Intention to adopt standard business reporting in Australia: an application of the technology-organization-environment framework

A Thesis Submitted
In fulfilment of the requirement of the degree of
Doctor of Philosophy

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DECLARATION

I, Md. Saiful Azam, declare that:

(i) except where due acknowledgement has been made, the work completed is mine alone;
(ii) the work has not been submitted previously, in whole or in part, to qualify for any academic award;
(iii) the content of the thesis is the result of work which has been carried out since the official date of the approved research programme;
(iv) any editorial work, paid or unpaid, carried out by a third party is acknowledged;
(v) and relevant ethics procedures and guidelines have been followed.

Md Saiful Azam
January 2012
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KEY ABBREVIATIONS

APRA: Australian prudential regulations authority
ASIC: Australian securities and investment commission
ASX: Australian securities exchange
ATO: Australian taxation office
CFO: Chief financial officer
CIO: Chief information officer
DOI: Diffusion of innovation
IT: Information technology
IS: Information systems
ICT: Information and communication technology
PBC: Perceived behavioural control
SEC: Securities and exchange commission
SBR: Standard business reporting
TAM: Technology acceptance model
TOE: Technology, organization, environment
TPB: Theory of planned behaviour
TRA: Theory of reasoned action
UTAUT: Unified theory of acceptance and use of technology
XBRL: Extensible business reporting language
XML: Extensible mark-up language
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Abstract

The medium for processing and reporting corporate financial and business information through the supply chain from the manager-preparer to government regulators and to external users has been evolving. In Australia, some major regulatory agencies of federal and state governments recently went ‘live’ with a coordinated on-line reporting facility called Standard Business Reporting (SBR), based on Extensible Business Reporting Language (XBRL) taxonomies, for electronic data exchange. The take up by businesses of this medium of compliance reporting of financial, tax and other business data to government regulators, is initially voluntarily. The intention to voluntarily adopt SBR by ASX listed companies is the research issue of this study.

The SBR project represents a technology innovation offered to businesses that has been led by government (i.e., the Australian Treasury with the co-operation of major business regulators, the ASIC, ASX, ATO, ABS and State government Revenue Offices), with the preceding support of IT consultants, software developers and accounting/auditing firms. The Australian Treasury’s SBR project has substantially drawn on the XBRL taxonomy project designed and implemented by the government in the Netherlands. XBRL, a variant of Extensible Mark up Language (XML), defines the financial data on the web with explicit semantics in a machine readable format. Each financial item in XBRL documents is assigned a unique, predefined tag. These tags are established to be compatible with current financial accounting standards. A major benefit claimed for XBRL is the ease with which usable information can be obtained from companies as part of a reporting process. The use of the taxonomies to underpin the reports means that the XBRL information garnered from any company will be comparable to the XBRL information from any other company around the world that is using the same taxonomy. Despite the potential benefits that the XBRL developer community claim will result from its use, few organisations have consciously adopted XBRL in the UK (Dunne et al., 2009). In the US, under the voluntary XBRL filing program (2005 – 2008) only 137 companies (out of over 10000) had decided to adopt XBRL in the SEC’s program (Bonson et al., 2009). This low level of adoption occurred despite the SEC’s commitment to the voluntary program. SBR is a case of XBRL adaptation in
Australia backed by a government initiative. This study seeks to understand the prospect of SBR adoption and the underlying factors that could be the determinants of intention to adopt in Australia. In particular, the objectives of this study are to:

- To assess the prospects for the Australian government’s SBR initiative achieving net benefits for each separate participant in the company financial reporting supply chain
- To hypothesize and empirically test factors driving the intentions of the top management of ASX listed companies, as perceived by the Chief Financial Officer (CFO) to adopt SBR for financial and compliance reporting

In addressing these objectives, the study reports findings from both the evaluation of normative claims made in the professional and academic literature about the virtues of using XBRL, and quantitative analysis of data collected from a survey designed to model the determinants of the extent of intention of companies, as perceived by their Chief Financial Officer, to voluntarily adopt SBR.

The conclusion from normative assessment (after a review of both scholarly literature and practitioner comments) on XBRL/SBR is that both users (mainly investors/securities analysts) and regulatory bodies have most to gain out of the SBR implementation. Users are expected to benefit by more timely and reliable information from companies at less information gathering and processing cost to users. The regulators are expected to benefit by having better analytic capabilities with more up-to-date data. In contrast, evaluation of the preparers’ viewpoint (especially company accountants and financial managers) suggests that prepares have much to weigh up. It is expected that compliance reporting costs of the preparers would be reduced in the long run but there will be short-term costs associated with installing the SBR platform, with potential disruption to information processing and reporting systems, and with management and operating staff training. In the longer-term, preparers are likely to face pressure to meet users’ expectation for continuous, real-time, financial reporting that the SBR facility would have the capability to fulfil. This longer-term prospect for continuous, audited financial information that can be reported in flexible ways has the
potential to reveal corporate proprietary information that competitors can use for competitive advantage against the reporting entity.

The empirical part of this study, based on data from a survey of listed companies, finds that there is a low degree of intention to adopt SBR. This finding suggests that the voluntary take-up by listed companies of the Australian government’s SBR initiative will not succeed, as was the similar experience in the UK and the US. Yet there has been limited published evidence on the factors inhibiting the voluntary adoption of XBRL (SBR) by senior management of listed companies. Drawing on an innovation adoption framework that embraces factors from the technology, organization and environment perspectives, the results from the survey conducted in this study reveal that only factors from the environment perspective, namely, industry force and communication, are significantly related to intention to adopt SBR. The study, therefore, concludes that, unlike most other innovations in information technology, technological arguments favouring SBR (or XBRL) as a reporting medium are not expected to induce adoption of SBR by listed companies in Australia; rather entities are most likely to respond to industry wide initiatives and communication about SBR before making a decision to adopt SBR. The study goes on to provide implications for practice in the light of this finding. The results of this study in the Australian SBR setting are also likely to be of interest to regulatory bodies in other countries that have had disappointing XBRL adoption rates.

The study contributes to the gap (i.e. investigation of factors leading to XBRL adoption) of growing research on XBRL which tended to concentrate mainly on technological arguments. The benefits of XBRL can only be achieved and the cost reduction associated with XBRL can only be realized when XBRL is adopted by organizations in the industry. This study provides an analysis of survey data on intention to adopt SBR that is more generalizable. However the finding of this study is subject to limitations that are noted in the thesis.
CHAPTER 1: INTRODUCTION

1.1 Introduction to the Study

Technology is now available to change the means of processing, reporting and assessing financial and other compliance information of reporting entities. It is called XBRL – Extensible Business Reporting Language. XBRL is a dialect of XML (Extensible Markup Language), a relatively new internet language, developed by World Wide Web Consortium (W3C) in 1998, that defines and names data in order to facilitate electronic data exchange (DiPiazza & Eccles, 2002). The potential consequence of this new communication technology to the discipline of accounting is that it can change the forces of supply and demand for accounting information amongst parties in the corporate reporting supply chain. This notion of a corporate reporting supply chain begins with company executives and goes through auditors, government agencies/regulators and security analysts before reaching shareholders and other end users.

Following government-led initiatives in the US and European countries to implement an XBRL-based financial reporting medium between businesses and regulatory agencies, the Australian government, through a task group under the Australian Treasury, developed a version of XBRL-facilitated on-line reporting which has been called Standard Business Reporting (SBR). This SBR facility went live in July 2010, allowing reporting entities to submit their financial reports, taxation returns and other required reports to the Australian Securities and Investments Commission (ASIC), Australian Taxation Office (ATO) and other regulatory agencies through this facility. To take it up, a reporting entity needs to adopt a version of XBRL as an interface with its accounting and financial and compliance reporting systems. Despite the many espoused benefits of adopting the XBRL-based SBR platform, the voluntary take-up since July 2010 has been very low at only 6 listed companies and a small number of non-listed entities. Without adoption of SBR by reporting entities, the expected net benefits to players in the financial reporting supply chain cannot be fulfilled. The prospect that reporting
entities in Australia will voluntarily adopt the SBR facility can be gauged by the extent of their intention to adopt, as viewed by their relevant executive, the Chief Financial Officer (CFO). Moreover, evidence of factors inhibiting or encouraging the intention to adopt SBR is lacking.

There are multiple benefits claimed in the professional and academic literature for the XBRL technological in terms of enhancing cost-efficiencies for business organisations in their external compliance reporting, auditing and internal financial reporting. Yet there has been a poor voluntary take-up of this newly available technological innovation in accounting reporting. This raises the research question as to what factors drive or inhibit the voluntary adoption, or intention to voluntarily adopt, this new business reporting technology. Findings about the determinants of senior managements’ intention to adopt SBR can help the Australian Treasury’s SBR Project Group and IT/Software/Accounting consultants to develop strategies that can be more effective in achieving the voluntary adoption of SBR by businesses, especially by ASX listed companies whose compliance reporting processes are onerous. More widely, published research findings on the determinants of XBRL adoption in other countries are lacking, so such findings in the Australian SBR setting are likely to be of interest to regulatory bodies in other countries that have had disappointing XBRL adoption rates. For example, in the European Community, an XBRL facility has been made available by many individual regulatory bodies for the receiving of business information (Locke and Lowe, 2007). However it had been reported by these regulators that voluntary adoption rates by businesses has varied but are generally low (Cordery et al., 2011). In the US, under the voluntary XBRL filing program (2005 – 2008) only 137 companies (out of over 10000) had decided to adopt XBRL under the Securities and Exchange Commission’s (SEC) program (Bonson et al., 2009). This low level of adoption occurred despite the SEC’s commitment to the voluntary program.

