The results from the t-test suggested that significant differences occurred between the responses obtained from the HTML & PDF and XBRL consumers with regards to attitudinal, normative and control factors.

Differences in demographic factors were tested with the chi-square test. The results indicate that XBRL consumers differ significantly to HTML & PDF consumers in terms of age, gender, experience and type of industry. Finally, the linear and logistic regression analysis provided the evidence that attitudinal, normative and control factors (predictor variables) were significantly explain the behavioral intention which of XBRL adoption.

The last section of this chapter discusses the usage of IFR services amongst XBRL adopters and nonadopters. The findings suggested that XBRL consumers significantly differ to HTML & PDF consumers in terms of the IFR services.

CHAPTER 6

REFLECTING UPON THE SURVEY FINDINGS: VALIDATING MXA'S CONCEPTUAL MODEL

6.1 INTRODUCTION

The purpose of this chapter is to discuss and reflect upon the findings conducted in this research from a theoretical point of view, discussed earlier in chapters 2. It also assesses the empirical evidences that have been obtained from the research findings. The chapter is organized as follows; summary of the hypotheses test is offered and discussed in the next section. This is followed by a discussion and reflection upon the conceptual model of XBRL adoption developed within this research. Finally, the summary and conclusions of the chapter are presented in the last section.

6.2 REVISITING RESEARCH HYPOTHESES

Although the discussion on each hypothesis included in this research is provided in the following sections, this section summarizes the numbers of hypotheses proposed in chapter 2 and states whether they are supported by the data or not. Table 6.1 shows that a total of 15 hypotheses were tested to ascertain the effect of independent variables on dependent variable. Out of the 15 research hypotheses (H1, H1.1, H1.2, H1.3, H1.4, H1.5, H2, H2.1, H2.2, H3, H3.1, H3.2, H3.3, H3.4 and H3.5), H3.1 was the only one that was rejected. The remaining 14 hypotheses were significantly influence consumers' intention to adopt XBRL. Sections 6.3, 6.4 and 6.5 will discuss this in details.

Table 6. 1

Summary of research hypotheses

HN	Research Hypotheses	Result
H1	Overall attitudinal factors have a significant influence on the XBRL behavioral intention (XBI).	Supported
H1.1	Perceived usefulness has a significant influence on the XBRL behavioral intention (XBI).	Supported
H1.2	Perceived ease of use has a significant influence on the XBRL behavioral intention (XBI).	Supported
H1.3	Perceived relative advantage has a significant influence on the XBRL behavioral intention (XBI	Supported
H1.4	Perceived compatibility has a significant influence on the XBRL behavioral intention (XBI)	Supported
H1.5	Perceived complexity has a significant influence on the XBRL behavioral intention (XBI).	Supported
H2	Overall normative factors have a significant influence on the XBRL behavioral intention (XBI)	Supported
H2.1	Peer influences have a significant influence on the XBRL behavioral intention (XBI)	Supported
H2.2	Superior influences have a significant influence on the XBRL behavioral intention (XBI)	Supported
H3	Overall control factors have a significant influence on the XBRL behavioral intention (XBI)	Supported
H3.1	Training has a significant influence on the XBRL behavioral intention (XBI)	**Not Supported**
H3.2	English language has a significant influence on the XBRL behavioral intention (XBI)	Supported
H3.3	Knowledge has a significant influence on the XBRL behavioral intention (XBI)	Supported
H3.4	Self-efficacy has a significant influence on the XBRL behavioral intention (XBI).	Supported
H3.5	Facilitating conditions Resources have a significant influence on the XBRL behavioral intention (XBI)	Supported
H4.1	The XBRL behavioral intention (XBI) has a significant influence on the XBRL adoption behavior (XAB)	Supported
H4.2	Knowledge has a significant influence on the XBRL adoption behavior (XAB)	Supported
H5.1	There is a significant difference between the adopters and nonadopters of the various age groups	Supported
H5.2	There is a significant difference between male and female regarding XBRL adoption behavior (XAB)	Supported
H5.3	There is a significant difference between the adopters and nonadopters of XBRL in different levels of education	**Not Supported**
H5.4	There is a significant difference between the adopters and nonadopters of XBRL in different levels of experience	Supported
H5.5	There is a significant difference between the adopters and nonadopters of XBRL in different types of industry	Supported
H5.6	There is a significant difference between different countries regarding XBRL adoption behavior (XAB) between the adopters and nonadopters of XBRL	**Not Supported**
H6.1	XBRL adopters will spend less time in using IFR than nonadopters	Supported
H6.2	XBRL adopters will use IFR services more frequently than non adopters	Supported
H6.3	XBRL adopters will use a higher number of IFR services more than nonadopters.	Supported

In order to examine the demographic differences between XBRL and HTML & PDF consumers, a total of six hypotheses were tested, but only four out of six were significant. Therefore, hypothesis H5.3 and H5.6 were rejected. This will be further discussed in section 6.7.

In order to examine the usage related differences between XBRL adopters and nonadopters, three hypotheses (H6.1, H6.2 and H6.3) were tested and all the data supported each of the three hypotheses (Table 6.1). Section 6.8 will discuss this in detail.

6.3 ATTITUDINAL FACTORS

As discussed in chapter 2, if the attitude towards XBRL is significant, then the consumers are more probable to form an intention to adopt the behavior (Fishbei & Ajzen, 1975; Ajzen, 1985, 1991; Lee, 2009; Taylor & Todd, 1995). Based on this idea it was believed that if the perception of the financial data consumers regarding the attitudinal factor is significant, it could have a positive influence on XBI. This believes is supported by the theoretical and empirical evidence in this research, which indicate that all attitudinal factors have significant influence on the XBI (Table 6.1).

Based on the theoretical considerations and the argued by Taylor and Todd (1995) and Venkatesh and Brown (2001) presented in chapter 2, this research decomposed attitude towards the behavior into five categories: perceived usefulness, perceived ease of use (Davis, 1989; Taylor and Todd, 1995), perceived relative advantage, perceived compatibility and perceived complexity (Rogers, 1995). These five factors are expected

to give measures of attitude towards the behavior of XBRL adoption among financial data consumers.

6.3.1 Perceived Usefulness

Perceived usefulness refers to the degree to which a person believes that using a particular system would enhance his/her job performance real time information processing, effective error detection, and quicker data analysis. This factor was proposed and validated to examine the adoption of technology (Davis, 1989; Taylor and Todd, 1995). Theoretically, it has been argued that XBRL can offer a more flexible fashion (Yan & Lin, 2007). For instance, many financial data consumers use XBRL in order to capture different accounting standards; XBRL can help the analyst community provide quicker and better quality investment advice and decisions, and many more work activities can be carried out easily using the faster access of the data offered by XBRL (Hodge et al., 2004).

Therefore, it is expected that the greater perception of the usefulness of XBRL for work related activities, the more probable it is that XBRL technology will be adopted in the work. The findings extracted from this research are consistent with this assumption; the findings confirmed that the perceived usefulness factor has a significant influence on XBI (Tables 5.29 and 6.1). It was also found that nonadopters had been significantly lower than adopters on perceived usefulness (Table 5.6). This finding is parallel with TAM (Davies, 1989) and UTAUT (Venkatesh et al., 2003) conclusions.

6.3.2 Perceived Ease of Use

Davis (1989) defined perceived ease of use as the degree to which a person believes that using a particular system would be free of effort. If a person does not perceive the technology in a positive way, he/she will be slow to adopt the technology. Premkumar and Roberts (1999) identify that the primary motivation for consumers to adopt new technologies is the anticipated benefits they will bring to them.

Hence, it was expected that individuals who perceive XBRL as ease of use would also be more likely to adopt the XBRL. The findings of this research highlighted that perceived ease of use has a significant influence on the XBRL behavioral intention to adopt XBRL (Tables 5.29 and 6.1). However, it was found that XBRL adopters scored significantly higher than the nonadopters in terms of perceived ease of use (Table 5.6). This finding also is in tandem with TAM (Davis, 1989), DTPB (Taylor and Todd, 1995) and UTAUT (Venkatesh et al., 2003).

6.3. 3 Relative Advantage

Previous empirical studies by Taylor and Todd (1995) and Tan and Teo, (2000) have found that perceived relative advantage is an important factor for determining the adoption of an innovation. In comparison to HTML & PDF, XBRL offers several key benefits: technology independence, full interoperability, efficient preparation of financial statements, reliable extraction of financial information and satisfaction to its consumers (Hodge et al., 2004). It was expected that individuals who perceive XBRL as

advantageous would also be more likely to adopt the technology. The findings derived in this research confirmed that perceived relative advantage has a significant positive influence on XBI (Tables 5.29 and 6.1). This research also confirmed that the nonadopters score for perceived relative advantage of having XBRL is significantly lower than the adopters of XBRL (Table 5.6). This is tandem with the diffusion theory and preceding work on technology adoption and diffusion of Moore and Benbasat (1991).

6.3. 4 Perceived compatibility

Compatibility is the degree to which an innovation is perceived as being compatible with existing beliefs, experiences, tools and needs of potential adopters (Rogers, 1995). In comparison to HTML and PDF, XBRL offers compatible data within taxonomy design, the compatible information across various platforms (Debreceny et al., 2009). Furthermore, XBRL is compatible with the working style, software or application and XBRL requirements. This factor was also proposed and validated to examine the adoption of technology (Rogers, 1995).

Theoretically, XBRL is compatible with XML; the main computer language used across the Internet by the consumers (Yoon et al., 2010). For instance, XBRL is compatible with Microsoft Excel and other spreadsheet packages widely used by businesses. Therefore, it is expected that the greater the perception of the compatibility of XBRL for work related activities, the more probable that XBRL technology will be adopted in the work. In another word, a faster rate of adoption occurs when the adopter

perceives the innovation as meeting the needs of the user. The findings derived from this research are consistent with this assumption; the findings confirmed that perceived compatibility has a significant influence on the XBI (Tables 5.29 and 6.1). It was also found that nonadopters scored significantly lower than adopters on perceived usefulness (Table 5.6). This is parallel with the diffusion theory of Rogers (1995).

6.3. 5 Perceived Complexity

Perceived complexity is the degree to which an innovation is perceived as being relatively difficult to understand and use. The perceived complexity of an innovation is negatively related to its rate of adoption (Rogers, 1995).

Therefore, it is expected that individuals who perceive XBRL as advantageous would more incline to adopt XBRL technology than HTML & PDF in their work. The findings obtained in this research confirmed that perceived complexity has a significant influence on the XBI (Tables 5.29 and 6.1). This research found that nonadopters (i.e. HTML & PDF consumers) score significantly lower than the adopters of XBRL in terms of perceived complexity (Table 5.6). This is consistent with the diffusion theory and technology adoption and diffusion of Rogers (1995).

6.4 NORMATIVE FACTORS

The subjective norm factors are defined in TPB is used as a single dimensional factor and is considered directly associated to the XBI. This is because an individual's

intention is influenced by his/her point of view of what others think of what they should do (Tan & Teo, 2000). Bearing in mind the theoretical arguments and empirical studies by Fishbein and Ajzen (1975), Ajzen (1985), Taylor and Todd (1995), Tan and Teo, 2000 and Venkatesh and Brown (2001), it is hypothesized that the stronger the perceived social influence to adopt XBRL is the stronger the intention that consumers will adopt XBRL. Findings of this research confirmed this research hypothesis whereby the overall normative factors have significant influence on the XBI (Table 5.32).

In terms of peer influence, the sources of impact could be the adopter's friends and colleagues/peers (Tan & Teo, 2000). Rice and Shook (1990) described such influence as social pressures where members of a social network affect one another's behavior. Venkatesh & Brown's (2001) research revealed that social influences are significant determinants of the purchasing behavior of personal computers. Similarly, it is also expected that financial data consumers who use XBRL are expected to influence their relatives, friends and bosses by telling them and demonstrating to them the benefits and convenience offered by XBRL.

Measures that influence adopters can appear in two forms that are peer influence and superior influence (Taylor & Todd, 1995; Venkatesh & Brown, 2001). These two dimensions are separated and defined. The findings extracted from this research on the role of peer influence and superior influence factors in explaining XBI are discussed in the following subsections.

6.4.1 Peer Influences

Social influence from friends, colleagues that take in the form of conversations and messages assist in forming perceptions of XBRL adoption is defined as peer influence (Venkatesh & Brown, 2001). Considering the findings from the previous studies by Taylor and Todd (1995) and Venkatesh and Brown (2001), it is expected that if the XBRL adopters are influenced by their social networks with conversations or messages, they are more probable to have a strong behavioral intention to adopt XBRL. The findings of this research confirmed that peer influence has a significant influence on XBI (Tables 5.29 and 6.1). The difference of the perception of peer influences on XBRL adoption between HTML & PDF and XBRL consumers was also examined in this research. It was found that the nonadopters' (i.e. HTML & PDF consumers) score significantly lower than the adopters of XBRL in terms of peer influences (Table 5.6). This result is in tandem with the DTPB proposed by Taylor and Todd (1995).

6.4.2 Superior Influences

The influences from the superiors, such as bosses and managers, are considered to be superior influences, which are the influencing factors of the adoption or rejection of the technology in question (Rogers, 1995; Venkatesh & Brown, 2001). The adopters of XBRL still face inconsistent information models when developing XBRL taxonomies. If their bosses or managers encourage them to use XBRL, there is tendency that they will adopt it. This theoretical argument is supported by the results obtained in this research. The results show that superior influences have a significant influence on the perceived behavioral intention to adopt XBRL (Tables 5.29 and 6.1). The findings also confirmed that nonadopters scores were significantly lower than the adopters of

XBRL in terms of perceived complexity (Table 5.6). This result is parallel with the DTPB by Taylor and Todd (1995).

6.5 CONTROL FACTORS

The findings support the theoretical argument that the increase of an individual's ability to control his/her internal and external constraints creates higher plausibility that he/she will adopt the technology in question as proposed by Ajzen (1991) and Tan and Teo (2000). However, if the individual control is lower, then despite having a strong behavioral intention, the consumer is less likely to adopt the technology (Ajzen, 1985, 1991). In order to develop a better comprehension, consistent with the TPB and DTPB, the current research considered the following barriers to the adoption of XBRL: high costs (i.e., FCR), the ease/difficulty of XBRL, and the lack of knowledge on XBRL's benefits (Mathieson, 1991; Taylor & Todd, 1995; Venkatesh & Brown, 2001). In addition to this, there are two factors that are believed to be related to the developing countries namely training and English language: This finding is consistent with the findings reported by Xia and Lee (2000) and Al-Gahtani (2003). The empirical evidences for these five control factors are described in the following five subsections.

6.5.1 Training

Surprisingly, the findings of this research highlighted that training courses did not significantly influence the XBI (Tables 5.29 and 6.1). This may reflect poor quality and high cost of the training courses, inadequacy of training on XBRL, and the

unavailability of courses in the field of XBRL. This implicates that the quality of training courses provided by the regulatory bodies or conferences need to be improved. A starting point would be to assess the training needs of XBRL consumers and to understand their particular nature of work and modes of communication and knowledge acquisition. The consumers may also need training courses to continuously use XBRL. Time is also required for the consumers to learn how to set up the system and what he/she can gain from the XBRL. This statement clearly indicates that XBRL consumers need special training to work with XBRL solution in comparison to HTML & PDF consumers. Moreover, the findings confirmed that nonadopters are differed significantly from the adopters in terms of training factor (Table 5.6).