The intention to voluntarily adopt SBR by Australian Stock Exchange (ASX) listed companies is the research issue of this study. This will be approached by both the evaluation of normative claims made in the professional and academic literature about
the virtues of using XBRL, and quantitative analysis of data collected from a survey designed to model the determinants of the extent of intention of companies, as perceived by their CFOs, to voluntarily adopt SBR.

1.2 Background on Financial Reporting and Communication Technology Developments

The tradition of annual financial reporting has allowed the opportunity for management to engage in accounting policy choice that creates income smoothing or earnings management. This can make the financial statements less decision useful. The corporate collapses and reporting scandals during the early 2000s (led by Enron) resulted in demands by investors and governments for higher levels of transparency, reliability and assurance in corporate reporting. More recently, with volatility in capital markets, the push by governments is to go further with corporate reporting by challenging corporations to provide the appropriate information in a timely, frequent, assured and customized manner to particular regulatory agencies and other users, while controlling the costs of complying with new requests. Due to these developments, there have been technological advances in the communication media through which companies can potentially convey financial information to investors, customers, suppliers and regulatory bodies. Computer technology greatly facilitates in this change by bringing new and improved tools. This study investigates the adoption of one such technologically advanced tool initiated by regulators in Australia to enhance business-to-government reporting in Australia.

The field of information and communication technology (ICT) has generated a lot of innovative products in the past two decades. This has attracted a diverse body of theoretical and empirical work on the adoption of ICT based innovations (Jeyaraj et al., 2006). The pace of change in information technology (IT) can also be felt in the field of accounting and it has been commented that IT has radically changed the manner in which accounting information is produced, disseminated and used (Sutton, 2010). Companies generally have an IT based structure to store accounting information for
further use. IT based tools enable businesses to extract the information, to have it audited, to use it for data input in management decision-modelling, or to share it with stakeholders. Users of external financial reports have shifted to technology driven processes for retrieving and analyzing corporate information (Sutton, 2010). The internet enables the spread of electronic information in an easy and economical way. It makes physical and national boundaries less meaningful and thus provides a seamless information delivery channel (Xiao et al., 2005). Companies generally use the World Wide Web as one of the primary means for reporting corporate information (Debreceny and Gray, 2001; Yoon et al., 2011). The early step taken in the use of the internet for electronic business reporting was the presentation of documents like annual in Hyper Text Mark-up Language (HTML) or Portable Document Format (PDF). However, as these communication media for presenting documents only provided text and multimedia for the human eye, important functions such as intelligent search and data exchange were not possible. Therefore, despite the conveniences with presenting information on the internet, the absence of a generally accepted computer understandable format for exchange of business information makes human interaction necessary, creating costs and space for human errors (Bergeron, 2003). Therefore, it was argued that corporate information on the web could not adequately meet the needs of the stakeholders in the financial reporting supply chain and additional technical capabilities must be deployed to corporate reporting to support decision-making capabilities of stakeholders (Yoon et al., 2011). What the financial reporting supply chain needed it was argued, was a new, universal language in which to report, and a way to use that language that does not require years of study by preparers and users (DiPiazza & Eccles, 2002).

The language now exists. XBRL, a variant of XML, defines the financial data on the web with explicit semantics in a machine readable format (Yoon et al., 2011). Each financial item in XBRL documents is assigned a unique, predefined tag. These tags are established according to financial accounting standards. Using these tags, every data element is fully described in terms of its definition, format, location, calculation, and
labelling (Li et al., 2006). XBRL can also tag non-financial, industry-specific, and company-specific information. It goes even further by facilitating the collection of information not only inside a company but outside as well. The tagging structure of XBRL provides interoperability of the data and the whole objective of using XBRL is to improve the disclosure, management and analysis of corporate data (Bonson et al., 2009). The framework of XBRL facilitates the easy automated production of financial data (Debreceny et al., 2010; Vasarhelyi and Alles, 2007) and the availability of software applications makes the analysis of such information possible (Silveira et al., 2007). Some researchers (like Yoon et al., 2011) find that XBRL reduces information asymmetry, thereby enhancing the decision-making of stakeholders. All these attributes of XBRL are expected to benefit different stakeholders in a corporate reporting supply chain. Preparers of business reports should be able to overcome incompatibilities between different information systems and provide more timely business information. Auditors gain from easier integration of XBRL documents into their own systems. Governments can more easily obtain access to detailed information for regulatory purposes, while shareholders and analysts can benefit from more timely corporate reports.

1.3 The XBRL-SRB Adoption Issue

In regard to the impact of IT on accounting, it is claimed that “never before have we experienced a technology that has evolved so rapidly increasing in power by a hundredfold or more every decade, radically changing the constraints of space and time, and reshaping the way we communicate, think, and learn” (Duderstadt, Atkins, & Van Houweling, 2002, p. 7). But accounting change is lagging the change in IT. In the case of external financial and compliance reporting, the ‘paper-based or pdf report’ is still use as a primary medium for financial reporting in Australia, even though the new technology, XBRL, is operationally available (Troshani & Doolin, 2005).

Mostly modelled around the Dutch taxonomy project, the XBRL-based SBR project in Australia is a specific case of technology adoption. The use of XBRL for business
reporting was aired in professional circles in Australia in the early 2000 when a private body *XBRL Australia Inc.* was formed to actively promote XBRL. But the new reporting language (XBRL) received concerted support from government leading up to the launch of the live SBR facility in 2010. The Australian Treasury’s SBR project group, with the engagement of both large government agencies (ASIC, ATO, the Australian Bureau of Statistics and State Government Revenue Offices) and endorsements from professional bodies (CPA Australia and the Institute of Chartered Accountants in Australia) undertook a strategy to promote the voluntary adoption of XBRL for compliance reporting by entities (Bonson et al., 2009). In Europe, XBRL has been installed by many regulators in order to facilitate the reporting of required information from business entities (Locke and Lowe, 2007). In Korea, all the publicly-held firms have been required to report financial statements in XBRL format since October 1, 2007 (Yoon et al., 2011). However it has been found that adoption rates by reporting entities tend to be low unless the adoption has been mandated by regulators (Cordery et al., 2011). As stated earlier, under the voluntary XBRL filing program in USA (2005–2008) only 137 companies (out of over 10000) decided to adopt XBRL in the SEC’s program (Bonson et al., 2009). This low level of adoption occurred despite the US’s Securities Exchange Commission’s (SEC) commitment to making a success of a voluntary program (Cordery et al., 2011). In the end, the SEC made it mandatory for the 500 largest companies in the US to report in XBRL format (Bonson et al. 2009). These efforts around the world surrounding the adoption by business entities of XBRL have endured since the mid-2000s.

Prior to and during this period of endeavours by government regulators to bring in the use of XBRL-based reporting, a substantial body of research literature has addressed the technical capabilities and challenges of XBRL, and the prospective consequences to organizations’ financial reporting arising in the short-term and longer-term from adopting it (e.g. Hodge et al., 2004; Wagenhofer, 2003). This literature has focused on either the technological complexities of the XBRL language and its applications, or a normative evaluation of its advantages and weaknesses to different players in the
financial reporting supply chain. There is limited empirical research on the familiarity, perceptions, preferences or intentions of the key participants in the financial reporting supply chain in relation to XBRL-based reporting systems. Troshani & Doolin (2005), Doolin & Troshani (2007) and Cordery et al. (2011) have published empirical research about the adoption of XBRL. These studies have taken a case study approach or conducted interviews of managers across a small number of businesses and regulators. Empirical evidence that can be generalized to a wider population of prospective adopters of XBRL is lacking.

1.4 Problem Statement

As SBR is a fairly recent phenomenon in the Australian context, there is a lack of knowledge about its likely success (if any) in the medium-term in relation to take up by Australian business entities. While actual adoption of SBR during the first year of its availability has been minimal, the prospect of this facility being taken up by entities in the medium-term can be gauged by evidence on intention to adopt. Ratings from CFO on their entity’s intention to adopt, however, will be affected by the CFO’s extent of familiarity with the XBRL-based SBR facility and its capabilities. By collecting and analysing data on both the familiarity of relevant management with SBR and the extent of intention to adopt SBR by listed companies, this study can be informative to the Australian government and its regulatory agencies concerning the policy decision whether to persevere with a voluntary approach or to phase in a mandatory approach to adoption.