6.5.2 English Language

Wahid (2007) suggested that the lack of English proficiency is identified to be most severe obstacles of the Internet adoption in Indonesia. The higher the level of English proficiency amongst non-native English speaker individuals, the higher the innovation will be adopted. Therefore, as discussed in chapter 2, it is argued that the adoption of XBRL requires a high level of proper English proficiency. If the consumers are not able to understand English, then it is expected that they will not be inclined to use XBRL due to lack of perceived needs. The empirical findings confirmed that English language gives a large impact behavioral intention to adopt XBRL (Table 5.29 and 6.1). This is parallel with the argument that majority of the consumers are fluent in English and most of XBRL literature is in English.

6.5.3 Knowledge

Rogers (1995) suggested that the level of knowledge about an innovation (its risks and benefits) affect its adoption rate. High understanding on the benefits of an innovation amongst the consumers results in high probability that the innovation will be adopted. Nel and Steenkamp (2008) found that lack of knowledge is one of the factors that inhibit XBRL adoption in South Africa. Knowledge concerning adoption drivers and inhibitors is expected to influence the attitudes of decision makers towards XBRL adoption (Doolin & Troshani, 2005). Therefore, in chapter 2, it is clearly stated that the adoption of technology (e.g., XBRL) requires a clear understanding on its usages and benefits amongst the consumers (Troshani & Doolin, 2007). The empirical findings indicate that the behavioral intentions to adopt and the actual adoption of XBRL were significantly influenced by knowledge factor (Tables 5.29, 5.36 and 6.1). This is in tandem with the argument by Nel and Steenkamp (2008) that majority of the consumers (e.g., accountants) are aware of what to do with the XBRL as it permeates work environment. This may be a possible reason why this factor has contributed towards explaining the variance in behavioral intention of adopting XBRL.

6.5.4 Self-Efficacy

The findings of this research offered evidence that self-efficacy has an influence on the behavioral intention to adopt XBRL (Tables 5.29 and 6.1). This is because the use of XBRL requires skills in personal computer, accounting applications, accounting standards, XBRL solutions and Internet applications. The XBRL International installed a

variety of promotion policies, such as "Conference Training" to boost XBRL use amongst accountants, financial analyst, as well as companies, industries and countries. This initiative aims to provide XBRL skills and in turn contribute towards the adoption of XBRL. The use of XBRL requires advanced skills than HTML and PDF and in turn higher self-efficacy.

This research provides empirical evidence that the nonadopters (i.e., HTML & PDF consumers) scored significantly lower than the XBRL adopters on the self-efficacy. On other words, XBRL adoption was significantly influenced by self-efficacy factor (Table 5.6). This result is in tandem with the DTPB by Taylor and Todd (1995).

6.5.5 Facilitating Conditions Resources

XBRL solutions need high support costs, which are then passed to the adopters and resulting in higher adoption costs. This may affect XBRL adoption negatively (Doolin & Troshani, 2005). A research on drivers and inhibitors of XBRL adoption in the Australia indicated that a high cost is major barrier that inhibits the XBRL adoption (Doolin & Troshani, 2005). The applications are not easily replaceable devices for the consumers. Therefore, an economic barrier in the form of costs that are incurred when upgrading or purchasing new application inhibits the adoption of XBRL among consumers.

Parallel with the theoretical basis, the findings of this research indicate that the facilitating conditions resources have a significant influence on the behavioral intentions

to adopt of XBRL (Table 5.29 and 6.1). However, it was found that nonadopters did not score significantly lower than the adopters in terms of facilitating conditions resources (Table 5.6).

6.6 MODEL OF XBRL ADOPTION (MXA)

From the aforementioned discussion it is clear that perceived usefulness, perceived ease of use, perceived relative advantage, perceived compatibility and perceived complexity were positively related to XBI. The overall attitudinal factors to XBI are also significant. The relationship between peer influence, superior influence, overall normative factors and XBI was also positively significant. From the five control factors perspective, English language, knowledge, self-efficacy and facilitating conditions resources were positively significantly related to XBI. However, training was not the influencing factor of XBI.

The overall control factors were also positively significantly related to XBI. In short, all three dimensions (i.e., overall attitudinal factors, overall normative factors, and overall control factors) of the determinants of XBI were positively significantly related to XBI. Finally, both XBI and knowledge were positively significantly related to the actual behavior of XBRL adoption.

It is not possible to compare the predictability of MXA with Henderson et al.'s (2009) research. This is because this study has examined different independent and dependent factors. However, the predictive power of the MXA can be compared to

guiding models such as the TAM, TPB and DTPB. This is because factors such as XBI and XAB and structure of the MXA are similar to the TAM, TPB, and DTPB.

With regards to the XBRL behavioral intention (XBI), the value of the adjusted R square varied between 0.20 (Gefen & Straub, 2000) and 0.57 (Taylor & Todd, 1995), while the adjusted R square for this research was 0.80 (Table 5.33). This means that the independent variables of this research conceptual framework were highly related to the consumer behavioral intentions towards the adoption of XBRL.

In terms of XBRL adoption behavior (XAB), the adjusted R square reported in the previous studies varied from 0.32 (Davis et al., 1989) to 0.51 (Davis, 1989). Since the adjusted R square value for this research was 0.52 (Tables 5.34), and it falls within the acceptable range. Therefore, the variance in XBRL adoption behavior was also sufficiently explained by the XBI. The adjusted R square and Nagelkerke R square value for both XBRL behavioral intention and adoption behavior was also satisfying the criteria of predictive ability (Straub et al., 2004). Straub et al. (2004) suggested that the predictive ability of a model is at a satisfactory level if the variance is above 0.40. Since XBI = 0.80 and XAB = 0.52 scores are above the range of 40%, it indicates that the model possesses a satisfactory level of predictive ability. Since the value XBI = 0. 80 is above 0.40, it indicates that the model possesses a strong level of predictive ability. Also, as the value of XAB = 0.52 and is above 0.40, this suggests that the model possesses a satisfactory level of predictive ability.

Figure 6.1 summarizes the relationship between overall attitudinal, normative and control factors and XBI in the form of a diagram. From the three types of factors, the largest variance of XBI was largely determined by the overall attitudinal factors, followed by the overall control factors and the overall normative factors. Finally, XBI is a significant determinant of XAB.

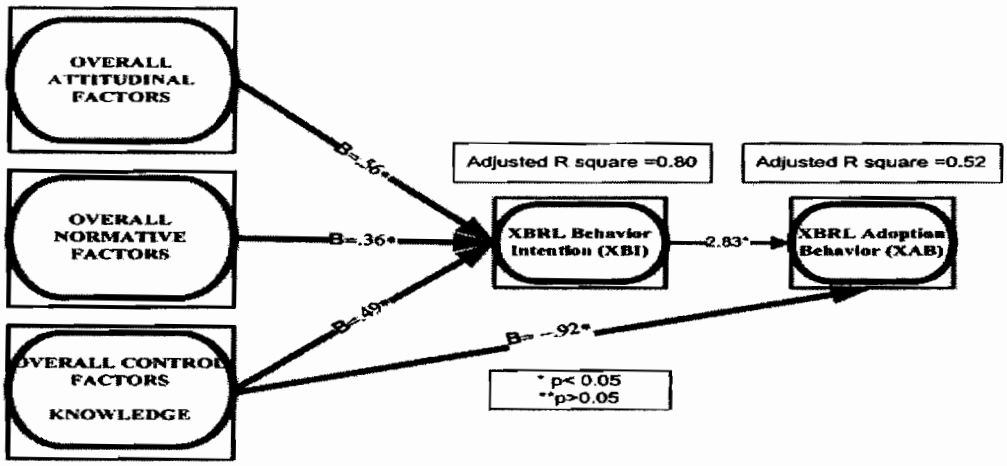


Figure 6. 1

Refined MXA

6.7 DEMOGRAPHICS AND ADOPTION OF XBRL ADOPTION

The demographic characteristic, were analyzed using chi-square test. The results are illustrated in Table 6.1 and Figure 6.2. Four (e.g., age, gender, experience and type of industry) out of six variables were significantly distinguishing the adopters from the nonadopters. The education and country variables failed to differentiate XBRL adopters and nonadopters.

Early expectation of the impact of age on the consumers' XAB is aligned with the results obtained in this research. It is argued that older people are less likely to use XBRL. A possible explanation for this is that they do not possess basic skills to operate accounting applications (e.g., XBRL solution) and majority of them do not work (retired). Most of the adopters belonged to the age group of 25-34 years. This is because this age group is considered to be economically active. The respondents within this age group may have different experiences. A high number of nonadopters belong to the age ranges from 35-44 and 55-64 years.

In the case of gender, the hypothesis was supported by the data collected in this research. Although the adopters and nonadopters are mostly male, the differences were large enough to reach significance. This may be due to majority of people in the IFR field is male (Benschop & Meihuizen, 2002). This theoretical claim was also supported by previous studies Marshall et al. (2010) that reported the increase in gender gap in the XBRL adoption.

Initially it is expected that educated respondents are most likely to adopt XBRL. The findings of this research are not supporting the prediction of the existing theories. This is because there is no difference between adopters and nonadopters in terms of educational background.

The findings also revealed that experience level was good predictor of XBRL adopters and nonadopters. This is in tandem with the arguments offered in the

theoretical section (Venkatesh & Davis 2000). Furthermore, it can be concluded that most of the adopters are experienced people.

The findings indicate that majority of XBRL adopters belong to information industry. It is expected that the respondents from the information industry would use XBRL. This can be attributed to the following reasons: the respondents work in the information industry. However, other consumers may work in different industry. Second, XBRL is a standard for preparing, publishing, and analyzing financial information for both public and private companies. Therefore, it is most likely that the consumers in the information field become the adopters of XBRL than nonadopters.

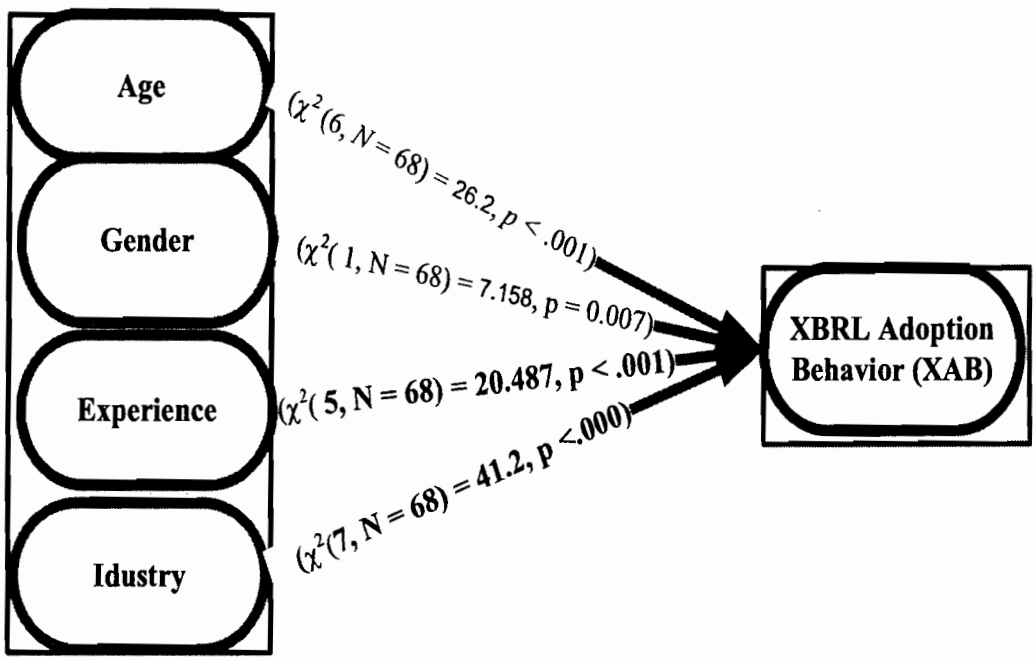


Figure 6. 2

Refined Demographic Factors on XBRL Adoption

In the case of the country, this research did not support the variable. Although the adopters were mostly from the USA, the nonadopters were also mostly from the USA. This may be because in the USA, the SEC announced a mandatory program relating to XBRL for largest companies in 2009. However, the differences were not large enough to indicate the occurrence of significant differences between adopters and nonadopters.

6.8 USAGE OF XBRL

Results from the previous studies suggested that IFR consumers behave differently when they use XBRL (Hodge et al., 2004). XBRL consumers use the Internet services on a longer basis, utilize more services or applications and apply them more often (Henderson et al., 2009). In comparison to the HTML & PDF consumers, XBRL allows consumers to spend more time on financial analysis and less time in gathering data (Willis, 2005).

There is little empirical evidence on the XBRL usage. In order to examine and confirm differences regarding the usage of the IFR between XBRL and HTML & PDF financial data consumers, this research included the rate of IFR use and variety of IFR use as the theoretical factors adapted from Shih and Venkatesh (2004).

Figure 6.3 presents both factors that successfully distinguished XBRL consumers from the HTML & PDF consumers. In terms of both duration of IFR usage (that is, how long consumers spend on the IFR) and frequency (that is, how many times consumers

uses the IFR), the XBRL consumers significantly exceeded the HTML & PDF consumers (Figure 6.3). This is mostly because of the advantages that XBRL offers, such as re-key data faster access and time saving.

Similar to the rate of use, the advantages of XBRL also significantly influenced financial data consumers in terms of the variety of IFR use (Figure 6.3). The variety means type of IFR-based Web services or local applications. In this research, a total of 23 IFR-based Web services or local applications (Table 5.42) that belonged to twelve different categories were included to examine the variety of IFR use (Table 5.42). These twelve categories were exchanging (five IFR services), facilitating (two IFR services), generating (six IFR services), filling (two IFR services), preparing (one IFR services), automating (one IFR service), information seeking (one IFR service), converting (one IFR service), archiving (one IFR service), data quality (one IFR service), internal compliances (one IFR service) and risk management (one IFR service) (Table 5.42).

The cross-sectional analysis confirmed that out of 23 activities, which belonged to twelve different categories, XBRL consumers used on average 11 activities, which significantly exceeded the HTML & PDF consumers. This is parallel with the theoretical argument that general usage of information technologies often leads to an increase in the quantity and variety usage of electronic services (Shih & Venkatesh, 2004). Since XBRL consumers used the advanced technology, such as XBRL-based Web services or local applications the number of IFR usage is much higher than HTML & PDF counterparts.

The manual data re-entry was theoretically considered to be one of the barriers of growth and diffusion of financial electronic services, including electronic reporting. It contributed to the doom of facilitating the exchange process of financial statements across all technologies, including the Internet. However, XBRL ease the process of data re-entry. The findings of this research supported this as both the rate and variety of IFR-based Web services or local applications are higher amongst the XBRL consumers. This means that the HTML & PDF format hampers the growth and diffusion of emerging financial electronic services.

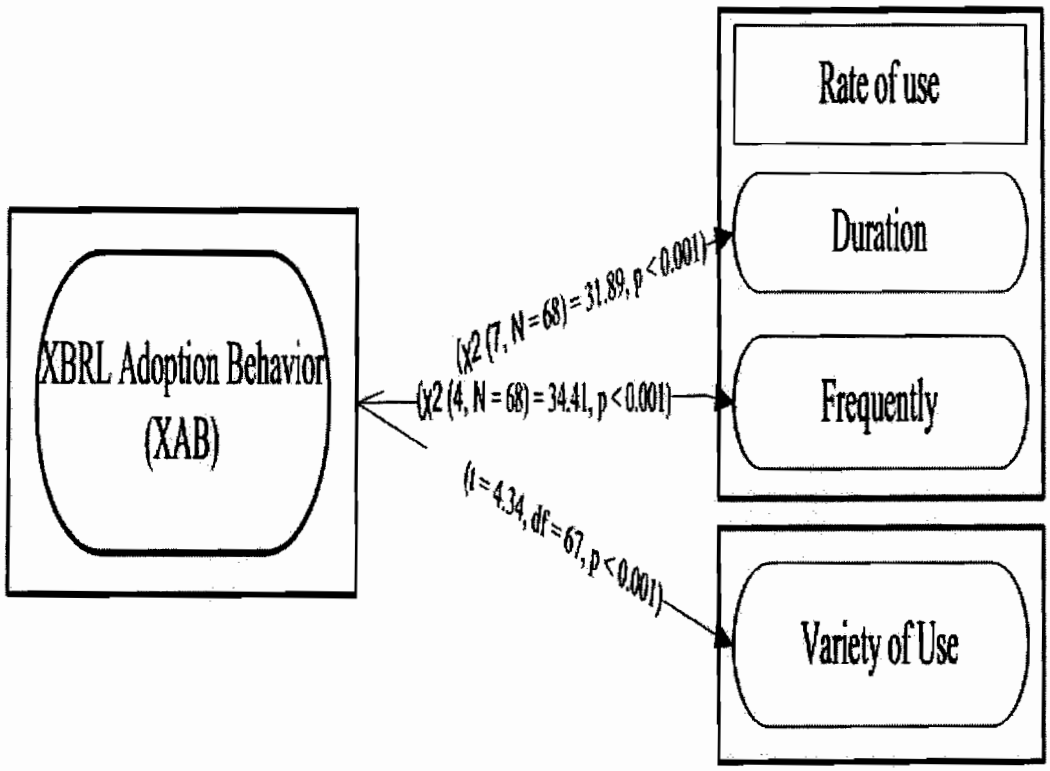


Figure 6. 3

Usage of IFR by XBRL adopters and nonadopters

6.9 THE FINAL RESEARCH MODEL OF XBRL ADOPTION

Based on the above discussion, the refined MXA is illustrated in Figure 6.4. The refined MXA is a useful basis for increasing the adoption of XBRL amongst financial data consumers.

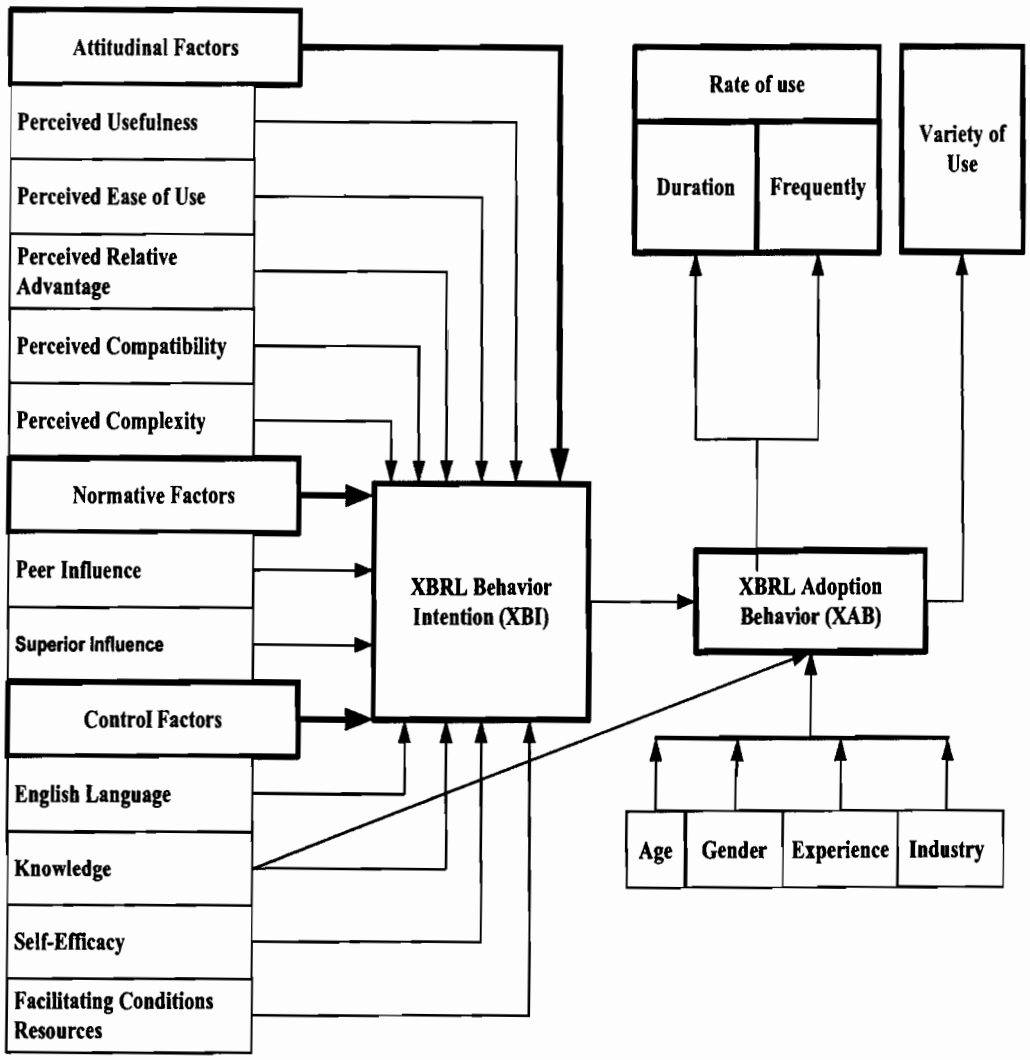


Figure 6. 4

The final model of XBRL diffusion

6.10 SUMMARY

This chapter discussed and reflected upon the findings (chapter 5) from the theoretical point of view (chapter 2). First, this chapter presented the refined and validated conceptual model of XBRL adoption. The discussing led to the conclusion that all the factors, with the exclusion of training, significantly clarified the behavioral intention to adopt XBRL, which in turn significantly explained the actual XBRL adoption behavior. A comparison of the adjusted R square derived in this research with the preceding studies indicates that the performance of the conceptual model that was used to understand the behavioral intention for the adoption and actual XBRL adoption is as good as its guiding models.

Second, this chapter also discussed the usage of XBRL by financial data consumers. The discussing revealed that the XBRL consumers differ from HTML & PDF consumers with regards to the usage of the IFR-based Web services or local applications. From the discussing, it can be concluded that XBRL consumers significantly differ from HTML & PDF ones in terms of duration and the frequency of IFR use on a daily basis. It was also found that the use of XBRL significantly influenced the rate of time spent on those activities whose implementation is relying upon the faster processing of data.

CHAPTER 7

SUMMARY AND CONCLUSIONS

7.1 INTRODUCTION

This chapter provides the overview and conclusion of the findings discussed in the previous chapters. The following sections will discuss the summary of the results and the conclusion of this research. This is followed by the discussion on the contributions that this research has made in terms of theory and practice, as well as the research limitations. Finally, the future research suggestions in the area of XBRL diffusion and adoption are provided.

7.2 SUMMARY

This research has examined the factors affecting the adoption and usage of XBRL among financial data consumers. Using the self selection sampling technique, about 166 financial data consumers responded to the survey. The questionnaire was positioned on the home page of the XBRL Network web site together with general information about the research between 11 February and 11 April 2010. 68 usable questionnaires were returned within the specified time, resulting in a 40.9 % response rate.

Findings from the descriptive statistics suggested that all the factors rated

important/very important (mean above 3.5 at the 1-7 Likert scale). This suggested that the respondents showed good agreement in factors included in the research for examining the adoption of XBRL. There was then an examination of the differences between the adopters and nonadopters of XBRL. The results from the analysis suggested that significant differences occur between the responses obtained from the nonadopters and adopters with regards to attitudinal, normative and control factors.

Examination of the demographic differences suggests that XBRL consumers differ significantly to non-XBRL consumers in terms of age, gender, experience and type of industry. The research analysis also provided evidence that the overall attitudinal, normative and control factors (independent variable) significantly explain behavioral intentions, which along with the knowledge significantly explain the XBRL adoption behavior.

The findings related to the usage of the IFR suggested that some of XBRL consumers significantly differ to HTML & PDF users in terms of the IFR usage. The numbers of XBRL consumers were exceedingly and significantly higher than the HTML & PDF consumers for using 11 services from a total of 23 services examined in this research

This research presents one of the initial efforts towards understanding of the XBRL adoption behavior and usage from global perspective towards consumer within of the context of developing (e.g., India, China, Malaysia, UAE and South Africa) and

developed countries (Japan, Netherlands, USA, UK, France, Lichtenstein, Spain and Italy). The findings are specifically useful for XBRL solutions providers and policy makers. Factors that are reported significant are important and require attention so as to encourage further adoption and usage of XBRL especially in the developing countries. Additionally, the cost of using the traditional standards such as HTML & PDF is very high so XBRL can be used as a replacement for processing data such as manual re-entering of data or exchange data.

7.3 CONCLUSION

This research offers one of the initial efforts towards understanding the adoption and usage behavior from the global context. Furthermore, this research is the only one from a few researches that address the issue of individual adoption and usage of XBRL among financial data consumers. The following statement illustrates the importance of conducting a study that examines XBRL adoption from the global context: "We see significant adoption of XBRL across many countries in several environments" (Debreceny, 2009).

This research offers an initial effort that confirms the role of usefulness, ease of use, relative advantage, compatibility, complexity, peer influence, superior influence, training, language, knowledge, self-efficacy and resource facilitating conditions factors in determining the adoption of XBRL among consumers by applying quantitative methodology. The research used various models and theories, and also extended them by incorporating new factors such as training, and language and also decomposed

normative factors into two categories, namely, peer influence and superior influence.

Overall, the findings of this research indicate that peer influence plays a key role in the first time adoption decision of XBRL among consumers. An added strength of this research is that, unlike other related studies on technology adoption, the current work investigated two components of diffusion comprising adoption and usage. This in turn helped in obtaining a holistic comprehension of adoption and usage from the perspective financial data consumers. This research provides several theoretical contributions and implications to practice and policy makers, and is discussed in detail section 7.4.

7.4 CONTRIBUTIONS

The contributions of this research can be divided into two, which are the theory and industry. The following two subsections 7.4.1 and 7.4.2 will discuss this in detail.

7.4.1 Contributions to Theory

7.4.1.1 Integrates Various Models and Theories

The first contribution of this research towards theory is that it integrates various models and theories so as to increase the knowledge of XBRL adoption from the financial data consumer perspective. This research introduces a conceptual model that integrates factors from different technology adoption models and theories to study XBRL diffusion from the perspective of financial data consumers.

7.4.1.2 Validate the Conceptual Model

The second contribution is to empirically determine the appropriateness of various factors and validate the model in the context of potential adopters of XBRL. This research utilized a survey with items/questions measuring various factors such as usefulness, ease of use, relative advantage complexity, compatibility, subjective norms, peer influence, superior influence, perceived behavioral control, training, language, knowledge, self-efficacy and facilitating conditions resource, specifically in the context of XBRL adoption.

7.4.1.3 Novel Factors

The third contribution is that this research introduced and validated novel factors such as relative advantage, complexity, training, English language, knowledge for investigating XBRL adoption among financial data consumers. Since these factors were not included in any of the guiding frameworks, including the TPB and DTPB, the conclusion of the factors contribute towards theory development in the form of theory extension.

7.4.1.4 Confirming the Role of Demographic Variables

The fourth theoretical contribution of this research was to confirm the role of demographic variables such as age, gender, education, experience, country, education and type of industry in explaining the actual adoption of XBRL. This is considered to be

one of the important research issues of this research, which is to investigate the demographic characteristics so as to determine their effect on the adoption of XBRL. This research concludes that age, gender, education, experience and type of industry are important variables that distinguish XBRL's adopters and nonadopters.

7.4.1.5 Examining the Rate and Variety of Use

The fifth contribution of this research towards theory is to examine the rate and variety of IFR use amongst HTML & PDF and XBRL consumers. Previous studies that focused upon the usage of technology from the consumer context have two main limitations. First, they were data driven and exploratory in nature, therefore, lack of theoretical underpinning. Second, the studies examined either XBRL or HTML & PDF consumers, therefore, lack of cross-sectional approach to distinguish XBRL consumers from HTML & PDF consumers. This research adapted the usage factors from the use diffusion model (UD) to examine IFR between XBRL and HTML & PDF consumers. Therefore, by overcoming the two abovementioned limitations of previous studies, this research provides better comprehension of IFR usage and helps to enhance the theoretical foundation.

7.4.1.6 Development and Validation of a Survey Instrument

The sixth theoretical contribution is the development and validation of a survey instrument. In a situation where theory is advanced but previous instrumentations are not available and validated, therefore it is important to create and validate new measures.

Such efforts are undercounted as a contribution to scientific practice in the accounting information system field. As Straub et al. (2004) highly recommended: Researchers who are able to engage in the extra effort to create and validate instrumentation for established theoretical factors are testing the robustness of the factors and theoretical links to method/measurement change. This practice, thus, represents a major contribution to scientific practice in the field (Straub et al., 2004).

Moore and Benbasat (1991) and Davis (1989) provide examples of such work on the instrument development and validation, which the authors considered as a major contribution towards the information system field. Although the factors used in this research have been adapted from established theories and models such as the TPB, DTPB, TAMs, and the diffusion of innovations, prior instrumentation to research XBRL adoption and diffusion is not developed and validated in the existing studies. Therefore, it is considered necessary to develop and validate a new research instrument for factors included in the conceptual model.

Since this research effort meets all of the above criteria (Straub et al., 2004), it makes a large contribution towards the research methodology. This is achieved by modifying, creating and validating measures that represent various factors included in the conceptual model. The research instrument developed and validated in this research can be used to examine various emerging standards within the context of financial data consumers.

7.4.2 Contributions to Industry and Policy Makers

7.4.2.1 Identify Segments of Society

One of the research questions of this research was to examine the demographic factors in order to determine their influence on the adoption of XBRL. Referring to the research question that discussed initially in section 1.3, it was identified that there is the occurrence of an unequal adoption rate in various dimensions including age, gender, experience, and type of industry.