Another research problem is the fact that any take up of SBR by business entities will not only affect the regulatory agencies that are participating in the SBR scheme, but also other parties in the financial/compliance reporting supply chain. Many benefits are claimed for SBR (which is XBRL enabled), but are these benefits less applicable to the business entities that supply their proprietary financial information, than to the parties in the supply chain that make use of this information? There is a substantial body of
research in the information technology/systems literature that looks at the technological aspects of XBRL design and implementation. This academic literature is partly normative and is added to by writers in the professional literature who have given their normative evaluation of the advantages/disadvantages of implementing XBRL. Such literature seeks to influence parties in the business information supply chain through claims the various benefits of XBRL associated with the easy, accurate, timely and cost-efficient automated production of financial data (Debreceny et al., 2010) and the availability of software applications to execute sophisticated analysis of such data (Silveria et al., 2007). More generally, Yoon et al. (2011) find that XBRL reduces information asymmetry which enhances the decision making of different stakeholders in a corporate reporting supply chain. However, a synthesis of the various normative claims made in this literature in terms of comparing the implications that XBRL has or is likely have on alternative parties in the supply chain has not previously been undertaken. By undertaking this comparative review of the normative literature in this study, conclusions can be drawn about whether claimed net benefits of SBR are more likely to accrue to professional service providers (auditors and software consultants), the regulatory agencies and securities analysts and investors, than to the business entities that adopt SBR as the medium to supply their financial information.

The final research problem is a lack of systematic evidence about the key factors that determine the intentions of relevant top managers of business entities to adopt SBR. There is a lack of empirical research on XBRL adoption that has investigated perceptions and preferences of preparers of financial or other business reports. Only a handful of studies (Troshani & Doolin, 2005; Doolin & Troshani, 2007; Cordery et al., 2011) investigate perceptions to XBRL adoption of report preparers. These studies have been case oriented, so are limited in their generalisability. The adoption of SBR (or XBRL) in Australia may relate to many factors. Adoption of new technology does not depend only on the attractiveness of technical benefits that the new technology promises, but importantly on perceptions of the key manager decision-maker for financial/business reporting who is typically a non-IT-expert (i.e., the CFO), and the
degree of organisational and external pressure they face towards adoption of the new technology. There is a gap in the research literature on behavioural intentions of CFOs and how this affects their entity’s take up of the benefits that XBRL technology (which enabled the SBR medium) promises. Technology adoption is complex and context sensitive with various models and theories having been posited in the past (Wolfe, 1994; Jeyaraj et al., 2006). This study addresses a literature gap by invoking a broadly-based framework known as the technology-organisation-environment (TOE) framework developed by Tornatzky & Fleischer (1990) to explain the adoption of technology innovations. Evidence on the effects of this broad range of factors on the intention to adopt SBR in Australia will provide insights to the Australian government and its regulatory agencies in considering their strategies for increasing the voluntary adoption of the SBR facility by listed companies.

1.5 Objectives of the Study

The central research question of this study is why has the costly establishment by governments of an XBRL-based facility for use by businesses as a medium for compliance reporting to regulatory agencies failed to be voluntarily taken up, despite its widely articulated and promoted technical and cost-saving benefits?

By investigating this question, this study seeks to contribute to the research on XBRL by shifting the focus from technological issues to behavioural issues. To this end, the main objectives of the study are:

**Objective 1:** To assess the prospects for the Australian government’s SBR initiative achieving net benefits for each separate participant in the company financial reporting supply chain, assuming that widespread adoption of SBR will eventually occur by voluntary or mandatory means. Widespread adoption of SBR will engage corporate financial/tax/audit report preparers (including company financial/accounting officers, professional accounting/tax advisors, and external auditor), users (including investors and lenders) and regulators (particularly ASX, ASIC and ATO). A synthesis and critique of normative claims about XBRL is undertaken to achieve this objective.
**Objective 2:** To hypothesize and empirically test factors driving the intentions of the top management of ASX listed companies, as perceived by the Chief Financial Officer (CFO) to adopt SBR for financial and compliance reporting to government agencies. The broad-based TOE framework is chosen to identify factors affecting intention to adopt SBR. This framework embraces facilitating or inhibiting factors within business environments that can influence the diffusion of SBR (or XBRL) as a reporting medium.

1.6 Contribution of the Study

By addressing the above objectives, this research complements the current volume of technical research on XBRL. Although the field of behavioural research in accounting has, according to Sutton (2010), flourished over the past 40 years, the large majority of this research has excluded current technology developments that influence the behaviour of accounting professionals. One such factor that has largely been ignored by behavioural accounting researchers is the rapidly increasing impact of IT on accounting (Sutton, 2010), especially the impact of an XBRL-based medium for assembling, reporting and analysing accounting information. This study seeks to contribute towards filling this gap.

This study also contributes to the operationalisation of theory used in the technology adoption literature. Prior technology adoption research has invoked the psychology-based theoretical model known as Technology Acceptance Model (TAM) and the sociology-based theory known as Diffusion of Innovation Theory (DOI). A broader-based organisational behaviour view used in technology adoption research is known as the Technology-Organisation-Environment (TOE) framework. The three components of the TOE framework have been defined and operationalised in qualitative research in terms of theme areas drawn from the text of interviews by Troshani & Doolin (2005), Doolin & Troshani (2007) and Cordery et al (2011). But prior research has not developed quantifiable multi-item scales that can operationalize the dimensions within
these three components of TOE and validate these measures of constructs on data from a questionnaire survey. This study seeks to develop and test the validity and reliability of constructs that have been conceptualized in the TOE framework. To this end, this study has the potential to contribute to broader information systems research by reaffirming the applicability of TOE framework which constitutes a high level theoretical basis for technology adoption.

Finally, in terms of its contribution to policy and practice, the findings from this study can contribute insights about the factors driving or hindering the intention to adopt SBR in Australia. Knowledge on these factors might inform the Australian government and its regulatory agencies in their decisions on how to more effectively motivate listed companies to voluntarily adopt SBR.

### 1.7 Outline of the Methodological Approach and Conceptual Model for the Study

The study adopts a 4 stage methodological approach. These stages are:

Stage 1: A critique of claims about XBRL/SBR and their potentially impact of company reporting supply chain participants

Stage 2: A review of the technology adoption literature to identify a suitable conceptual model and develop hypotheses

Stage 3: The construction and administration of a mail questionnaire to collect data for hypotheses testing.

Stage 4: Analyses on the data

A detailed research outline to conduct this study is presented in Figure 1.1.
Figure 1.1: Research Outline
The conceptual model for the empirical phase of this study is developed from Tornatzky & Fleisher’s (1990) TOE framework. To achieve Objective 2 of this study, nine independent variables and one dependent variable are identified in the model. The dependent variable in the model is “intent to adopt SBR” and the nine independent variables are developed from the TOE framework as follows:

(i) Technology perspective:
Relative advantage; Compatibility; Complexity

(ii) Organizational perspective:
Organizational Alignment; Top Management Support; Perceived Financial cost

(iii) Environment perspective:
Competitive pressure; Government pressure; Communication

From these nine independent variables, nine hypotheses are formulated.

1.8 Structure of thesis
This thesis consists seven chapters.
Chapter 1 has provided a general introduction to the thesis.
Chapter 2 and 3 provide discussion on SBR and its technology enabler, XBRL. Discussion on SBR’s impacts on users, businesses (preparers) and regulators is provided. The discussion ends with a normative comment on prospective of SBR adoption in Australia.

Chapter 4 presents a literature review and development of hypotheses used in this study. The need to model adoption is discussed first in Chapter 4 followed by a review of relevant theories/models of adoption. The chapter then goes on to discuss applicability of those models for the current study followed by the hypotheses developed for this study.
Chapter 5 describes and justifies methodologies used in this study. The development of the instrument, data collection procedure and analysis procedure adopted in this study are discussed in Chapter 5.

Chapter 6 presents the analysis of the data. The analysis is facilitated through the use of SPSS software. The results from the analyses are then discussed to provide insight about the potential adoption of SBR.

Chapter 7 presents the major conclusions of this research. The results are over-viewed. The implications of this research are put forward. Finally, the limitations of this research are discussed, along with future research recommendations.

1.9 Summary of chapter

The purpose of this chapter has been to lay the foundation for this research. This chapter has introduced the background on financial reporting and communication technology developments, the XBRL-SBR adoption issue, the problem statement, the objectives of the study and its contribution to the literature and practice, and the methodological approach that will be taken.
CHAPTER 2: STANDARD BUSINESS REPORTING AND ITS BACKGROUND

Financial and business reporting is at the core of the activities of the public accounting profession. The output of this reporting process is a number of documents for intended users (shareholders and stakeholders). The centrepiece of the reporting process is the annual report, which contains the annual audited financial statements, along with other statements and reports (Assurance Working Group of XBRL, 2006). This reporting process which is underpinned by the financial accounting process, is defined as the process through which financial information on business transaction is recorded, verified, and disseminated to wider audiences, mostly other businesses, investors, governments or employees (Volmer et al., 2007). The main structured financial information that flows from the reporting process is contained in financial statements. This structured information permits analysis of a wide range of trends and relationship among quantitative data. Such trends and relationships in turn, provide considerable insight into a company’s opportunities and risks, including growth and market acceptance, costs, productivity, liquidity, and collateral. The advent of the computer and the popularization of the internet in the late 1990s caused reporting processes and information handling to evolve radically beyond the traditional scope of paper-based presentation.

As background to the emergence of SBR, the evolution of business reporting in the light of changes in information and communication technology (ICT) is outlined in this chapter. Then details of the SBR initiative itself are given.