It has been learnt that an important implication for all participants in the financial reporting supply chain, such as policy makers and industry, is to identify segments of society that are slow in adopting XBRL. By analyzing the findings of this research, the reasons for slow adoption can be explored and appropriate measures can be developed and implemented so that they can be overcome.

7.4.2.2 Identify challenges of XBRL

As discussed before, XBRL solution providers may face two key challenges. First, there are consumers who cannot comprehend the complexity of XBRL. Therefore, the XBRL solutions providers may consider providing alternative new software so as to reduce the complexity, which is an issue currently being emphasized. Second, some of the consumers with a high education and experience may also be reluctant to use XBRL due to lack of ability to create global Taxonomy; hence, the challenges to the XBRL solutions providers are to integrate global Taxonomy and XBRL solutions and make them easy to the ordinary financial data consumers.

7.4.2.3 Justifying Investment in the Area of XBRL deployment

This research also examined the usage of 23 IFR services and applications. The research suggests that for all IFR services the numbers of XBRL consumers were higher than the total number of HTML & PDF ones. It was also concluded that for the usage of many services, the differences between the numbers of XBRL and HTML & PDF consumers were significant. Thus, the findings of this research may assist in justifying investment in the area of XBRL deployment and assist policy-making organizations such as XBRL International that is involved in the development and deployment of XBRL in the world.

The findings also have important implications for the other standards (e.g., iXBRL, XBRL-GL etc). Various standards are likely to benefit from the diffusion of XBRL, as more respondents use interactive financial data rather than using traditional standards. This may encourage the financial data industry to attract potential financial data customers. Bearing these points in mind, it can be argued that the contributions of this research are substantial for both policy makers and the financial data industry. Therefore, this research is viewed to be pertinent for the deployment of XBRL in the world.

7.5 RESEARCH LIMITATIONS

Although the findings of the research contribute to theory and practice, there are several important limitations that must not be disregarded. One of the limitations of this

study was related to the availability of the sufficient literature examining the topic from micro-level factors' perspective (e.g., altitudinal, normative and control factors) in this area. Another limitation is that when conducting online research, the investigators encounter sampling problem. Some virtual groups and organizations provide membership email lists that can help the researcher establish a sampling framework. However, not all members of the virtual groups and organizations allow their email addresses to be listed, and some may not allow administrators to provide their email addresses to the researchers. This result in determination of population and sampling size becomes difficult. Bearing this in mind, the visitors of XBRL network site is considered to be the most comprehensive sample frame for the population frame.

Although the response rate that was obtained in this research was considered acceptable in the information system research, there was the possibility of a non-response bias. Self-selection bias is a major limitation of the online survey research (Stanton, 1998; Witmer, Colman & Katzman, 1999; Thompson et al., 2003). In any given Internet community, there are undoubtedly some individuals who are more likely than others to complete an online survey. Many Internet communities advertise their products services and can demotivate the participants from answering the survey requests posted on the website. In short, there is a tendency of some individuals to respond to an invitation to participate in an online survey, while others ignore it, leading to a systematic bias.

This research was focused upon using a quantitative research that may have

reduced the ability of this research when attempting to obtain an in-depth view of consumer technology adoption and usage. However, due to time and resources constraints, conducting both qualitative and quantitative researches was not possible.

This research used convenience samples; therefore, it cannot be generalized because of the potential bias (self selection etc). What is provided is that the evidence from a number of consumers of financial data, with relatively efficient sample, that strongly indicate that XBI drive XAB. Though the results cannot be generalized to all similar consumers of financial data (due to the sampling method), it does shed light on various factors that help drive XBRL adoption.

7.6 SUGGESTIONS FOR FUTURE RESEARCH

This research intends to examine whether the obtained findings are specific to the consumers or whether the results will be the same across specific countries with regards to XBRL adoption and usage in the future. This would require a cross- sectional approach when investigating XBRL adoption. The questionnaire findings would have been strengthened if it is supplemented by the interviews. As mentioned in the previous limitations section 7.5, the interview tool had to be abandoned due to the limitation of time and resources. The findings would also have been reinforced if the research had been a longitudinal one. The data for this research has been collected over a short period of time and provides a snapshot. However, it could be expanded over a longer period of time to offer a longitudinal research.

Due to the emergence of interactive data, there is now an emphasis upon the diffusion of intelligence business; therefore, studying the impact of XBRL on financial data consumers becomes a very broad area. There is a need to research specific areas such as financial reporting supply chain on an individual basis so as to determine the real impact of XBRL. Furthermore, there is a need to explore associated issues such as the positive and negative impact of these changes on the growth and development of the XBRL and the diffusion of XBRL technology.

Finally, this research focused upon considering the advantages of XBRL due to slow rate of adoption and its effect on the adoption and diffusion of new electronic services. There are several negative aspects of XBRL adoption; however, this issue was not included within this research due to time and resource constraints. XBRL is still very new and its system definition is not complete yet, and the taxonomies still need to be modified. There are also security issues on the usage of XBRL database system. Some financial information may not necessary to be disclosed to all public. As XBRL is based on the Internet, intelligent computer user, hackers may still get access to confidential financial data and disclose to the culprits. Therefore, it is advisable that future research may take issues such as privacy and security into consideration when examining the adoption and usage of XBRL.

REFERENCES

Abdullah, A., Khadaroo, I., & Shaikh, J. (2009). Institutionalisation of XBRL in the USA and UK. *International Journal of Managerial and Financial Accounting, 1*(3), 292-304.

Abrahao, S., & Poels, G. (2009). A family of experiments to evaluate a functional size measurement procedure for Web applications. *The Journal of Systems & Software, 82*(2), 253-269.

Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use and usage of information technology. *MIS Quarterly, 16*(2), 227-247.

Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences, 30*(2), 361-391.

Ajzen, I. (1985). From intentions to actions, In J. Kuhl, & J. Beckmann (Eds.), *A theory of planned behavior*: Springer series in social psychology (pp. 11-39). *Berlin: Springer.*

Ajzen, I. (1988). *Attitudes, personality, and behavior*. Chicago: Dorsey Press.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665-683.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Al-Gahtani, S. (2003). Computer technology adoption in Saudi Arabia: Correlates of Perceived Innovation Attributes. *Information Technology for Development, 10*(1), 57-69.

Amoako-Gyampah, K. (2007). Perceived usefulness, user involvement and behavioral intention: an empirical study of ERP implementation. *Computers in human behavior, 23*(3), 1232-1248.

Amoako-Gyampah, K., & Salam, A. (2004). An Extension of the technology acceptance model in an erp implementation environment. *Information & Management, 41*(6), 731-745.

Anckar, B. (2003). *Drivers and inhibitors to e-commerce adoption: exploring the rationality of consumer behaviour in the electronic marketplace.* Paper presented at the 11th ECIS on New Paradigms in Organizations, Markets and Society, Napoli, Italy.

Anderson, B., McWilliam, A., Lacohee, H., Clucas, E., & Gershuny, J. (1999). Family life in digital home- domestic telecommunications at the end of the 20th century. *T Technology Journal, 17*(1), 85-97.

Anderson, B., & Tracey, K. (2001). Digital living: the impact (or otherwise) of the internet on everyday life. *American behavioral scientist, 45*(3), 456-475.

Arnold, V., Bedard, J., Phillips, J., Sutton, S., & Fellow, P. (2010). *The impact of information tagging in the md&a on investor decision making: Implications for XBRL*. Paper presented at the European Accounting Association Annual Congress. Retrieved from http://www.nd.edu/~carecob/Workshops/09-10%20Workshops/Arnold%20Paper.pdf

Arnold, V., Bedard, J., Phillips, J., Sutton, S., Fellow, P., & Fellow, P. (2008). *Understanding Professional and Non-Professional Investors' Information Requirements*: Working paper. Retrieved from http://www.finrafoundation.org/web/groups/foundation/@foundation/ documents/ foundation/p118443.pdf

Atwell, R. C., Schulte, L. A., & Westphal, L. M. (2009). Linking resilience theory and diffusion of innovations theory to understand the potential for perennials in the US Corn Belt. *Ecology and Society, 14*(1), 30. [online] URL: http://www.ecologyandsociety.org/ vol14/iss1/ art30/.

Bandura, A. (1977). Self-Efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, N.J.: Prentice-Hall.

Bandura, A. (1995). *Self-efficacy in changing societies*: Cambridge Univ Press.

Bandura, A. (2006). *Guide for constructing selfefficacy scales*. In F. Pajeras., & T. Urdan (Eds.). Self-efficacy beliefs of adolescents (pp. 307-337). Connecticut: Information Age Publishing.

Barac, K. (2004). South african auditors' policies, practices and perceptions with regard to Internet reporting. *Meditari Accountancy Research, 12*(2), 1-19.

Beattie, V., & Pratt, K. (2003). Issues concerning web-based business reporting: an analysis of the views of interested parties. *The British Accounting Review, 35*(2), 155-187.

Beck, R., Beimborn, D., Weitzel, T., & König, W. (2008). Network effects as drivers of individual technology adoption: analyzing adoption and diffusion of mobile communication services. *Information Systems Frontiers, 10*(4), 415-429.

Benbasat, I., & Zmud, R. (1999). Empirical research in information systems: the practice of relevance. *MIS Quarterly, 23*(1), 3-16.

Benschop, Y., & Meihuizen, H. (2002). Keeping up gendered appearances: representations of gender in financial annual reports. *Accounting, Organizations and Society, 27*(7), 611-636.

Bergeron, B. (2003). *Essentials of XBRL: financial reporting in the 21st century*: John Wiley & Sons Inc.

Blount, L. W. L. (2009). Women Administrators in distance higher education- an exploratory study. *Advancing Women In Leadership Journal*, 27.

Bosak, J., & Bray, T. (1999). XML and the second-generation Web. *scientific American, 280*(5), 89-93.

Boudreau, M., Gefen, D., & Straub, D. (2001). Validation in information systems research: A state-of-the-art assessment. *MIS Quarterly*, 25(1), 1-16.

Bovee, M., Ettredge, M., Srivastava, R., & Vasarhelyi, M. (2002). Does the year 2000 XBRL taxonomy accommodate current business financial-reporting practice. *Journal of Information Systems, 16*(2), 165-182.

Boyd, G., & Teixeira, A. (2004). What in the world Is XBRL? *Chartered Accountants Journal Of New Zealand, 83*(1), 4-5.

Boyer-Wright, K., Summers, G., & Kottemann, J. (2010). XBRL: Is it time? *Issues in Informing Science and Information Technology*, 7.

Brace, N., Kemp, R., & Snelgar, R. (2003). *Spss for Psychologists: A guide to data analysis using spss forwindows (Versions 9, 10 and 11),*2nd. Ed., New York: Palgrave MacMillan.

Bradford, M., & Florin, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems, 4*(3), 205-225.

Brown, F., & Willis, M. (2003). XBRL: Revolutionizing the corporate reporting supply chain. *Financial Executive, 19*(3), 70-71.

Brown, S., & Venkatesh, V. (2003). Bringing nonadopters along: The challenge facing the PC industry. *Communications of the ACM, 46*(4), 76-80.

Burns, A., & Bush, R. (2002). *Marketing Research: Online Research Applications*: Prentice Hall.

Carr, M. (2008). Adoption and diffusion of Internet banking. *Advances in Banking Technology and Management. New York: Hershey*, 33-52.

Carveth, R., & Kretchmer, S. (2002). The digital divide in western europe: Problems and prospects. *Informing Science, 5*, 239–249.

Chan, S., & Lu, M. (2004). Understanding internet banking adoption and use behavior: A Hong Kong perspective. *Journal of Global Information Management, 12*(3), 21-43.

Chang, J., Torkzadeh, G., & Dhillon, G. (2004). Re-examining the measurement models of success for internet commerce. *Information & Management, 41*(5), 577-584.

Chang, M. (1998). Predicting unethical behavior: A comparison of the theory of reasoned action and the theory of planned behavior. *Journal of Business Ethics, 17*(16), 1825-1834.

Chang, M., Cheung, W., Cheng, C., & Yeung, J. (2008). Understanding ERP system adoption from the user's perspective. *International Journal of Production Economics, 113*(2), 928-942.

Chau, P., & Hu, P. (2001). Information technology acceptance by individual professionals: a model comparison approach. *Decision Sciences, 32*(4), 699-719.

Chen, A., LaBrie, R., & Shao, B. (2003). An XML adoption framework for electronic business. *Journal of Electronic Commerce Research, 4*(1), 1-14.

Chiu, C. M., Chang, C. C., Cheng, H. L., & Fang, Y. H. (2009). Determinants of customer repurchase intention in online shopping. *Online Information Review, 33*(4), 761-784.

Choudrie, J., & Dwivedi, Y. (2005). Investigating the research approaches for examining technology adoption issues. *Journal of Research Practice, 1*(1).

Compeau, D., & Higgins, C. (1995). Application of social cognitive theory to training for computer skills. *Information systems research, 6*(2), 118.

Compeau, D., Higgins, C., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A Longitudinal Study. *MIS quarterly, 23*(2), 145-158.

Cornford, T., & Smithson, S. (2006). *Project research in information systems*. London, UK: Palgrave

D'Ambra, J., & Rice, R. (2001). Emerging factors in user evaluation of the world wide Web. *Information & Management, 38*(6), 373-384.

Davidson, A., Robinson, A., & Malthus, S. (2006). Survey of chartered accountants show xbrl slow to catch on. *Chartered Accountants Journal* (68-70).

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly, 13*(3), 319-340.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science, 35*(8), 982-1003.

Debreceny, R. (2007). Research into XBRL - old and new challenges *new dimensions of businessreporting and XBRL* (pp. 3-15). Deutscher Universität-Verlag,Weisbaden: Springer.

Debreceny, R. (2009). Statement of interest-roger debreceny. from http://www.w3.org/2009/03/XBRL/soi/Debreceny.html

Debreceny, R., & Gray, G. (2001). The production and use of semantically rich accounting reports on the internet: XML and XBRL. *International Journal of Accounting Information Systems, 2*(1), 47-74.

Debreceny, R., Gray, G., & Rahman, A. (2002). The determinants of internet financial reporting. *Journal of Accounting and Public Policy, 21*(4-5), 371-394.

Debreceny, R. S., Chandra, A., Cheh, J. J., Guithues-Amrhein, D., Hannon, N. J., Hutchison, P. D. *et al.* (2005). Financial reporting in XBRL on the SEC's edgar system: A Critique and Evaluation. *Journal of Information Systems, 19*(2), 191.

Deshmukh, A. (2004). XBRL. *Communications of the Association for Information Systems, 13*(16), 196-219.

Deshmukh, A., Karim, K., Romine, J., & Rutledge, R. (2006). XBRL in the accounting curriculum: A survey of ais faculty. *Review of Business Information Systems, 10*(2), 75-90.

Deutskens, E., De Ruyter, K., Wetzels, M., & Oosterveld, P. (2004). Response rate and response quality of internet-based surveys: An Experimental Study. *Marketing Letters, 15*(1), 21-36.