2.1 The changing media for financial reporting

Traditionally, the main medium used by companies to present financial and business information has been in paper format. The issue with the paper-based reporting system is that a human must read the reports in order to process them (Assurance working
A paper-based medium of transmission means the reliance on manual processes leaving the entire supply chain, from managers to business partners, to auditors, to regulators, to financial analysts and investors, in a situation in which the processes for getting information to the point at which it can be used are:

- slow
- labour intensive
- costly
- error prone; and
- inefficient

(Jones & Willis, 2003)

Due to the dynamic business environment, increasing sophistication of securities markets and changing regulatory demands on businesses, alternative financial reporting medium to disseminate corporate information is sought by securities markets and corporate regulators (Ashbaugh et al., 1999). The advent of the internet prompted companies to use their website as an additional reporting channel. There has been an increasing trend of using internet technologies within businesses as the basis of internal and external corporate communications (PWC, 2002). This trend is in line with the spread of internet access (Xiao, Jones & Lymer, 2003). The growing importance of the internet prompted the accounting profession to assess its future position in an internet environment. It was predicted by Jones and Xiao (2003) that internet reporting would be more sophisticated and interactive, whereas hard copy reports would be supplied on demand only. Users would use search facilitating technology to extract required information (Jones & Xiao, 2003). This prediction was supported by the assurance working group of XBRL International who found in 2006 that financial reporting had been increasingly carried out on the internet, through corporate websites and also through regulatory websites. They also found that there had been an expansion of the
scope of financial reporting that goes well beyond the traditional financial statements, such as performance reporting and corporate governance (Assurance working group of XBRL, 2006).

But the use of the internet was not the only technology that the preparers of corporate reports had contemplated for making a change in the way they reported to external users. Since the early 1990s preparers had been trying several technologies to streamline the accounting information flow within the corporate reporting supply chain. Table 2.1 lists the major technologies used:

**TABLE 2.1: Technologies used in corporate reporting**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Overview</th>
<th>Uses in (or implication for) corporate reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-ROM</td>
<td>Low cost medium for the distribution of large quantities of information since each CD-ROM can store 0.65gB of data.</td>
<td>In the early 1990s a small number of corporations, most notably IBM Corporation, experimented with CD-ROMs for the distribution of accounting</td>
</tr>
<tr>
<td>Electronic Paper</td>
<td>Technologies that allow conversion of print documents into electronic version which can be read in computer screen. Of course, the documents can be printed to paper for offline reading and archiving. The best-known product of this type is Adobe’s Acrobat, which is based upon Adobe’s PostScript technology.</td>
<td>A large number of corporations now use Adobe Acrobat to provide electronic versions of their printed reports. It is very inexpensive for companies to produce an Adobe Acrobat version of a printed report and to provide the report in this form via their Web site.</td>
</tr>
<tr>
<td>HTML (Hyper text)</td>
<td>In a simple language, HTML technology allows communication of client computer</td>
<td>Almost all the companies now a days have websites, where they use HTML</td>
</tr>
</tbody>
</table>
### Mark-up Language

HTTP protocol sets the standard method of communication by which the client computer does a *handshake* (exchanges initial identification and protocol information) with the server, requests transfer of information and then disconnects after the transfer has been completed. The client relies on the browser to interpret the HTML layout language to display information to the end-user.

### Plug-in

When first released, the HTML language allowed only simple textual representation and basic graphic capability. Subsequently, Web browser developers, and others, created so-called “plug-ins” to add functionality to the basic browser to enable it to efficiently handle a wider range of data types. An example of a ‘plug-in’ is “Shockwave” from Macromedia, which allows animation created in Macromedia’s Director program to be incorporated into Web sites.

### Multimedia

This technology allows the compression and/or streaming of audio across the Internet. The best known of these technologies are RealPlayer, Microsoft’s

### A number of financial reporting Web sites use plug-ins. The most popular are Macromedia’s Shockwave and Flash graphics plug-ins. Adobe Acrobat is also available as a plug-in, so that Acrobat files can be viewed from within the browser.

### A smaller number of corporations are using Real Video or QuickTime to distribute the annual and other corporate meetings. Making quarterly
<table>
<thead>
<tr>
<th>Media Player and, more recently, Apple’s QuickTime.</th>
<th>earnings calls available on the Internet significantly enhances the flow of information to a wider audience than was possible previously.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Databases</strong></td>
<td>The interconnection between Web pages and databases is well established. This relationship can range from simple retrieval of information from corporate databases, as when customers of TNT or Federal Express query the status of shipments or customers of Amazon Books search for particular books, to the generation of tailored Web pages.</td>
</tr>
<tr>
<td><strong>Search tools and Metadata</strong></td>
<td>This can range from simple, site specific search tools such as “SWISH” (Simple Web Indexing Systems for Humans) to large-scale indexing tools such as Compaq’s AltaVista, which indexes many, but by no means all, publicly available Web pages. Metadata provides information about a specific data. When combined with Metadata, search engines have a great potential to be used by investors.</td>
</tr>
<tr>
<td><strong>Java script, Java and Active/X</strong></td>
<td>Today’s Internet is characterised by browsers running on high performance personal computers but still providing interactivity within Web-based annual report pages can greatly enhance the user experience. An</td>
</tr>
</tbody>
</table>
Communicating with servers over limited bandwidth communication links. These applications can undertake a number of different tasks. They can add a variety of interactions to a Web page. JavaScript can also be used to provide validity checking on Web forms, before they are sent to the HTTP server.

An example of use of both JavaScript and Java is by IBM in their 1997 Annual Report. The online report allowed users to graph results for a number of Income Statement and Balance Sheet items and to display the results either by quarter or by year.

The oldest example of Internet push technology is email, which remains an important conduit for rapid and cheap distribution of knowledge to a predefined audience. There are a number of newer examples of Web-based push technologies like PointCast and Marimba. These services allow the information consumer to establish a profile of information needs. Then as vast amounts of information come into an information distributor, it is filtered against each user’s profile and only the appropriate information is subsequently pushed to each user.

This technology has some important implication on business reporting. Push technology, as with all Internet technologies, radically changes the economics of information distribution. Corporate press releases, quarterly results, and new product information can all be pushed to curious user list at effectively zero cost. When there is more widespread adoption of push technologies, information consumers can subscribe to a corporate Web site that will then push the requested information to the consumers.

Intelligent agents

An intelligent agent, which is built upon long-standing research in artificial intelligence, is software that undertakes predetermined tasks in an independent fashion. The agent will react to its external environment in a quasi-intelligent fashion.

Very limited use in corporate reporting but widely used in e-commerce.

(Adapted from Lymer, et al 1999)
Lymer et al. (1999) concluded that no new technology gained preference over the current paper based medium of annual reporting at the time of their study. All of the technologies above were found to contain some issues or did not provide any extra advantage over paper based financial statements. But it is evident from the table that the use of the internet is increasingly being considered by businesses. The internet offers easy access to firms’ information (Wagenhofer, 2003). Speed of disclosure is also enhanced by use of the internet. Information can be published at a time that is under control of firm (Dipiazza & Eccles, 2002). Some researchers (e.g. Dunne et al., 2009; Cobb, 2008) use the term “first generation digital reporting” to describe this early use of internet for the purpose of corporate reporting. The role of the majority of first-generation internet reports was merely complementary as these reports were (and still are) generated by companies using PDF files or Hyper Text Mark-Up Language (HTML) software to display online versions of the hard-copy financial statements on the internet (Allam and Lymer 2003; Bónson and Escobar 2006). The use of both HTML and PDF has allowed many organisations to create a presence on the Web (Debreceny and Gray 1997) and, therefore, provided stakeholders with more general company information in a more interactive environment (Beattie and Pratt 2003).

But the question is whether these HTML and PDF technologies avoid the problems associated with hard copy reports? The nature of both these technologies suggests that they lack the ability to deal with internal searches in a detailed report or to unveil the meaning or context of information (Bergeron 2003); in other words, the input is treated simply as data and not as information (Dunne et al., 2009). Typically, HTML and PDF-based documents are just converted pages from hard-copy reports (Malhotra and Garritt 2004), and so no additional insight is gained by stakeholders. Essentially, this means that the internet is primarily used as another medium for disseminating the published financial statements (Lymer et al. 1999), rather than offering a new communication channel for interested parties. The transition from the first generation digital reporting was then necessary to find a better alternative. What the financial reporting supply chain has needed is a new, universal language in which to report, and a way to use that
language that does not require years of study (DiPiazza & Eccles, 2002). Nordberg (1998) discussed the possible transition in terms of: (i) the move away from pure HTML and PDF-based reporting formats to more advanced reporting languages; (ii) the incorporation of more detailed graphical and audio displays in financial statements; and (iii) the changing format of financial statements and the provision of greater detail for corporate stakeholders (Dunne et al., 2009). The availability of more advanced technologies such as XML (eXtensible Mark-Up Language) facilitated the transition to overcome the difficulties associated with first-generation tools. A second-generation reporting technology exists now, called XBRL.

2.2 The nature of XBRL

XBRL is a data description language that enables the exchange of understandable, uniform business information. The language takes the advantage of an open standard which is used for the preparation, exchange and publishing of financial information among disparate computer platforms, software applications and accounting standards (Hannon, 2003; Hasegawa et al., 2003; Jones & Willis, 2003). XBRL delivers corporate information along with identification tags that make the information self-describing to a computer. For example, when a piece of data is tagged as “asset”, then XBRL enabled applications know that it adheres to a strict definition of asset (satisfying required accounting definition and recognition criteria) and can use it accordingly. Therefore the receiving computer can allow the tagged data to flow automatically and seamlessly into its proper place. Another advantage of XBRL is that it tags both financial and nonfinancial information in standardized, computer and human readable format (Jones & Willis, 2003). Through this exchange and extraction processes, XBRL usage links “backend” accounting tasks to daily business operations in ways other current accounting systems cannot. The elegance of XBRL is that the technology required for XBRL enabled data resides in the middle of the current IT infrastructure (Troshani & Doolin, 2005). Organizations can utilize their existing infrastructure, such as back-end relational databases and front-end applications like Excel. XBRL is based on an internet language known as XML. The world wide web consortium (W3C) developed XML in
1998 to facilitate electronic publishing. XML is described as “a mark-up language that focuses on describing the content of the data as opposed to the structure of the document or display as in HTML (Malhotra and Garritt, 2004, p.64)”. XML is a general language for integration purposes. It was not designed for specific types of data. This means that XML is particularly helpful with the integration of data sources of different types. Lymer and Debreceny (2003, p.116) notes that XML enables information to be marked in such a way as to encapsulate not just numbers or sequences of words for display, but as objects containing information – numbers and words with attached meaning and context. This particular attribute of XML attracted the professionals and ultimately XBRL is born. XBRL, therefore, builds on XML as a special-purpose variant aimed at meeting the specific needs involved in manipulating business and financial reporting information (Dunne et al., 2009).

The history of XBRL dates back to 1999 when a non-profit consortium known as XBRL International was founded comprising companies like the AICPA, IASB, Microsoft and PWC. Formally established XBRL jurisdictions include Australia, Canada, Germany, International Accounting Standards Committee Foundation (IASCF), Ireland, Japan, Korea, Netherlands, New Zealand, Spain, United Kingdom and United States. Provisional jurisdictions have been formed in Belgium, Denmark, France, Poland, South Africa, Sweden and the United Arab Emirates (XBRL International, 2006). There is a growing interest in XBRL by many other countries around the world. As such, the XBRL organization has been growing rapidly (from 13 founding members in 1999 to more than 250 in 2004). It was noted in 2006 that approximately 450 companies, association and governments were working collaboratively to develop XBRL (Assurance working group of XBRL, 2006).

XBRL consists of three main parts: the specification, taxonomies, and instance documents. The specification contains technical grammatical rules for creating taxonomies and instance documents. Taxonomies are referred to as dictionaries and define all the concepts to be used in a particular instance document that follows the
taxonomy. The specification and the taxonomy set out the framework for constructing instance documents. Instance documents contain the actual information in a machine-readable format. Surrounding all data items are tags that provide a context to the information.

Taxonomies exist for several financial reporting standards. In addition to containing a dictionary of agreed terms, XBRL taxonomies come with a basic set of ‘grammar’ rules (known as ‘specification’) describing how to link these terms (Hussein and Tam 2002, Bergeron 2003). This is the most important difference between XBRL and earlier generations of internet communications languages used for financial information, such as HTML or PDF. In these earlier languages tagging also occurs to link data items contained in the document to further information about those data. The tags are not there primarily to aid the understanding of the data; instead, they control the display of the data for a human user (eg by a Web browser in the case of HTML documents, or in a PDF reader in the case of PDF documents). XBRL tags are assigned to specific data items in the financial information to identify their specific characteristics as pieces of financial information. This allows the figures to be automatically read, understood and manipulated by a variety of computer programs that can understand the same collection of tags (i.e. use a common taxonomy). Thus, XBRL allows organisations to describe and deliver rich, structured data easily in a standard, consistent way, using predefined tags (Bergeron 2003; Deshmukh 2006).

The ability of XBRL to gather contextually relevant information from outside the company offers previously unattainable benefits to the corporate reporting supply chain. Hailed as the “digital language of business”, XBRL-enabled software transforms completed files into digital bits of information that are reusable and interoperable. Specifically it is claimed that XBRL -

- Creates more confidence in data through limiting the risk of erroneous data entry since all reports are automatically generated from one single information source.
• Minimizes costs by allowing easier, more automatic composition and processing of reports to different clients
• Accelerates financial decision making by institutions such as banks and rating services
• Improves the process of publishing analyst and investor report
• Allows consumers unprecedented access, comparison and analysis capabilities.
• Detects error at the source of data rather than at receiving party.

(Software AG, 2002)

Both the professional and academic literatures contain articles outlining the potential benefits that could be realised from the adoption of XBRL (Carey and Foster, 2001; Gray, 2001; Teixeira, 2002; Boritz et al., 2003; Jones and Willis, 2003; MacDonald et al. 2003; Willis, 2005; Carter, 2006). Many of these articles argue that claims for the main benefits of XBRL are based on the promise of the development of a more efficient, better controlled and more detailed financial reporting process (Dunne et al., 2009). Similar claims are made by Henderson et al (2012) in a recent article where the authors find that technological benefits of XBRL are related to inhouse adoption of XBRL. Troshani and Lymer (2010) suggest that the benefits of XBRL cannot be achieved without supporting software applications necessitating the development of such softwares by developers.

2.3 Government responses to the emergence of XBRL

Considering the benefits that XBRL provides, several regulatory bodies worldwide have already adopted or plan to adopt XBRL in their reporting infrastructure. While some governments or their agencies have already mandated XBRL report filings, a few others have started voluntary XBRL programs (Cordery et al., 2011). Examples of countries that have adopted XBRL-based reporting facilities include the US, Canada, the UK, Singapore, the Netherlands, Spain, China. The Securities Exchange Commission (SEC) has played a vital role in accelerating adoption of XBRL in the US. Companies in USA were phased into EDGAR (the Electronic Data-Gathering, Analysis, and Retrieval)
filing over a three-year period, ending 1996. Since then, all public domestic companies (with some exemptions) have been required to submit their SEC filings via EDGAR. Therefore an established electronic reporting mechanism was already there in the US starting 1996. SEC introduced voluntary XBRL filing into the system from 2005. In December 2008, SEC has made it mandatory for companies above US $5 billion as a global float, to file their returns from June 2009 quarter onwards in XBRL format (Watson & Dhobale, 2009). In the UK, Her Majesty’s Revenue and Customs (HMRC) activated an XBRL-based electronic reporting standard of receiving company tax filings using the new XBRL electronic reporting standard from October, 2006. The UK Government announced that the use of XBRL would be mandatory for all company tax returns due after March 2011. Company tax returns comprise both full financial statements and corporation tax computations. Since January 2008, XBRL has been mandatory for all filings of annual accounts to the National Bank of Belgium. The non-profit-making organization XBRL Belgium has been set up to encourage its use in Belgium. Since April 2008, project has been extended to the annual accounts of the not-for-profit sector. The CBSO (Central Balance Sheet Office - CBSO) receives currently more than 90% of all the annual accounts filed in XBRL format (Watson & Dhobale, 2009). In Singapore, incorporated companies have been required to file their financial statements in XBRL since November 2007, unless they are exempt by the Accounting and Corporate Regulatory Authority (ACRA). Japan also is one the early adopters of XBRL and had started voluntary XBRL reporting program for financial services institutions since 2005. China has also adopted XBRL reporting from 2009. In the Netherlands, the government introduced a single XBRL-based Standard Business Report (SBR) in 2004, covering all filings that companies are required to send to the government. Its aim has been to reduce the administrative cost of compliance by 25 percent. However, take up by businesses in the Netherlands has been lower than expected to date, partly because intermediaries and software companies lack incentives to invest in SBR (Productivity commission, 2012). In early 2011, the Head of the Tax Administration in the Netherlands recommended that the alternative older online tax
channels should be phased out as they risked undermining the take up of SBR. From 2013, SBR is mandated to be the exclusive channel for online lodgement of corporate and income tax reports in the Netherlands (Productivity Commission, 2012). Recently, the government treasury in the Netherlands introduced a project in co-operation with ABN-AMRO and Rabobank to evaluate credit risk of small business borrowers using XBRL data. In Spain, financial institutions are required to file XBRL-based reports and the interactive data is used, among other things, to identify possible money laundering activities. Similar XBRL initiatives are also taken in Chile, South Africa, India, Denmark, Ireland etc. In each country, preparers of companies’ accounts can prepare and manage their financial reports in XBRL using a free on-line standard.

2.4 The SBR initiative in Australia

The term “Standard Business Reporting” (SBR) is generally used to refer to an initiative to simplify business reporting, particularly to governments. The current reporting framework in Australia imposes a heavy burden on business in terms of time and cost. SBR is a program of work operating across the whole-of-government aimed at reducing costs to business in reporting information to government. SBR strives to reduce costs to business through standardisation; standardisation of a place of lodgement, data definitions and a communication language (SBR steering group of New Zealand, 2008). The most obvious choice to achieve standardization and seamless exchange of information is XBRL.