Ding, R. (2008). *How does partner selection affect contractual design?: evidence from inter-firm cooperation*: Bradford University, School of Management.

Dipiazza, S., & Eccles, R. (2002). *Building public trust:* The future of corporate reporting: Wiley.

Dishaw, M., & Strong, D. (1999). Extending the technology acceptance model with task–technology fit constructs. *Information & Management, 36*(1), 9-21.

Dommeyer, C., & Moriarty, E. (2000). Comparing two forms of an e-mail survey: Embedded vs. attached. *International Journal of Market Research, 42*(1), 39-50.

Doolin, B., & Troshani, I. (2004). XBRL: A research note. *Qualitative Research in Accounting & Management, 1*(2), 93-104.

Doolin, B., & Troshani, I. (2005, June). *Drivers and inhibitors impacting technology adoption: a qualitative investigation into the Australian experience with XBRL.* Paper presented at the 18th Bled eConference eIntegration in Action Bled, Slovenia.

Doolin, B., & Troshani, I. (2007). Organizational adoption of XBRL. *Electronic Markets, 17*(3), 199-209.

Downey, L., Papageorgiou, V., & Stough, C. (2006). Examining the relationship between leadership, emotional intelligence and intuition in senior female managers. *Leadership & Organization Development Journal, 27*(4), 250-264.

Dubelaar, C., Tsarenko, Y., & Gabbott, M. (2003). Performance measurement in the Australian on-line securities marketplace. *International Journal of Bank Marketing, 21*(6/7), 335-346.

Dull, R. B., Graham, A. W., & Baldwin, A. A. (2003). Web-based financial statements: hyperlinks to footnotes andtheir effect on decisions. *International Journal of Accounting Information Systems, 4(3),* 185-203.

Dwivedi, Y. K., Choudrie, J., & Brinkman, W. P. (2006). Development of a survey instrument to examine consumer adoption of broadband. *Industrial Management & Data Systems, 106*(5), 700-718.

Dwivedi, Y. K. (2007). *Consumer adoption and usage of broadband*: IRM Press.

ErnestChang, S., & Heng, M. (2006). An empirical study on voice-enabled web applications. *IEEE Pervasive Computing, 5(3), 76-81.*

Etzioni, O. (1996). The world-wide web: Quagmire or gold mine? *Communications of the ACM, 39*(11), 65-68.

Farewell, S., & Pinsker, R. (2005). XBRL and financial information assurance services. *The CPA Journal, 75*(5), 68-69.

Farr, J., & Ford, C. (1990). Individual Innovation. *In West M.A. and* Farr*J.L.(Eds.) Innovation and creativity at work, 63-80.*

Finch, J. (1986). Age. In *key variables in social investigation,* Burgess, R., (Ed.), Routledge, London.

Gefen, D., & Straub, D. (2005). A practical guide to factorial validity using pls-graph: tutorial and annotated example. *Communications of the Association for Information Systems, 16*(5), 91-109.

Ghani, E., & Jusoff, K. (2009). Determinants of preferred financial digital format by new zealand accounting practitioners. *International Education Studies, 2*(1), 167-178.

Ghani, E., Laswad, F., & Tooley, S. (2009). Digital reporting formats: Users' perceptions, preferences and performances.*The International Journal of Digital Accounting Research, 9, 45-98.*

Ghani, E., Mara, U., Laswad, F., Tooley, S., & Jusoff, K. (2009). The role of presentation format on decision-makers' behaviour in accounting. *International Business Research, 2*(1), P183.

Ghani, E., Mara, U., Laswad, M., North, P., Zealand, N.,Tooley, S. *et al.* (2008). *Do digital reporting formats assist professional users in overcoming functional fixation in recognition vs. disclosure?* Paper presented at the BAA 2008 Conference.

Ghani, E. K., Laswad, F. a., & Tooley, S. (2007). *Users' perception of usefulness and ease of use of digital presentation formats.* Paper presented at the 5th Asia Pacific Interdisciplinary Research in Accounting (APIRA) Conference.

Gilbert, G. N. (2001). *Researching social life*: Sage Publications Ltd.

Gilligan, C., & Wilson, R. (2003). *Strategic marketing planning*: Butterworth-Heinemann Ltd.

Gorsuch, R. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of personality assessment, 68*(3), 532-560.

Gray, G., & Miller, D. (2009). XBRL: Solving real-world problems. *International Journal of Disclosure and Governance, 6*(3), 207-223.

Greenhalgh, T., Robert, G., MacFarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly, 82*(4), 581-629.

Grigorovici, D., & Constantin, C. (2004). Experiencing interactive advertising beyond rich media: Impacts of ad type and presence on brand effectiveness in 3D gaming immersive virtual environments. *Journal of Interactive Advertising*, 5(1), 1-22.

Grossnickle, J., & Raskin, O. (2001). Handbook of online marketing: McGraw.

Guadagnoli, E., & Velicer, W. (1988). Relation to sample size to the stability of component patterns. *Psychological Bulletin, 103*(2), 265-275.

Hanna, R., Weinberg, B., Dant, R., & Berger, P. (2005). Do internet-based surveys increase personal self-disclosure? *The Journal of Database Marketing, Customer Strategy Management, 12*(4), 342-356.

Hannon, N. (2003). XBRL: Edgar analyst changes everything. *Strategic Finance, 84*(7), 55-56.

Harrison, A., & Rainer, R. (1992). The influence of individual differences on skill in end-user computing. *Journal of Management Information Systems*, 9(1), 93-111.

Hartwick, J., & Barki, H. (1994). Explaining the role of user participation in information system use. *Management Science, 40(4),* 440-465.

Henderson, D., Sheetz, S., & Trinkle, B. (2009). A Structural model of the determinants of XBRL adoption. *Available at SSRN: http://ssrn.com/abstract=1367232.*

Herrero Crespo, A., & Rodriguez del Bosque, I. (2008). The effect of innovativeness on the adoption of B2C e-commerce: A Model Based on the Theory of Planned Behaviour. *Computers in Human Behavior, 24*(6), 2830-2847.

Herrmann, T., Kienle, A., & Reiband, N. (2003). Meta-knowledge-a success factor for computer-supported organizational learning in companies. *Educational Technology & Society, 6*(1), 9-13.

Higgins, L., & Harrell, H. (2003). XBRL: Don't lag behind the digital information revolution. *Journal of Corporate Accounting & Finance, 14*(5), 13-21.

Hinton PR. Brownlow C, McMurray I. et al. *SPSS Explained.* 1st Ed. 2004

Hodge, F. (2001). Hyperlinking unaudited information to audited financial statements: Effects on investor judgments. *Accounting Review, 76(10),* 675-691.

Hodge, F., Kennedy, J., & Maines, L. (2004). Does search-facilitating technology improve the transparency of financial reporting?. *The Accounting Review, 79*(3), 687-703.

Hoffman, C. (2006). *Financial reporting using XBRL.* IFRS and US GAAP Edition.

Hoffman, C., & Strand, C. (2001). *XBRL essentials: A nontechnical introduction to extensible business reporting language (XBRL), the digital language of business reporting*: American Institute of Certified Public Accountants, New York.

Hoffman, D., & Novak, T. (1996). Marketing in hypermedia computer-mediated environments: conceptual foundations. *The Journal of Marketing, 60*(3), 50-68.

Holmes, J. H. (1997). *Discovery of disease risk with a learningclassifier system*. Paper presented at the Proceedings ofthe Seventh International Conference on GeneticAlgorithms (ICGA97).

Huang, E., & Chuang, M. (2007). Extending the theory of planned behaviour as a model to explain post-merger employee behaviour of is use. *Computers in Human Behavior, 23*(1), 240-257.

Huang, W., D'Ambra, J., & Bhalla, V. (2002). *Key factors influencing the adoption of e-government in australian public sectors*. Paper presented at the 8th AMCIS.

Hurtt, D., Kreuze, J., & Langsam, S. (2001). Using the internet for financial reporting. *Journal of Corporate Accounting & Finance, 12*(3), 67-76.

Jackson, C., Chow, S., & Leitch, R. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision Sciences, 28*(2), 357-389.

Jackson, S., & Scott, S. (2001). *Gender*. Routledge, London.

Jeyaraj, A., Rottman, J., & Lacity, M. (2006). A Review of the predictors, linkages, and biases in it innovation adoption research. *Journal of Information Technology, 21*(1), 1-23.

Jones, A., & Willis, M. (2003). The challenge of XBRL: Business reporting for the investor. *Balance Sheet, 11*(3), 29-37.

Jones, N., & Gupta, J. (2004). Transforming small businesses into intelligent enterprises through knowledge management. *Intelligent enterprises of the 21st century*, Idea Group

Kalton, G. (1983). *Introduction to survey sampling*: Sage Publications, Inc.

Kaplowitz, M., Hadlock, T., & Levine, R. (2004). A Comparison of web and mail survey response rates. *Public opinion quarterly, 68*(1), 94-101.

Karahanna, E., & Straub, D. (1999). The psychological origins of perceived usefulness and ease-of-use. *Information & Management, 35*(4), 237-250.

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). It adoption across time. *MIS Quarterly, 23*(2), 183-213.

Kazmi, S. N. (2008). *Competitive constructs of ERP implementation public sector in pakistan. International conference on business and management* (pp. 1-11). Bangkok: International Colloquium On Business & Management.

Kitchenham, B., & Pfleeger, S. (2002). Principles of survey research part 3: Constructing a survey instrument. *ACM SIGSOFT Software Engineering Notes, 27*(2), 20-23.

Laforet, S., & Li, X. (2005). Consumers' attitudes towards online and mobile banking in china. *Marketing, 23*(5), 362-380.

Lai, F., Wang, J., Hsieh, C. T., & Chen, J. C. (2007). On network externalities, e-business adoption and information asymmetry. *Industrial Management And Data Systems, 107*(5), 728-746.

Lawshe, C. (1975). A quantitative approach to content validity. *Personnel Psychology, 28*(4), 563-575.

Lee, M. (2009). Factors influencing the adoption of internet banking: An integration of tam and TPB with perceived risk and perceived benefit. *Electronic* Commerce *Research and Applications, 8*(3), 130-141.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management, 40*(3), 191-204.

Lessiter, J., Freeman, J., Miotto, A., & Ferrari, E. (2008). *A comparative study of remote controls for digital TV receivers*. Paper presented at the 6th European conference on Changing Television Environments table of contents.

Lewis, B. R., Snyder, C. A., & Rainer, K. R. J. (1995). An empirical assessment of the information resources management construct. *Journal of Management Information Systems, 12*(1), 199-223.

Li, Y., & Crews, M. (2006). Information technology addresses transparency: The potential effects of XBRL on financial disclosure. *Issues in Information Systems, 7*(2), 241-245.

Lim, V. K. G., & Teo, T. S. H. (2009). Mind your e-manners: impact of cyber incivility on employees' work attitude and behavior. *Information & Management*, 46(8), 419-425.

Limayem, M., & Hirt, S. (2003). Internet-based teaching: How to encourage university students to adopt advanced internet-based technologies?. *Journal of the Association for Information Systems, 4*(3).

Lin, H. Y. (2003). *The business financial reporting with XBRL technology.* National Yunlin University of Science & Technology, Taiwan,.

Locke, J., & Lowe, A. (2007). XBRL: An (open) source of enlightenment or disillusion? *European Accounting Review, 16*(3), 585-623.

Lu, J., Yao, J., & Yu, C. (2005). Personal innovativeness, social influences and adoption of wireless internet services via mobile technology. *Journal of strategic information systems, 14*(3), 245-268.

Luarn, P., & Lin, H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *computers in human behavior, 21*(6), 873-891.

Lucas, H., Swanson, E., & Zmud, R. (2007). Implementation, innovation, and related themes over the years in information systems research. *Journal of the Association for Information Systems, 8*(4), 206-210.

Ma, Q., & Liu, L. (2005). The role of internet self-efficacy in the acceptance of web-based medical record systems. *Journal of Organizational and End User Computing, 17*(1), 38-57.

Malhotra, Y., & Galletta, D. (1999). *Malhotra, Y. And Galletta, D. Extending the technology acceptance model to account for social influence: Theoretical bases and empirical validation.* Paper presented at the 32nd Annual Hawaii International Conference on Systems Sciences, Hawaii.

Marshall, B., Mortenson, K., Bourne, A., & Price, K. (2010). Visualizing basic accounting flows: does xbrl+ model+ animation= understanding?. *The International Journal of Digital Accounting Research, 10*(2), 27-54.

Mathieson, K. & Chin, W. (2001). Extending the technology acceptance model: The influence of perceived user resources. *Database for Advance in Information Systems, 32*(3), 86-102.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information systems research, 2*(3), 173-191.

Mathieson, K., Peacock, E., & Chin, W. (2001). Extending the technology acceptance model: the influence of perceived user resources. *ACM SIGMIS Database, 32*(3), 86-112.

McCloskey, D. (2006). The importance of ease of use, usefulness, and trust to online consumers: An examination of the technology acceptance model with older customers. *Journal of Organizational and End User Computing, 18*(3), 47-65.

Melville, N., & Ramirez, R. (2008). Information technology innovation diffusion: an information requirements paradigm. *Information Systems Journal, 18*(3), 247-273.

Miller, P., Sooryamoorthy, R., Anderson, M., Palackal, A., & Shrum, W. (2006). Gender and science in developing areas: Has the internet reduced inequality?. *Social Science 4,* 87(3), 679-689.

Mingers, J. (2001). Combining is research methods: Towards a pluralist methodology. *Information Systems Research, 12*(3), 240-259.

Mingers, J. (2003). The paucity of multimethod research: A review of the Information Systems Literature. *Information Systems Journal, 13*(3), 233-249.

Moody, D., Sindre, G., & Brasethvik, T. (2003). *Evaluating the quality of information models: empirical testing of a conceptual model quality framework.* Paper presented at the 25th International Conference on Software Engineering (ICSE'03).

Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information systems research, 2*(3), 192-222.

Morgan, D. H. J. (1986). Gender. In *key variables in social investigation,* Burgess, R., (Ed.), Routledge, London.

.Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions: implications for a changing work force. *Personnel Psychology, 53* (2), 375-403.

Myers, M. (1997). Qualitative research in information systems. *MIS Quarterly*, 21(2), 241-242.

Nandhakumar, J., & Jones, M. (1997). *Designing in the dark: The changing user-developer relationship in information systems development.* Paper presented at the eighteenth international conference on Information systems table of contents, Atlanta, Georgia, United States.

Naumann, J. (2004). Tap into XBRL's power the easy way: The microsoft office tool for XBRL benefits all financial reporting participants. *Journal of Accountancy, 197*(5), 32-40.

Nel, G., & Steenkamp, L. (2008). An exploratory study of chartered accountants' awareness and understanding of XBRL. *Meditari Accountancy Research, 16*(1), 79-93.

Ngai, E., & Gunasekaran, A. (2004). Implementation of EDI in Hong Kong: *an empirical analysis. Industrial Management & Data Systems*, 104(1), 88-100.

Nilikanta, S., & Scammel, W. (1990). The effect of information sources and communication channels on the diffusion of innovation in a database development environment. *Management Science, 36(1),* 24-40.