In Australia, the federal government set up a taskforce to consider reducing regulatory burdens on business. It reported in 2006 under the title “Rethinking Regulation” (the Banks Report) (Madden, 2009). This report indicated that cost to business of government reporting requirements was in the order of 2.5 per cent of GDP per annum because it diverted time and resources from core business activities. Some submissions to the taskforce indicated that compliance activities could take up to 25 per cent of senior management’s time. In response, the Australian Government approved the development of an SBR program through an SBR Steering Group with the Australian
Treasury as the lead agency and participation from ASIC, the ATO, the ABS and State and Territory revenue offices (However, Productivity Commission report published in 2012 suggest that ABS had withdrawn its engagement with the SBR project citing ‘reservations’ and Australian treasury is currently in discussion with ABS for its reengagement). It closely considered the Dutch Taxonomy project that aimed to standardise the reporting of financial accounts, taxes and financial statistics and move to XBRL reporting for all these areas (Madden, 2009). There has been extensive consultation and collaboration with stakeholder groups, including business and business intermediaries such as commercial accounting and business software developers. These ‘business intermediaries’ are a large group that includes accountants, tax agents, financial advisors, payroll specialists and bookkeepers, as well as business and industry associations (Madden, 2009). Together a single set of reporting definitions was developed that makes it possible to map government reporting terms directly to the appropriate information in a business’s financial/accounting or payroll system. From July 2010, companies within Australia can voluntarily use the SBR platform to submit their statutory reports to the major participating government agencies.

At the heart of the SBR program is the underlying definitions and the properties of financial information. The collective set of reporting definitions for SBR is referred to as the SBR Taxonomy. XBRL has been chosen as the technical solution for formalizing these definitions even though there were no publicly successful adoption of XBRL in Australia (Troshani & Lymer, 2010). As stated earlier, XBRL is a platform independent language based on Extensible mark up language (XML). XML provides a method to tag financial information to improve the automation of information location and retrieval (Debreceny & Gray, 2001). From a technical perspective, the XML specification defines a set of rules for creating valid XML. It is not focused on business reporting, but rather it is a broad-based specification applicable to any project requiring the structuring and electronic exchange of data (Farewell, 2010). XBRL builds upon XML, allowing accountants and regulatory bodies to identify items that are unique to the business reporting environment in their countries and also taking into consideration the
The multidimensional nature of business reporting (Farewell, 2010). As XBRL is governed by a not for profit consortium, XBRL has gained acceptance from jurisdictions around the world. This coupled with IFRS being already produced in an XBRL Taxonomy form prompted Australian regulators develop SBR taxonomy based on XBRL. Australian regulators, thus, achieve XBRL standardization via the SBR project and Troshani & Lymer (2010) note that this XBRL standardization in SBR project would automatic sending of data stored in businesses’ accounting software directly to relevant government agencies saving time and cost. The SBR programme, therefore, is driven by clearly defined standardization processes (Troshani & Lymer, 2010). Financial information delivered via SBR carries a XBRL tag (using SBR taxonomy) but these tagged outputs (also known as instance documents) are not in themselves user friendly. SBR enabled software (sourced from software vendors) is needed to make the documents user friendly. An interface is developed in SBR medium to ensure seamless exchange of information between company and regulators. That interface is called SBR core services. Australian treasury notes that the businesses will not see the SBR Core Services, and will not log onto SBR to report, as all of the reporting functions will be built into their software (Madden, 2009). To encourage the voluntary take up, the Director of SBR and his office in Treasury (which is overseen by the government-appointed SBR Board and Business Advisory Forum) continues to manage and promote the SBR program in partnership with business, reporting professionals, software developers and participating Australian, state and territory government agencies. There is also said to be credible SBR operational support teams available to businesses within the ATO, and other agencies have support processes to deal with incoming SBR reports (Madden, 2009).

Prior to and after the SBR facility went live in July 2010, the claimed benefits made on the Australian Treasury website to prospective businesses are as follows:

- removing unnecessary or duplicated information from government forms
- using business software to automatically pre-fill forms
- adopting a common reporting language (SBR Taxonomy), based on international standards and best practice
- making financial reporting a by-product of natural business processes
- providing an electronic interface to agencies directly from accounting software, which will also provide validation and confirm receipt of reports
- providing a single secure sign-on for users to all agencies involved.

(Australian Treasury, 2010)

Over the past decade, government has evolved from paper-based filing and processing to web-based filing and electronic processing. The movement toward electronic processing has allowed agencies to reduce internal costs. However, in many cases this has meant the cost has shifted onto business as there was no central, standardised place of lodgement to multiple government agencies. SBR provides the opportunity for automating and standardising the connection between business and government as a means of redressing the imbalance. To this end, SBR can be viewed as a further step in establishing a networked economy. In the current environment, where websites are developed to access and process reporting to government, people are still required to input information through a web interface. The whole reporting process would benefit if the business and government machines (computers) have the ability to communicate with each other without the need for a person. SBR provides that ability to business and government paving the way for a networked economy.

2.5 Summary of the chapter

This chapter provides a broad overview of the changing nature of the media that businesses use to report their financial results. The chapter notes that an appreciation of the need to provide automated and real time information led to the development of XBRL, which has been later used by Australian regulators to standardise business reporting in Australia. Introduced in 2010, reporting via the SBR facility is voluntary for Australian businesses. But Australian Treasury had expected that the facility would be taken up rapidly by Australian businesses because of the obvious technological benefits associated with the technology. An evaluation of the claimed benefits of the
SBR facility to alternative parties in the financial reporting supply chain is undertaken in the next chapter, with a view to drawing conclusions from a normative analysis as to the extent of short- and longer-term net benefits likely to be perceived by these alternative parties.
CHAPTER 3: NORMATIVE EVALUATION OF CLAIMED XBRL/SBR IMPACTS

3.1 Introduction

The use of XBRL prompted the regulators to make a claim that SBR would be a feasible reporting medium for businesses in Australia (Madden, 2009). Reporting via SBR can also be the catalyst for the wider application of XBRL for business in reducing reporting costs and increasing the quality and integrity of information available to other parties that monitor business performance. Benefits would thus be expected to accrue to all providers and consumers of business information. A normative assessment of the impacts of SBR on the major parties in the reporting supply chain is necessary to make a preliminary comment on the success of SBR. Both scholarly literature and practitioner comments on XBRL/SBR are reviewed in this chapter to make a normative assessment of the claims made about this technology in terms of its potential to benefit (or disadvantage) the parties in the reporting supply chain. For the take-up of SBR by business enterprises to be a success, there are three principal players in the financial reporting supply chain that need to be convinced of the net benefits of SBR adoption. These principal players are external users of company financial information (particularly, company shareholders and financial analysts), the preparers of statutory reports (particularly relevant company management and company auditors) and non-participating regulators (namely, relevant government agencies and professional bodies who have not yet set up the SBR platform). As SBR is enabled by XBRL, the advantages espoused for XBRL should apply to SBR. In the next sections, general advantages/disadvantages of XBRL as well as advantages/disadvantages specific to SBR are discussed from the perspectives of investor-users, manager-preparers and regulators, respectively.
3.2 Potential impact of SBR (or XBRL) on investor-users of company financial information

There is considerable literature suggesting the benefits of automation of business reporting. Can SBR (or XBRL) improve the quality of company financial information made available to investors and securities analysts who advise these investors, and reduce the costs to those investor-users of obtaining the information? If so, a company that takes up SBR-based reporting would, ceteris paribus, be preferred by investors and analysts over one that does not?

XBRL takes the advantage of both human and machine readability, as XML is the underlying dialect. XML can be used for constructing and presenting documents with accepted formats and rules. Problems that XBRL/XML can solve include:

- As open standards, XBRL and XML allow the users to use one technology for a variety of applications without being held hostage by one software company
- XML coded data in search engine databases allows users to clearly specify the exact definitions and context of their terms.
- Common standards simplify application integration
- XML automatically codes instructions for each output format (WEB, CD-ROM, printer, mobile devices etc).

(Software AG, 2002)

The technology behind XBRL makes it possible to store and retrieve financial information online. This attribute has a profound implication on financial report users. It means that everyone can find related financial information from the internet quickly and easily (Wallison, 2004). The accessibility of financial data will be opened to a wider range of people at more workplaces more quickly. SBR taxonomy (which is based on XBRL) has a universally accepted definition of each item of financial data. Not only people but also machines can recognize financial data. Machines recognize the data
much more quickly and easily, because machines or computer software can be easily programmed to identify the numerical (mostly) data from a unique tag and use them in related operation. Both machine and human readability means that the users can only manipulate financial data into XBRL format and let computer software automatically find, store and analysis this data for specific practical use of the user (Wallison, 2004).

What are the findings of scholarly research about the usefulness of XBRL for financial reporting? It has been found by Hodge & Kennedy (2004) that XBRL helps even the non-professional financial statement users acquire and integrate related financial statement and footnote information when making investment decision. They carried out an experiment to evaluate XBRL's advantages. They tested two hypotheses- (1) individuals who use search facilitating technology are more likely to acquire information from various places in the financial statements and footnotes than are individuals who do not use search facilitating technology and (2) individuals who use search facilitating technology will better integrate related information from various places in the financial statements and footnotes than will individuals who do not use search facilitating technology. The result of the experiment suggests that XBRL helps financial statement users by improving the transparency of firms. The result is consistent with the views of Lok Tin and Wefield (2001) who argued favouring the benefits of a XBRL based search engine in terms of fast financial information access (cited by Wang, 2007).

Cost efficiencies, automated exchange, great scope and reach of business information, frequency, timeliness, accuracy, reliability and accessibility of information are widely discussed by researchers in the information systems field (Wang, 2007). In particular the great scope and reach of business information and frequency make XBRL more appealing to the users. Scope and reach of information is understood from the broad international definition and professional sets of XBRL taxonomies (Wang, 2007). Individuals or organizations can reach related XBRL information from across physical space boundaries and look at the financial data terms with a completely systematic view.
An XBRL formatted report (which is the feature of SBR reports) allows as many people, and as many times as they need, access to stored XBRL data. Also, data tagging makes financial statements easier to navigate for investors and analysts and harder for executives to hide financial information in footnotes (Cueto, 2002). In essence, the public can make investment decisions based on the most current and up-to-date information possible instead of information that is months old as is the case with traditional audited financial reports (Wang, 2007).

The assessment of fair presentation based on a company’s choice of accounting principles can be better achieved using XBRL. The tagging of assumption disclosures in XBRL formats would “make management’s choices more transparent to users avoiding the scenario of Enron and easier to compare with those of other companies” (Akanoh, 2006, p.21) within and outside the same industry. Ultimately, observers could be assured of the reliability of decisions made by corporate managers.

In summary, the existing literature provides strong arguments mostly in favour of XBRL. Some of the arguments come from empirical experiments while others are normative contributions by scholars like Jones & Willis (2003) and Pinsker (2003, 2005). Scholars have often based their normative reasoning on the technological superiority of XBRL. Drawing from this literature it can be claimed that XBRL will enable public financial reporting to become less error prone, more consistently reliable, more timely and less costly to produce. All these advantages are important to current and prospective company shareholders and other securities investors and analysts because it enables them to obtain higher quality information on which to make investment decisions. Under signalling theory, higher quality company information disclosure enables investor-users to more accurately assess the value of a company, thereby generating value to the investor.

Investor-users could create the push-demand on companies to take up SBR in Australia. However, the pull for voluntary adoption of SBR must come from the company
3.3 Potential impact of SBR (or XBRL) on preparers of company statutory reports

The anecdotal evidence is that financial and executive management, as responsible preparers of financial reports of their company, have tended to be sceptical about the advantages of adopting XBRL. In the US, the SEC has pushed hard to achieve XBRL reporting as mandatory for SEC filing. The voluntary filing did not bring mass adoption in US. There are other stories from other parts of the world like the EU and Singapore. In each case, it is the regulators who impose XBRL in the financial reporting supply chain.

Management in business organizations is likely to be aware of the advantages of XBRL to the users and regulators, but appears not convinced about the benefits that XBRL would bring to their organization. Accounting and information systems researchers and practitioners have addressed the benefit to manager-preparers, as well as counter-arguments. The literature suggests that organizations can leverage on the extensibility of XBRL reports if they carefully plan their overall information system strategies. For example, Weber (2003) provides a case illustration of how having an XML-based system can bring competitive advantage for an organization. He demonstrates that in an XML environment, the organization could capture data and transmit it in XML format to a service provider as a way of outsourcing its processing and reporting functionality. Such an outsourcing possibility would enable the organization to reap the gains from economies of specialization, scale, and scope (Weber, 2003). Businesses would capture some of these benefits through competition among the service providers. This led the author to conclude that given the increasing complexity of the information systems and reporting activities that businesses now must undertake, it is easy to see that XML offers some attractive possibilities for many managers.
XBRL can lead to more efficient data collection by lowering operating cost associated with idiosyncratic data feeds, reducing errors, facilitating a concentration on adding value to the data, and increasing transaction capacity to financial publishers and data aggregators (Bovee et al., 2001). Bovee et al. (2001) conduct an experiment to find that an accounting team can develop financial documents more quickly and accurately by using XBRL without having programming ability. This allows companies to meet the need for ‘real-time reporting’, which is currently being asked by regulators and users. The need for “real-time disclosures” can be met with XBRL’s ability to improve data processing and publishing efficiency. XBRL technology can automate data entry and data processing and, then enable online publishing. This automation and real time disclosure by XBRL means that the asymmetry between internal management information and external public information can be greatly reduced by the use of XBRL in the company’s accounting transactions processing (Hunton et al., 2003).

XBRL also provides flexibility to some businesses. Weber (2003) reported that mergers and acquisitions should be easier to effect if the businesses involved operate in an XML environment. This is particularly because some problems that arose previously during attempts to integrate disparate information technology platforms should be mitigated (Boritz et al., 2003). Similarly, internal reorganizations are likely to be easier to effect because they are less constrained by incompatible information technology platforms. On the other hand, businesses operating in an XML environment become more amenable to takeover. They have fewer barriers in place to prevent a takeover (Weber, 2003). By incorporating these general benefits associated with XBRL (and/or XML), participation in SBR project is expected to be a worthwhile adventure for Australian business, atleast as claimed by Australian Government.

It has been widely advocated that in the longer run, XBRL will reduce the costs of (a) compliance with reporting regulations and (b) data quality assurance services (e.g., audits) (Weber, 2003). Using XBRL, SBR will also enable businesses to communicate more effectively with financial markets, thereby reducing their cost of capital. From a small business perspective, SBR will be almost invisible because it builds the taxonomy
into the accounting systems that businesses use to manage their records (Madden, 2009). Moving up the scale to large business, much of the SBR abilities will still be built into accounting systems, but the range of reports will be broader (SBR steering group of New Zealand, 2008).

The Australian Treasury’s SBR website notes some additional benefits that businesses can avail by adopting XBRL. It first concedes that some of the information mapping between the SBR definitions and the information in businesses’ accounts will need to be set and tested by the business or its accountant (www.sbr.gov.au). However, once mapped, the information can be used to satisfy a range of reporting needs. Businesses will no longer need to re-enter data into different systems or interpret terms for one agency that have a slightly different meaning for another. All this will ultimately save an estimated $800 million per year for business in Australia (Madden, 2009). Therefore longer-term cost savings is one of the most compelling impacts that the business should experience from the adoption of XBRL (or SBR).

The standardisation of data definitions and reporting requirements will result in fewer data elements in total and increased consistency in the way businesses report data within and between agencies. This could also alleviate current confusion in the business community where different agencies use different definitions for similar terms (Madden, 2009). Consistent definitions will lead to improved data quality and integrity, as businesses have a clearer idea of what they are required to report, and agencies will know what they were getting. There is also potential for timelier reporting, as businesses will not need to transform their existing data sets to the same extent. Based on a reduced set of data across agencies, and alignment of terms it will leave less room for error in reporting, and will also make it easier for software producers to incorporate those definitions into their reporting systems. It must also be stressed that SBR will allow business, accounting and financial systems to become the portal to report to government. Australian SBR project is aimed at reducing business forms submission to the government agencies. In this sense, SBR will operate much like a post office, simply moving electronic messages from businesses’ system to the right agency, and returning
an electronic receipt (see sbr.gov.au). For some of the simpler forms, the reports will be prefilled in the accounting system, and businesses will be able to complete the forms where necessary, check for accuracy and validity, and correct any errors before final submission. This will save time and effort with corrections. In addition, businesses will be able to use a single sign-on not only to send reports to multiple agencies, but also to log onto the web portals provided by the agencies involved in SBR. Along the way, because the terms used by different agencies have been harmonised into a smaller, single and consistent set of definitions — the SBR Taxonomy — business will understand better what government is asking for. All these expected to reduce the time needed compliance reporting by businesses in Australia, which will cascade over time, freeing up business people and their professional intermediaries for higher level analysis and advising and streamlining the movement of financial information along the entire reporting chain. As a summary Australian Treasury expects that SBR would benefit Australian businesses in the following areas:

- Reduction in the administrative burden (i.e. cost) of providing data to Government-

- Streamlined process of passing/aggregating data across different internal departments, offices or business units of a company.

- Increased interoperability of finance applications

- Increased ability to change providers of filing services (where used) driving increased competition for business and lower charges.

- Better interaction with the banks for loan applications and risk systems:

- Improved data quality (less errors due to less manual intervention).

- Avoidance of fines for non-compliance with a mandatory request to provide data.

(OECD forum, 2009)
These benefits of SBR can only be achieved by a business once it fully implements SBR. It seems that two major benefits out of prospective adoption of XBRL (and/or SBR) are mostly reiterated in the literature – cost savings due to streamlining of information systems, and better compliance reporting. But the literature did not fail to mention what concerns businesses should consider before adopting XBRL for their reporting purposes. Probably these concerns might explain why a majority of the organizations have reservations about taking up XBRL reporting.

The first concern relates to outsourcing possibilities. Earlier the possibilities of outsourcing were listed as one of the benefits of XBRL. But that same outsourcing decision may become a concern for the management of an organization. It has been reported by Weber (2003) that if a business decides to use XML essentially to outsource its information systems processing and reporting activities, it ought to carefully consider four questions. To quote from Webber (2003):

1. How integral are the processing and reporting capabilities to the core competencies of the business? Will use of XML to outsource these activities to a service provider fundamentally undermine these core competencies of the business over time?

2. What will happen if the particular service market on which the business relies ends up as an oligopoly or monopoly? Will a “hold-up” situation arise in which the service provider can extract “rents” from the business?

3. Can the business place reliance on the service provider’s system of internal control? What implications will reliance on the service provider have on the conduct of the business’s audit?

4. As more businesses place reliance on the service provider, will the service provider increasingly become a target for attack by malicious parties? For instance, will hackers attempt to perpetrate denial of-service attacks with a view to blackmail the service provider or impact the share price of the service
provider or the businesses that rely on the service provider? (Weber, 2003, pp.3-4).