Norman, D. (2002). *The design of everyday things*: Basic Books New York.

Ogbonna, E., & Harris, L. (2005). The adoption and use of information technology: A longitudinal study of a mature family firm. *New Technology, Work and Employment, 20*(1), 2-18.

Oliver, R., & Bearden, W. (1985). Crossover effects in the theory of reasoned action: a moderating influence attempt. *Journal of Consumer Research*, 324-340.

Orlikowski, W., & Baroudi, J. (1991). Studying information technology in organizations: research approaches and assumptions. *Information systems research, 2*(1), 1-28.

Pandita, N., Singh, S., & Dash, S. (2008). *Barriers to equitable access to quality health information with emphasis on developing countries*. Paper presented at the Making the Health Connection conference.

Pankko, R. (1983). Options in electronic mail. *Office Administration and Automation, 44*(11), 50-96.

Park, N., Lee, K., & Cheong, P. (2008). University instructors' acceptance of electronic courseware: an application of the technology acceptance model. *Journal of Computer-Mediated Communication, 13*(1), 163-186.

Pearson, A., Gallagher, A., Rosser, J., & Satava, R. (2002). Evaluation of structured and quantitative training methods for teaching intracorporeal knot tying. *Surgical endoscopy, 16*(1), 130-137.

Petter, S., DeLone, W., & McLean, E. (2008). Measuring information systems success: models, dimensions, measures, and interrelationships. *European Journal of Information Systems, 17*(3), 236-263.

Pfeffer, J., & Salancik, G. (2003). *The external control of organizations: a resource dependence perspective*: Stanford University Press, CA.

Pinsker, R. (2003). XBRL awareness in auditing: a sleeping giant? *Managerial Auditing Journal, 18*(9), 732-736.

Pinske, R. (2007). A theoretical framework for examining the corporate adoption decision involving XBRL as a continuous disclosure reporting technology *new dimensions of business reporting and XBRL* (73-98). Verlag, Germany: Springer Group.

Pinsker, R. (2008). An empirical examination of competing theories to explain continuous disclosure technology adoption intentions using XBRL as the Example technology. *The International Journal of Digital Accounting Research, 8*(14), 81-96.

Pinsker, R., & Wheeler, P. (2009). Nonprofessional investors perceptions of the efficiency and effectiveness of XBRL-Enabled financial statement analysis and of firms providing XBRL-formatted information. *International Journal of Disclosure and Governance, 6*(3), 241-261.

Plumlee, R., & Plumlee, M. (2008). Assurance on XBRL for financial reporting. *Accounting Horizons* 22 *(3),* 353–368.

Porter, C., & Donthu, N. (2006). Using the technology acceptance model to explain how attitudes determine internet usage: The Role of Perceived Access Barriers and Demographics. *Journal of Business Research, 59*(9), 999-1007.

Premkumar, G., & Roberts, M. (1999). Adoption of new information technologies in rural small businesses. *Omega, 27*(4), 467-484.

Premuroso, R., & Bhattacharya, S. (2008). Do early and voluntary filers of financial information in xbrl format signal superior corporate governance and operating

performance?. *International Journal of Accounting Information Systems, 9*(1), 1-20.

Rawashdeh, A. A., Selamat, M.H., & Abdullah M.S. (2011, February). *Characteristics of consumers influencing adoption behavior for XBRL*. Paper presented at the International Business Research Conference (IBRC'11), Kuala Lumpur, Malaysia.

Rice, C. (1997). *Understanding customers*. Oxford: Butterworth-Heinemann.

Rice, R., & Shook, D. (1990). Relationships of job categories and organizational levels to use of communication channels, including electronic mail: A meta-analysis and extension. *Journal of Management Studies, 27*(2), 195-229.

Rogers, E. (1983). *Diffusion of innovations (3rd Ed)*. New York, USA: The Free Press.

Rogers, E.. (1995). *Diffusion of innovation* (4th Ed ed.). New York: Free Press.

Rogers, E. (2002). Diffusion of preventive innovations. *Addictive Behaviors, 27*(6), 989-993.

Rogers, E. M., F.F. Shoemaker (1971). *Communication of innovations*. Collier Macmillan, India: The Free Press.

Roig, J. C. F., Garcia, J. S., Tena, M. A. M., & Monzonis, J. L. (2006). Customer perceived value in banking services. *International Journal of Bank Marketing*, 24(5), 266-283

Saeed, K., & Abdinnour-Helm, S. (2008). Examining the effects of information system characteristics and perceived usefulness on post adoption usage of information systems. *Information & Management, 45*(6), 376-386.

Saeedi, A., Richards, J., & Smith, B. (2004). An introduction to XBRL. *Irainan Accounting & Auditing Review, 45*, 132-158.

Scott, S., & Bruce, R. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal, 37*(3), 580-607.

Selamat, M. H., Dwivedi, Y. K., Abd Wahab, M. S., Mat Samsudin, M. A., Williams, M. D., & Lal, B. (2008). *Factors Affecting Malaysian Accountants' Broadband Adoption and Use Behavior.* Paper presented at the 14th Americas Conference on Information Systems (AMCIS 2008), Toronto, Ontario.

Selamat, M. H., & Rawashdeh, A.A. (2009). *Towards a conceptual model of XBRL diffusion.* Paper presented at the 8th Asian Academy of Management International Conference, Kuantan, Malaysia.

Selamat, M. H., & Rawashdeh, A.A. (2010). Investigating XBRL diffusion: *Toward establishing content validity and pre-test of the questionnaire instrument.* Paper presented at the Communication and Media Conference (i-COME'10), Melaka, Malaysia.

Shannon, D., Johnson, T., Searcy, S., & Lott, A. (2002). Using electronic surveys: advice from survey professionals. *Practical Assessment, Research & Evaluation,*

8(1). Retrieved July 18, 2004, from http://www.ericae.net/pare/getvn.asp?v=8&n=1

Sheehan, K. (2001). E-mail survey response rates: A review. *Journal of Computer-Mediated Communication, 6*(2), 1-20.

Shih, C., & Venkatesh, A. (2002). Beyond adoption: Development and application of use diffusion (Ud) model to study household use of computers. *Irvine, CA, Project NOAH at Center for Research on Information Technology and Organizations (CRITO) at University of California.*

Shih, C., & Venkatesh, A. (2004). Beyond adoption: Development and application of a use-diffusion model. *Journal of Marketing, 68*(1), 59-72.

Shih, Y., & Fang, K. (2004). The use of a decomposed theory of planned behavior to study internet banking in taiwan. *Internet Research, 14*(3), 213-223.

Shin, R. (2003). XBRL, financial reporting, and auditing. *The CPA Journal, 73*, 12-61.

Singh, M., & Burgess, S. (2007). Electronic data collection methods. *Handbook of research on electronic surveys and measurements, Idea Group Reference, Hershey*, 28–43.

Solomon, S., & O'Brien, J. (1990). The effect of demographic factors on attitudes toward software piracy. *J. COMP. INF. SYST., 30*(3), 40-46.

Stanton, J. (1998). An empirical assessment of data collection using the internet. *Personnel Psychology, 51*(3), 709-725.

Straub, D., Boudreau, M., & Gefen, D. (2004). Validation guidelines for is positivist research. *Communications of the Association for Information Systems, 13*(24), 380-427.

Straub, D., Gefen, D., & Boudreau, M. (2005). Quantitative research, *research in information systems: A handbook for research supervisors and their students. Amsterdam: Elsevier.*

Strong, D., Dishaw, M., & Bandy, D. (2006). Extending task technology fit with computer self-efficacy. *ACM SIGMIS Database, 37*(2-3), 96-107.

Stynes, D., & Peterson, G. (1984). A review of logit models with implications for modeling recreation choices. *Journal of Leisure Research, 16*(4), 295-310.

Sugai, P. (2007). Exploring the impact of handset upgrades on mobile content and service usage. *International Journal of Mobile Communications, 5*(3), 281-299.

Tan, M., & Teo, T. (2000). Factors influencing the adoption of internet banking. *Journal of the* AIS, 8(3), 130-141.

Taylor, E. Z., & Dzuranin, A. C. (2010). Interactive financial reporting: An introduction to extensible business reporting language (XBRL). *Issues in Accounting Education*, 25, 71.

Taylor, S., & Todd, P. (1995). Understanding information technology usage: A test of competing models. *Information systems research, 6*(2), 144.

Teo, T. (2009). The impact of subjective norm and facilitating conditions on pre-service teachers' attitude toward computer use: A structural equation modeling of an

extended technology acceptance model. *Journal of Educational Computing Research, 40*(1), 89-109.

Thompson, L., Surface, E., Martin, D., & Sanders, M. (2003). From paper to pixels: Moving personnel surveys to the web. *Personnel Psychology, 56*(1), 197-227.

Tojib, D., & Sugianto, L. (2006). Content validity of instruments in is research. *Journal of Information Technology Theory and Application (JITTA), 8*(3), 31-56.

Tribunella, T., & Tribunella, H. (2006). A method of teaching the underlying theory of XBRL: An application of information modeling and XML programming with a microsoft excel implementation. *AIS Educator Journal, 1*(1), 11-25.

Troshani, I., & Doolin, B. (2007). Innovation diffusion: A stakeholder and social network view. *European Journal of Innovation Management, 10*(2), 176-200.

Troshani, I. and Rao, S. (2007) Drivers and inhibitors to XBRL adoption: A Qualitative Approach to Build a Theory in Under-Researched Areas, *International Journal of E-Business Research, 3*(4), 98-111.

Sekaran, U. (2003). Research methods for business. *NY: Hermitage Publishing Service.*

Valente, T. (1996). Network models of the diffusion of innovations. *Computational & Mathematical Organization Theory, 2*(2), 163-164.

Vasal, V. K., & Srivastava, R. P. (2002). Extensible business reporting language (XBRL): The digital language of business: An Indian Perspective. *Indian Accounting Review, 6*(1), 41–59.

Venkatesh, V., & Brown, S. (2001). A Longitudinal investigation of personal computers in homes: Adoption determinants and emerging challenges. *MIS Quarterly*, 71-102.

Venkatesh, V., & Davis, F. (2000). A Theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 186-204.

Venkatesh, V., & Morris, M. (2000). Why don't men ever stop to ask for directions? gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 115-139.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a Unified View. *MIS Quarterly, 27*(3), 425-478.

Venkatesh, V., Speier, C., & Morris, M. (2002). User acceptance enablers in individual decision making about technology: Toward an integrated model. *Decision Sciences, 33*(2), 297-316.

Wacker, J. (2004). A Theory of formal conceptual definitions: Developing theory-building measurement instruments. *Journal of Operations Management, 22*(6), 629-650.

Warren, M. (2004). Farmers online: Drivers and impediments in adoption of internet in Uk agricultural businesses. *Journal of Small Business and Enterprise Development, 11*(3), 371-381.

Wahid, F.(2007), Using the technology adoption model to analyze internet adoption and use among men and women in indonesia. *Journal on Information Systems in developing Countries*, 32(6): p. 1-8

Wei, L., & Zhang, M. (2008). The adoption and use of mobile phone in rural china: A case study of hubei, China. *Telematics and Informatics, 25*(3), 169-186.

Weisberg, S. (2005). *Applied linear regression*: Wiley-Interscience.

Willis, M. (2005). XBRL and data standardization: Transforming the way cpas work; save time and improve reporting. *Journal of Accountancy, 199*(3), 80-82.

Witmer, D., Colman, R., & Katzman, S. (1999). From paper-and-pencil to screen-and-keyboard: toward a methodology for survey research on the internet. *Doing Internet research: Critical issues and methods for examining the Net*, 145-161.

Wright, K. (2005). Researching internet-based populations: advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. Journal of Computer-Mediated Communication, 10(3), 11. Retrieved February 5, 2008, from http://jcmc.indiana.edu/vol10/issue3/wright.html.

Xia, W.D. and Lee, G.H. (2000, December). *The influence of persuasion, training and experience on user perceptions and acceptance of IT innovation*', Association for Conference on Information Systems, Brisbane, Australia, 371-384.

Yan, P., & Lin, L. (2007). Reconstruction of business reporting model: An flexible reporting model based on XBRL and web services. *Accounting Research, 5*,80-87.

Yi, M., Jackson, J., Park, J., & Probst, J. (2006). Understanding information technology acceptance by individual professionals: Toward an integrative view. *Information & Management, 43*(3), 350-363.

Yoon, H., Zo, H., & Ciganek, A. (2010). Does XBRL adoption reduce information asymmetry? *Journal of Business Research, In Press, Corrected Proof.*

Young, H. (2006). The diffusion of innovations in social networks. *The economy as an evolving complex system III: Current Perspectives and Future Directions*, 267.

Yuan, X., & Wang, Y. (2009). Study on the function of XBRL and the enhancement of the accounting information quality under the background of informationization. *International Journal of Business and Management, 4*(11), P137.

APPENDICES

Appendix A

THE INVITATION TO JOIN THE RESEARCH

Dear Sir/Madam

You are kindly requested to participate in this survey research being conducted by Awni Rawashdeh, PhD student from the Faculty of Business, Universiti Utara Malaysia.

Your opinions are important to us. Please take a few minutes to complete the online survey concerning XBRL diffusion.

To begin the survey, simply go to:

http://xbrlnetwork.ning.com/, Homepage, Thank you!

Best Regards

Awni Rawashdeh

Appendix B

EXPLORATORY STUDY

SECTION 1: DEMOGRAPHIC ITEMS

This section asks questions about your age, gender, education, experience, country, and industry. Please answer the questions with which you are comfortable. All information will remain strictly confidential and anonymous.

1. What age group do you belong to?

- 17-24 Years
- 25-34 Years
- 35-44 Years
- 45-54 Years
- 55-64 Years
- 65-74 Years
- Above 75 Years

2. Gender

- Male
- Female

3. Highest level of education

Diploma

- Degree
- Postgraduate (MA, MSc)
- Postgraduate (PhD)

4. How long have you worked in your current position?

- 1 Year
- 2-5 Years
- 5-10 Years
- 10-15 Years
- 15-20 Years

- Above 20 Years.

5. In which industry do you currently work?
   - Agriculture, Forestry, Fishing and Hunting
   - Mining, Quarrying, and Oil and Gas Extraction
   - Utilities
   - Construction
   - Manufacturing
   - Wholesale Trade
   - Retail Trade
   - Transportation and Warehousing
   - Information
   - Finance and Insurance
   - Real Estate and Rental and Leasing
   - Professional, Scientific, and Technical Services
   - Management of Companies and Enterprises
   - Administrative and Support and Waste Management and Remediation Services
   - Educational Services
   - Health Care and Social Assistance
   - Arts, Entertainment, and Recreation
   - Accommodation and Food Services
   - Other Services (except Public Administration)
   - Public Administration
6. In what country do you work?
7. Do you use any type of XBRL services in your work?
   - Yes
   - No

SECTION 2: ATTITUDINAL AND NORMATIVE FACTORS

Please rate each of the following statements provided on a 1-5 point scale where: 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

1. PRA1. XBRL has an advantage over e-traditional standard (HTML and PDF) because it offers faster access to data.
2. PRA2. XBRL has an advantage over e-traditional standard because it provides faster processing of data.
3. PRA3. XBRL has an advantage over e-traditional standard because it offers an always-on access to data.
4. PRA4. XBRL has no an advantage over e-traditional standard because the XBRL specifications are royalty-free.
5. PRA5. XBRL has no an advantage over e-traditional standard because it provides more accurate data.
6. PU1. XBRL is useful in making my work/job-related tasks easier.
7. PU2. XBRL provides a standard that allows business data to be exchanged among different computer systems and software applications.
7. PU3. XBRL is helpful in improving my work/job-related tasks in the workplace.
9. PU4. The advantage of the XBRL will outweigh the disadvantage.
10. PU5. Overall, using the XBRL will be advantageous.
11. PE1. The instructions for using applications in the XBRL are hard to follow.
12. PE2. It is difficult to learn how to use the XBRL.
13. PC1. Using XBRL is compatible well with the way I work.
14. PC2. Using the XBRL is compatible with my work style.
15. PC3. The setup of XBRL is compatible with the way I work.
16. PX1. The XBRL specifications are frequently changed.
17. PX2. The XBRL specifications contain varied "tag" (U.S GAAP and IFRS).
18. PI1. My friends think that I should use (or continue the current using) XBRL.
19. PI2. My colleagues think that I should use (or continue the current using) XBRL.

20. PI3. My family members think that I should use (or continue the current using) XBRL.

21. SI1. My bosses encourage me to try XBRL.

22. SI2. My managers encourage me to try XBRL.

SECTION3: CONTROL FACTORS

This section asks questions about control factors such as knowledge (KN), training (TR), language (EL), self efficacy (SE) and facilitate conditions rescores (FCR).

1. KN1. I do not have difficulty in explaining why adopting XBRL is beneficial.

2. KN2. I know the benefits that XBRL offer and cannot be obtained by e traditional standards.

3. T1. Training plays an essential role in the adoption of XBRL.

4. L1. Poor English language skills hindering XBRL adoption

5. SE1. I clearly understand how to use the XBRL.

6. FCR1. My current tools are adequate to enable the use of XBRL.

7. FCR 2. There is problem of XBRL availability in my workplace.

8. FCR 3. XBRL is not compatible with the software or application that I use.

9. FCR4. The processing data by the XBRL will be too expensive.

10. FCR5. It is not too costly to purchase new XBRL software or to upgrade my old software.

11. FCR6. It is not too costly for me to use XBRL.

12. FCR7. I can afford to use XBRL if I want to.

SECTION 4: COMMENTS

This section asks open-ended questions for you to enter anything else that you think we and the industry in general should know about XBRL, and other descriptive information.

1. Do you have any comments on why you will choose to adopt or not to adopt XBRL?

2. Do you have any other issues you wish to raise, or ideas you wish to propose, concerning the XBRL Diffusion Survey?

3. Do you have any comments on completing the questionnaire, or any suggestions for improvements?

Appendix C

CONTENT VALIDITY

Please rate each of the following statements provided on a 1-3 point scale where: 1 = Not Necessary, 2 = Useful but Not Essential, 3 = Essential.

- Not Necessary
- Useful but Not Essential
- Essential

SECTION 1: XBRL Behavioral intention (XBI)

1. Bi1: I intend to adopt (or continue to adoption) XBRL in the future
2. BI2: I not intend to use (or intend to continue use) XBRL web services in the future.
3. BI3: I intend to use XBRL frequently in the future.

SECTION 2: ATTITUDINAL AND NORMATIVE FACTORS

1. PRA1. XBRL has no an advantage over e-traditional standard (HTML and PDF) because it offers faster access to data.
2. PRA2. XBRL has no an advantage over e-traditional standard because it provides faster processing of data.
3. PRA3. XBRL has no an advantage over e-traditional standard because it offers an always-on access to data.
4. PRA4. XBRL has no an advantage over e-traditional standard because the XBRL specifications are royalty-free.
5. PRA5. XBRL has an advantage over e-traditional standard because it provides more accurate data.
6. PU1. XBRL is useful in making my work/job-related tasks easier.
7. PU2. XBRL provides a standard that allows business data to be exchanged among different computer systems and software applications.
8. PU3. XBRL is helpful in improving my work/job-related tasks in the workplace.
9. PU4. The advantage of the XBRL will outweigh the disadvantage.
10. PU5. Overall, using the XBRL will be advantageous.
11. PE1. The instructions for using applications in the XBRL are hard to follow.

12. PE2. It is difficult to learn how to use the XBRL.

13. PE3. Overall, XBRL services would be easy for me

14. PC1. Using XBRL is compatible well with the way I work.

15. PC2. Using the XBRL is compatible with my work style.

16. PC3. The setup of XBRL is compatible with the way I work.

17. PX1. The XBRL specifications are frequently changed.

18. PX2. The XBRL specifications contain varied "tag" (U.S GAAP and IFRS).

19. PI1. My friends think that I should use (or continue the current using) XBRL.

20. PI2. My colleagues think that I should use (or continue the current using) XBRL.

21. PI3. My family members think that I should use (or continue the current using) XBRL.

22. SI1. My bosses encourage me to try XBRL.

23. SI2. My managers encourage me to try XBRL.

SECTION 3: CONTROL FACTORS

This section asks questions about control factors such as knowledge (KN), training (TR), language (EL), self-efficacy (SE) and facilitate conditions rescores (FCR).

1. KN1. I do not have difficulty in explaining why adopting XBRL is beneficial.

2. KN2. I know the benefits that XBRL offer and cannot be obtained by e traditional standards.

3. TR1. Training plays an essential role in the adoption of XBRL.

4. TR2. XBRL training you received has helped you to adopt XBRL.

5. EL1. Poor English language skills hindering XBRL adoption

6. EL2. MY English language skills helped me to use XBRL.

7. SE1. I clearly understand how to use the XBRL.

8. SE2.I would feel comfortable using the XBRL on my own.

9. SE3.Learning to operate the XBRL applications is easy for me.

10. FCR 1. My current tools are adequate to enable the use of XBRL.

11. FCR 2. There is problem of XBRL availability in my workplace.

12. FCR 3. XBRL is not compatible with the software or application that I use.

13. FCR 4. The processing data by the XBRL will be too expensive.

14. FCR5. It is not too costly to purchase new XBRL software or to upgrade my old software.

15. FCR6. It is not too costly for me to use XBRL.

16. FCR7. I can afford to use XBRL if I want to.

SECTION 4: XBRL USAGE

Please rate each element in relation to the different factors of XBRL usage on a three-point scale: "1 = not necessary"; "2 = useful but not essential"; "3 = essential". Please select 'Not Necessary' or 'Useful but Not Essential' or 'Essential' from the drop-down box.

- Not Necessary
- Useful but Not Essential
- Essential

1. To exchange business information
2. To facilitate continues reporting
3. To generate information for tax filings
4. To generate internal and external financial reporting
5. To generate external financial reporting
6. To generate information for financial authorities
7. To generate information for central banks
8. To generate information for governments
9. To fill of loan reports and applications
10. To fill credit risk assessments
11. To exchange of information between government departments
12. To exchange of information between other institutions
13. To prepare financial reports in multiple languages
14. To exchange financial statements
15. To automate the processes of data collection
16. To distribute data
17. To look for data on Internet
18. To convert data among different forms (GAAP, IFRS)

19. To archive the financial data
20. To facilitate data transfer between different systems
21. To improve data quality
22. To internal compliance processes
23. To reduce risk management
24-To increase comparability of financial data
25-To make financial data more transparent
26-To make financial data to external stakeholder easier
27-To reduce the cost of generating financial reports
28-To increase the reliability of financial data
29-To establish a common vocabulary for financial data
30-To provide an audit trail
31-To facilitate continuous auditing
32-To communicate with trading partners

Appendix D

Pre-Test Survey

Please rate each of the following statements provided on a 1-7 point scale where : 1 = Extremely disagree(ED) 2 = Quite disagree 3 = Slightly disagree 4 = Neutral 5 = Slightly agree 6 Quite agree 7 = Extremely agree(EA).

- 1 = extremely disagree
- 2 = Quite disagree
- 3 = Slightly disagree
- 4 = Neutral
- 5 = Slightly agree
- 6 = Quite agree
- 7 = Extremely agree

SECTION 1: Behavioral intention (BI) to adopt XBRL

SECTION 1: XBRL Behavioral intention (XBI)

Bi1: I intend to adopt (or continue to adoption) XBRL in the future

Bi2: I not intend to use (or intend to continue use) XBRL service in the future

BI3: I intend to use XBRL frequently in the future.

SECTION 2: ATTITUDINAL AND NORMATIVE FACTORS

1. PRA1. XBRL has no an advantage over e-traditional standard (HTML and PDF) because it offers faster access to data.

2. PRA2. XBRL has no an advantage over e-traditional standard because it provides faster processing of data.

3. PRA3. XBRL has no an advantage over e-traditional standard because it offers an always-on access to data.

4. PRA4. XBRL has no an advantage over e-traditional standard because the XBRL specifications are royalty-free.

5. PRA5. XBRL has an advantage over e-traditional standard because it provides more accurate data.

6. PU1. XBRL is useful in making my work/job-related tasks easier.

7. PU2. XBRL provides a standard that allows business data to be exchanged among different computer systems and software applications.

7. PU3. XBRL is helpful in improving my work/job-related tasks in the workplace.

9. PU4. The advantage of the XBRL will outweigh the disadvantage.

10. PU5. Overall, using the XBRL will be advantageous.

11. PE1. The instructions for using applications in the XBRL are hard to follow.

12. PE2. It is difficult to learn how to use the XBRL.

13. PC1. Using XBRL is compatible well with the way I work.

14. PC2. Using the XBRL is compatible with my work style.

15. PC3. The setup of XBRL is compatible with the way I work.

16. PX1. The XBRL specifications are frequently changed.

17. PX2. The XBRL specifications contain varied "tag" (U.S GAAP and IFRS).

18. PI1. My friends think that I should use (or continue the current using) XBRL.

19. PI2. My colleagues think that I should use (or continue the current using) XBRL.

20. SI1. My bosses encourage me to try XBRL.

21. SI2. My managers encourage me to try XBRL.

SECTION 3: CONTROL FACTORS

This section asks questions about control factors such as knowledge (KN), training (TR), language (EL), self-efficacy (SE) and facilitate conditions rescores (FCR).

1. KN1. I do not have difficulty in explaining why adopting XBRL is beneficial.

2. KN2. I know the benefits that XBRL offer and cannot be obtained by e traditional standards.

3. TR1. Training plays an essential role in the adoption of XBRL.

4. TR2. XBRL training you received has helped you to adopt XBRL

5. L1. Poor English language skills hindering XBRL adoption

6. MY English language skills helped me to use XBRL.

7. SE1. I clearly understand how to use the XBRL.

8. SE2.I would feel comfortable using the XBRL on my own.

9. SE3.Learning to operate the XBRL applications is easy for me.

10. FCR 1. My current tools are adequate to enable the use of XBRL.

11. FCR 2. There is problem of XBRL availability in my workplace.

12. FCR3. The processing data by the XBRL will be too expensive.

13. FCR4. It is not too costly to purchase new XBRL software or to upgrade my old software.

11. FCR5. It is not too costly for me to use XBRL.

12. FCR6. I can afford to use XBRL if I want to.

SECTION 7: XBRL Usage

Do you use the following services in your work? Please select 'YES' or 'No 'from the drop-down box.

- Yes
- No

1. To exchange business information
2. To facilitate continues reporting
3. To generate information for tax filings
4. To generate internal and external financial reporting
5. To generate external financial reporting
6. To generate information for financial authorities
7. To generate information for central banks
8. To generate information for governments
9. To fill of loan reports and applications
10. To fill credit risk assessments
11. To exchange of information between government departments
12. To exchange of information between other institutions
13. To prepare financial reports in multiple languages
14. To exchange financial statements
15. To automate the processes of data collection
16. To distribute data
17. To look for data on Internet
18. To convert data among different forms (GAAP, IFRS)
19. To archive the financial data
20. To facilitate data transfer between different systems
21. To improve data quality

22. To internal compliance processes

23. To reduce risk management

Other (please specify)

SECTION 8: COMMENTS

This section asks open-ended questions for you to enter anything else that you think we and the industry in general should know about XBRL, and other descriptive information.

1. Do you have any comments on why you will choose to adopt or not to adopt XBRL?

2. Do you have any other issues you wish to raise, or ideas you wish to propose, concerning the XBRL diffusion survey?

3. Do you have any comments on completing the questionnaire, or any suggestions for improvements?

Appendix E

Pilot Test Questionnaire

You are kindly requested to participate in a global survey being conducted by Awni Rawashdeh, a PhD student from the Faculty of Business, Universiti Utara Malaysia.

PROJECT TITLE: diffusion of XBRL innovation model of adoption and usage

TARGET AUDIENCE: Any individual who use and consume Internet financial data and has knowledge about XBRL, HTML and PDF tend to accept and use any one of these formats in his/her work.

1. PURPOSE OF THE STUDY: The purpose of this research is to "investigate XBRL adoption and usage among users".

2. CONFIDENTIALITY: None of the information provided by the participants will be disclosed or used in any monetary, political or institutional way. A code number will be used to protect your identity. Data will be kept with the investigator and will be destroyed after completion of this research.

3. **FREEDOM TO WITHDRAW:** Participation is voluntary. I can stop part way through or withdraw at any time, if I choose.

CONTACT: If you have any questions about the survey please contact the investigator Awni Rawashdeh, Faculty of business, University Utara Malaysia, 06010 Sintok, Kedah Darul Aman, by email at:

I would like to take this opportunity to thank you for your time and patience in completing this questionnaire.

SECTION 1: DEMOGRAPHIC ITEMS

This section asks questions about your age, gender, education, experience, country, and industry. Please answer the questions with which you are comfortable. All information will remain strictly confidential and anonymous.

1. What age group do you belong to?
    - 17-24 Years
    - 25-34 Years
    - 35-44 Years
    - 45-54 Years
    - 55-64 Years
    - 65-74 Years
    - Above 75 Years
2. Gender
    - Male
    - Female
3. Highest level of education
    - Diploma
    - Degree
    - Postgraduate (MA, MSc)
    - Postgraduate (PhD)
4. How long have you worked in your current position?
    - 1 Year
    - 2-5 Years
    - 5-10 Years
    - 10-15 Years
    - 15-20 Years
    - Above 20 Years.
5. In which industry do you currently work?
    - Agriculture, Forestry, Fishing and Hunting
    - Mining, Quarrying, and Oil and Gas Extraction

- Utilities
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transportation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, Scientific, and Technical Services
- Management of Companies and Enterprises
- Administrative and Support and Waste Management and Remediation Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodation and Food Services
- Other Services (except Public Administration)
- Public Administration

6. In what country do you work?

The following statements only represent your perception so it is alright to rate them even if you do not have XBRL access at work place.

1. Do you use or adopt Internet financial reporting (XBRL, HTML, PDF etc)?
2. If you use or adopt Internet financial reporting, what would you describe?
3. How long have you been accessing the Internet financial reporting for?
4. How often do you use the Internet financial reporting?
5. How long do you spend on the Internet financial reporting on a daily basis?

SECTION 2: XBRL Behavioral intention (XBI)

Please rate each of the following statements provided on a 1-5 point scale where: 1 = Extremely disagree, 2 = Slightly disagree, 3 = Undecided, 4 = Slightly agree, 5 = Extremely agree.

Bi1: I intend to adopt (or continue to adoption) XBRL in the future

Bi2: I intend to use (or intend to continue use) XBRL service in the future

BI3: I intend to use XBRL frequently in the future.

SECTION 3: XBRL ADOPTION

This section asks questions about attitudinal factors such as perceived ease of use (PE), perceived usefulness (PU), relative advantage (PRA), perceived compatibility (PC), perceived complexity (PX) and normative factors such as peer influences (PI) and secondary influences (SI).

1. PRA1. XBRL has an advantage over e-traditional standard (HTML and PDF) because it offers faster access to data.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

2. PRA2. XBRL has an advantage over e-traditional standard because it provides faster processing of data.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

3. PRA3. XBRL has an advantage over e-traditional standard because it offers an always-on access to data.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

4. PRA4. XBRL has an advantage over e-traditional standard because the XBRL specifications are royalty-free.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

5. PRA5. XBRL has an advantage over e-traditional standard because it provides more accurate data.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

6. PU1. XBRL is useful in making my work/industry-related tasks easier.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

7. PU2. XBRL provides a standard that allows business data to be exchanged among different computer systems and software applications.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

8. PU3. XBRL is helpful in improving my work/industry-related tasks in the workplace.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

9. PU4. The advantage of the XBRL will outweigh the disadvantage.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

10. PU5. Overall, using the XBRL will be advantageous.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

11. PE1. The instructions for using applications in the XBRL are hard to follow.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

12. PE2. It is difficult to learn how to use the XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

13. PC1. Using XBRL is compatible well with the way I work.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

14. PC2. The setup of XBRL is compatible with the way I work.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

15. PC3. XBRL is not compatible with the software or application that I use.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

16. PX1. The XBRL taxonomies are frequently changed.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

17. PX2. The XBRL taxonomy contains varied "tag" (U.S GAAP and IFRS).

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

18. PI1. My friends think that I should use (or continue the current using) XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

19. PI2. My colleagues think that I should use (or continue the current using) XBRL.

20. SI1. My bosses encourage me to try XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

21. SI2. My managers encourage me to try XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

SECTION 4: CONTROL FACTORS

This section asks questions about control factors such as knowledge (KN), training (TR), English language (EL), self-efficacy (SE), and facilitate conditions rescores (FCR).

1. KN1. I do not have difficulty in explaining why adopting XBRL is beneficial.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

2. KN2. I know the benefits that XBRL offer and cannot be obtained by e-traditional standards.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

3. TR1. Training plays an essential role in the adoption of XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

4. TR2. XBRL training you received has helped you to adopt XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

5. EL1. Poor English language skills hindering XBRL adoption

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

6. EL2. MY English language skills helped me to use XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

7. SE1. I clearly understand how to use the XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

8. SE2.I would feel comfortable using the XBRL on my own.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

9. SE3.Learning to operate the XBRL applications is easy for me.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

10. FCR1. My current tools are adequate to enable the use of XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

11. FCR2. There is problem of XBRL availability in my workplace.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

12. FCR3. It is not too costly for me to use XBRL.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

13. FCR4. The processing data by the XBRL will be too expensive.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

14. FCR5. It is not too costly to purchase new XBRL software or to upgrade my old software.

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

15. FCR6. I can afford to use XBRL if I want to

1 Extremely Disagree 2 3 4 5 6 7 Extremely Agree

SECTION 5: XBRL UASAGE

Please select 'Yes' or 'No' from the drop-down box.

Do you use the following IFR services in your work?

1-To exchange business information

- Yes
- No

2-To facilitate continues reporting

- Yes
- No

3-To generate information for tax filings

- Yes
- No

4-To make financial data easier to analyze

- Yes
- No

5-To prepare financial reports in multiple languages

- Yes
- No

6-To exchange financial statements

- Yes
- No

7-To automate the processes of data collection

- Y Yes
- No

8-To distribute data

- Yes
- No

9-To look for data on Internet

- Yes
- No

10-To convert data among different forms (GAAP, IFRS)

- Yes
- No

11-To increase comparability of financial data

- Yes
- No

12-To improve the accuracy of financial data

- Yes
- No

13-To increase the accessibility of financial data

- Yes
- No

14-To archive the financial data

- Yes
- No

15-To facilitate data transfer between different systems

- Yes
- No

SECTION 6: COMMENTS

This section asks open-ended questions for you to enter anything else that you think we and the industry in general should know about XBRL, and other descriptive information.

1. Is the length of the questionnaire suitable?
2. Are the questions understandable/easy to answer?
3. How long you took to complete the questionnaire?
4. Is the design of the questionnaire suitable to be completed by email?
5. Do you have any comments on why you will choose to adopt or not to adopt XBRL?
6. Do you have any other issues you wish to raise, or ideas you wish to propose, concerning the XBRL Diffusion Survey?
7. Do you have any comments on completing the questionnaire, or any suggestions for improvements?

8. May we contact you to participate in future studies we will be conducting?

9. Would you like to receive a summary report of the findings of the study?

(If you say yes, you will receive an email including a copy of the report after analysis is complete.)

10. If you agreed to be contacted, would like to receive a copy of the summary report from this study, please enter you email address.

Appendix F

FINAL SURVEY

Exit this survey

Dear Sir/Madam

You are kindly requested to participate in a global survey being conducted by Awni Rawashdeh, a PhD student from the Faculty of Business, Universiti Utara Malaysia.

PROJECT TITLE: diffusion of XBRL innovation model of adoption and usage

TARGET AUDIENCE: Any individual who use and consume Internet financial data and has knowledge about XBRL, HTML and PDF tend to accept and use any one of these formats in his/her work.

1. PURPOSE OF THE STUDY: The purpose of this research is to "investigate XBRL adoption and usage among users".

2. CONFIDENTIALITY: None of the information provided by the participants will be disclosed or used in any monetary, political or institutional way. A code number will be used to protect your identity. Data will be kept with the investigator and will be destroyed after completion of this research.

3. **FREEDOM TO WITHDRAW:** Participation is voluntary. I can stop part way through or withdraw at any time, if I choose.

CONTACT: If you have any questions about the survey please contact the investigator Awni Rawashdeh, Faculty of business, University Utara Malaysia, 06010 Sintok, Kedah Darul Aman, by email at:

I would like to take this opportunity to thank you for your time and patience in completing this questionnaire.

1 / 8		12%

Next

2. Demographic Items

This section asks questions about your age, gender, education, experience, country and job.

Please answer the questions with which you are comfortable. All information will remain strictly confidential and anonymous.

1. What age group do you belong to?

- ○ 17-24 Years
- ○ 25-34 Years
- ○ 35-44 Years
- ○ 45-54 Years
- ○ 55-64 Years
- ○ 65-74 Years
- ○ Above 75 Years

2. Gender

- ○ Gender Male
- ○ Female

3. Highest level of education

- ○ Highest level of education Diploma
- ○ Degree
- ○ Other (please specify)
- ○ Postgraduate (MA, MSc)
- ○ Postgraduate (PhD)

4. How long have you worked in your current position?

- ◉ 1 Year
- ○ 2-5 Years
- ○ 5-10 Years
- ○ 10-15 Years
- ○ 15-20 Years
- ○ Above 20 Years

5. In what country do you work?

In what country do you work?

6. In which industry do you currently work?

- In which industry do you currently work? Agriculture, Forestry, Fishing and Hunting
- Mining, Quarrying, and Oil and Gas Extraction
- Utilities
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transportation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, Scientific, and Technical Services
- Management of Companies and Enterprises
- Administrative and Support and Waste Management and Remediation Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodation and Food Services
- Other Services (except Public Administration)
- Public Administration

2 / 8		25%

Prev Next

Exit this survey

3. Internet Financial Reporting Adoption

1. DO you adopt or use XBRL at work?

○ Yes ○ No

2. If you adopt or use Internet financial reporting, what would you describe the type of Internet financial reporting is that you do have?

○ HTML ○ PDF ○ Other

3. How long have you been accessing the Internet financial reporting (XBRL, HTML, PDF) for?

○ <12 Months ○ 12-24 ○ 25-36 ○ >36 Months

Other (please specify) _____

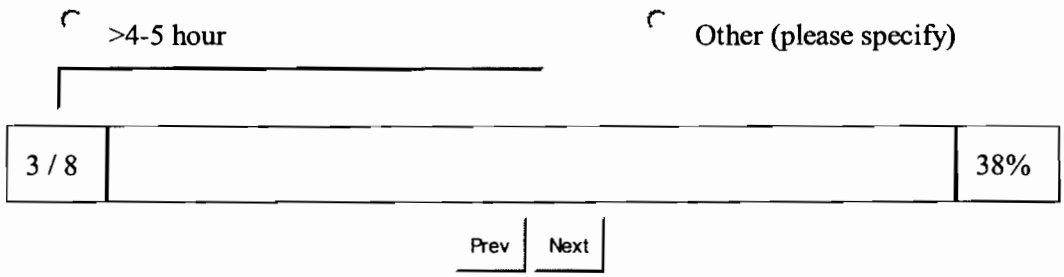
4. How often do you use the Internet financial reporting (XBRL, HTML, PDF)?

○ Several times a day
○ 3-5 days a week
○ Once every few weeks
○ About once a day
○ 1-2 days a week
○ Less often
Other (please specify)
○ Other (please specify)

_____

5. How long do you spend on the Internet financial reporting (XBRL, HTML, PDF) on a daily basis?

○ <1/2 hour
○ >5-6 hour
○ 1/2-1 hour
○ >6-7 hour
○ >1-2 hour
○ >7-8 hour
○ >2-3 hour
○ >8-9 hour
○ >3-4 hour
○ >9-10 hour



Towards a Holistic Model for the Diffusion of XBRL Innovation Exit this survey

4. Attitudinal Factors

Please rate each of the following statements provided on a 1-7 point scale where: 1=Extremely disagree (ED) 2=Quite disagree 3=Slightly disagree 4=Neutral 5=Slightly agree 6 Quite agree 7= Extremely agree(EA).

SCALE : Extremely Disagree (ED) 1 2 3 4 5 6 7 Extremely Agree (EA)

This section asks questions about attitudinal factors such as perceived ease of use (PE), perceived usefulness(PU), relative advantage (RA), perceived compatibility (PC), perceived complexity (PX) and normative factors such as peer influences (PI) and superior influences (SI).

Therefore, the following questions only represent your perception so it is alright to rate them even if you do not have XBRL at work place.

1. PU1. XBRL is useful in making my work/job-related tasks easier.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

2. PU2. XBRL provides a standard that allows business data to be exchanged among different computer systems and software applications.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

3. PU3. XBRL is helpful in improving my work/job-related tasks in the workplace.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

4. PU4. The advantage of the XBRL will outweigh the disadvantage.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

5. PU5. Overall, using the XBRL will be advantageous.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

6. PE1. The instructions for using applications in the XBRL are hard to follow.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

7. PE2. It is difficult to learn how to use the XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

8. RA1. XBRL has an advantage over HTML/PDF because it offers faster access to data.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

9. RA2. XBRL has an advantage over HTML/PDF because it provides faster processing of data.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

10. RA3. XBRL has an advantage over HTML/PDF because it offers an always-on access to data.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

11. RA4. XBRL has an advantage over HTML/PDF because the XBRL specifications are royalty-free.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

12. RA5. XBRL has an advantage over HTML/PDF because it provides more accurate data.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

13. RA6. XBRL has an advantage over HTML/PDF because it enables efficient reuse of information more quickly.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

14. PC1. Using XBRL is compatible well with the way I work.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

15. PC2. The setup of XBRL is compatible with the way I work.

○ ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

16. PC3. XBRL is not compatible with the software or application that I use.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

17. PX1. The XBRL taxonomies are frequently changed.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

18. PX2. The diversion between USA accounting standards and those of other countries is one of the outstanding complexities that XBRL has.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

Prev Next

5. Normative Factors

This section asks questions about normative factors such as peer influences (PI) and superior influences (SI).

Therefore, the following questions only represent your perception so it is alright to rate them even if you do not have XBRL at work place

1. PI1. My friends think that I should use (or continue the current using) XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

2. PI2. My colleagues think that I should use (or continue the current using) XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

3. SI1. My bosses encourage me to try XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

4. SI2. My professors encourage me to try XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

Prev Next

6. Control Factors

This section asks questions about control factors such as knowledge (KN), training (TR), language (EL), self-efficacy (SE) and facilitate conditions rescores (FCR).

1. K1. I do not have difficulty in explaining why adopting XBRL is beneficial.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

2. K2. I know the benefits that XBRL offer and cannot be obtained by e-traditional standards.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

3. T1. Training plays an essential role in the adoption of XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

4. T2. XBRL training you received has helped you to adopt XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

5. L1. Poor English language skills hinder XBRL adoption.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

6. L2. MY English language skills helped me to use XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

7. SK1. I clearly understand how to use the XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

8. SK2. I would feel comfortable using the XBRL on my own.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

9. SK3. Learning to operate the XBRL applications is easy for me.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

10. FCR1. My current tools are adequate to enable the use of XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

11. FCR2. There is no problem of XBRL availability in my workplace.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

12. FCR3. It is not too costly for me to use XBRL.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

13. FCR4. The processing data by the XBRL will be too expensive.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

14. FCR5. It is not too costly to purchase new XBRL software or to upgrade my old software.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

15. FCR6. I can afford to use XBRL if I want to.

○ 1 ED ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 EA

Prev Next

XBRL UASAGE

Please select 'Yes' or 'No' from the drop-down box.

Do you use the following IFR services in your work?

1. To exchange business information
2. To facilitate continues reporting
3. To generate information for tax filings
4. To generate internal and external financial reporting
5. To generate external financial reporting
6. To generate information for financial authorities
7. To generate information for central banks
8. To generate information for governments

9. To fill of loan reports and applications

10. To fill credit risk assessments

11. To exchange of information between government departments

12. To exchange of information between other institutions

13. To prepare financial reports in multiple languages

14. To exchange financial statements

15. To automate the processes of data collection

16. To distribute data

17. To look for data on Internet

18. To convert data among different forms (GAAP, IFRS)

19. To archive the financial data

20. To facilitate data transfer between different systems

21. To improve data quality

7. 22. To internal compliance processes

23. To reduce risk management

7 / 8		88%

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8. Comments

This section asks open-ended questions for you to enter anything else that you think we and the industry in general should know about XBRL, and other descriptive information.

Would you like to receive a summary report of the findings of the study?

(If you say yes, you will receive an email including a copy of the report after analysis is complete.)

○ Yes ○ No

2. If you agreed to be contacted, would like to receive a copy of the summary report from this study, please enter you email address.