The interest of an individual company is to achieve maximum profit for their own company, which can be achieved through building a good public image, hiding sensitive information from competitors and even using different accounting rules for internal and external financial reports (Wang, 2007). However, XBRL might make each of these strategies impossible. Therefore, a business would be prompted to view XBRL from a strategic perspective rather than from a narrow operating activity perspective. Individual companies might not like to have all their financial information exposed instantly to the public and regulators. There is a possibility of hostile takeover bids by rival companies if too much information is available to them. Following the self-interest assumption of agency theory, managers would defer the plans to incorporate XBRL to avoid any potential uncertainty about the survival of the business. Wang (2007), therefore, predicted that persuading individual companies to process financial reports through the XBRL medium by adopting XBRL-facilitated business-to-government software voluntarily could be a difficult task for regulators.

The issue of cost pressure comes next. In the short run, all businesses are likely to incur higher costs as they add XBRL capabilities to their existing information systems to enable them to comply with regulations that require them to report in XBRL format. In this regard, businesses need to consider how this short term cost pressure would outweigh the very long term benefit. This short term cost pressure is particularly important for small and medium organizations. The existence of XBRL is also likely to motivate regulators and investors to place increased pressure on businesses to provide continuous reporting of their financial position. At least in the short run, responding to this pressure is likely to result in businesses incurring higher costs. In the midst of the global financial crisis in 2008-2009, the organization would be wary about the high cost associated with implementation of SBR, especially when preparers might perceive SBR gives more benefit to the users than the preparers themselves.
SBR or XBRL promotes continuous reporting which businesses would find contentious. Continuous reporting via XBRL can be a blessing and a curse according to Hunton et al. (2003). “The blessing is that real-time disclosure of information can be made available to the entire marketplace at once, thereby decreasing the potential for information asymmetry and increasing the decision usefulness of such information. The curse, however, is that the same technological improvements that give rise to timelier and more equitable disclosures can also be used to offer richer disclosures (Hunton et al., 2003, p.12)”. Stakeholders including competitors, employees, suppliers, customers and government agencies could potentially place greater demands and costs on the company. Competitors could get earlier signals about the disclosing company’s growth opportunities, employees could better bargain for improved benefits based on more detailed profitability and productivity information about the company, suppliers and customers could more readily assess the company’s product and service costs for their price negotiations, and government agencies could better assess the company’s financial and business performance for purposes of reviewing policies on tax or business activities or investments constraints. Individual companies are less likely to be able to control the presentation of their financial report using XBRL based systems as freely as before (Wang, 2007).

To sum it up, managers face concerns about loss of control of their management information system from outsourcing of the SBR function, disruption to their established approach to business modelling, and the proprietary costs of externally exposing more disaggregated and frequent financial information to competitors. The latter concern would particularly be a barrier to management that contemplates their company taking the lead in the implementation of SBR in its industry.
3.4 Potential impact of SBR (or XBRL) on regulators

It is government ministries and agencies that are predominantly pushing the use of SBR by businesses in their country. The question addressed in this section is why the regulators are showing a keen interest in XBRL (or SBR).

The literature suggests that XBRL offers several major benefits to regulators. First, it reduces the costs associated with their obtaining and assimilating information from businesses. Regulators are not forced to re-enter information or expend resources on dealing with the problems that arise as a result of incompatibilities between their own information technology platforms and those of the businesses that fall within their jurisdiction (Weber, 2003).

Second, the existence of XBRL allows them to argue more strongly for the standardization and harmonization of international business reporting standards. Most importantly XBRL offers better analysis of company information by the regulators (Weber, 2003). Public policy decisions by government agencies would be informed in a more consistent, complete and timely way. The experience by SEC in the US might be useful here to illustrate the advantages to regulators. SEC is an enthusiastic supporter of XBRL and it has already mandated XBRL for the registrants in the US. It has been demonstrated that “teams of reviewers” in the Corporation Finance division of the SEC could view a company’s data just as easily as the preparer itself (Brunka, 2008). The reviewers can automatically compare information from various sections within a single disclosure document. It is claimed that the structure of the XBRL taxonomies enables users to “view the underlying authority of accounting literature . . . associated with each piece of tagged information” (White, 2007 cited by Brunka, 2008, p.104). SEC reviewers could also view information from issuers across quarters with a simple mouse click. This enables SEC to better analyse company data and recommend action if necessary. One very good example has been given by White (2007), the director of Corporate Finance at SEC. Suppose a company is being investigated for stock option backdating. White (2007) stated that regulators “could easily go back very quickly and
look at all the past disclosures [the company] made concerning option grants.” In addition, the company and the SEC could easily and quickly look at what other companies were saying and how they were handling the problem. The interactive data format in XBRL allows investigators to cull and compare information more quickly (Brunka, 2008, p.106). Therefore, the XBRL technology provides enhanced searching capabilities. SEC staff may run searches looking for stock option filing dates that occur within a specified date range, and the staff may likewise search for stock option execution dates that fall within a certain range. This combination of searches allows investigators to spot filing dates that occur more than two business days after the execution date of the filing, a red flag for stock options backdating (Brunka, 2008).

Overall, it appears that the SEC simply is able to spot internal inconsistencies more quickly and easily under the new program. In addition, where cross-company comparison of various issues previously involved sifting through hundreds of pages, or dozens of screens, of financial data, the XBRL technology makes it possible to pull up several companies’ disclosures on a particular area within seconds. SEC presumably is the biggest regulator of companies in the world. Other regulators can learn from SEC’s experience and that is why other countries including Australia are proceeding to implement SBR to leverage on XBRL.

It is suggested by Wang (2007) that there will be significant benefits to government regulatory agencies from automated business reporting via SBR. He points out that agencies would be able to introduce automatic checking of business data to identify data quality issues, as well as be able to run automatic risk-assessments of business reports, to determine whether further manual processing needed to be undertaken. This will result in savings in time spent processing business returns, and at the same time provide significant improvements in agencies’ risk management strategies (Wang, 2007).

The report of the SBR Steering Group of NZ (2008), sums up the benefits of SBR to company regulators, based on focus group research amongst government agencies in New Zealand.
To quote: “Government agencies will benefit from:

- Higher quality and more timely information being received from business on which government can make decisions.
- The elimination of duplicate and obsolete requests being made of business.
- Data being received in a standard format allowing for a reduction in collection costs as well as far greater analysis and understanding.

The main intangible benefits for the government would be:

- Improved data quality
- Faster and more consistent government responses
- Improved collaboration among government agencies
- Consistent data feeding into improved policy development and implementation processes.

The realisable benefits for government would be:

- Increased business and public satisfaction
- Improved agency interaction
- Scalable solution enabling future initiatives and other tangible benefits
- Reduced risk
- Reduced revenue leakage
- Improved efficiency
- Better decision making.”

(SBR Steering Group of NZ, 2008)
From the above list, regulators in NZ believe XBRL benefits are not limited only to faster data collection and better analysis of data but extend to improving efficiency and risk management in the economy leading to better public satisfaction with policy development. This view was shared at an OECD forum (OECD, 2009) where it was concluded that XBRL can “improve Governments’ ability to make timely and effective decisions impacting economic and fiscal policy because of improvements to the business reporting supply chain, with respect to reporting compliance, data accuracy and reporting process speed”.

As a further note, reliability of data transmitted via SBR is also addressed in the literature. Regulators would be interested in the possibilities of the rise of specialist assurance service to ensure the reliability of transmitted financial data. Businesses can transmit their data to these service providers to have its quality assessed. XBRL, in turn, allows business reports to be tagged to indicate what elements have been subjected to assurance services (e.g., by an auditor). Links might also be established to files containing the evidence associated with particular assurance tags. The job of the regulators will be much easier as they are able to pay less attention to data quality and concentrate their efforts more into policy making. With a system that provides reliable data, regulators can focus on analysing the data to formulate new and updated policies. In addition, regulators can easily check whether or not companies are complying with their regulations and standards, and can do so in a timely manner. This will enable regulators to quickly respond to any issue(s) of non-compliance.

Regulators around the world are increasingly concerned about litigation risks from inadequate monitoring of companies, partly due to the recent financial crisis. Continuous reporting reduces litigation risk as management undertakes frequent reporting (Hunton et al., 2003). But if the continuous reporting improves relevance without appropriate consideration for reliability, it may generate accounting information that is inappropriately relied on by financial report users. Thus the potential for litigation will increase. However, the emergence of specialist assurance services in the
XBRL environment will ensure the reliability of XBRL reports. Therefore, continuous reporting via XBRL (or SBR) should reduce litigation risk of company information. 

3.5 Prospects for voluntary take-up of the recently activated SBR facility in Australia

The discussion above has given a review of what the take-up of SBR in Australia could mean to three parties in the financial reporting supply chain – company investor-users, company management-preparers and government regulators of financial and business reporting. Since, SBR taxonomies are based on XBRL, any XBRL advantage should accrue to the SBR initiative by the Australian government. It can be seen that there are varied potential benefits arising from the take-up of SBR. This review suggests that SBR provides benefits to all of the parties but users and regulators are clear beneficiaries. Users would benefit by more timely and reliable information from companies. There would also be reduced information gathering cost for the users. The regulators would benefit by having better analysis capabilities with more up-to-date data. It would be easier for the regulators to identify problem companies in terms of non-compliance, and to aggregate business data for early indicators use in government fiscal, taxation and monetary policy decisions.

But investor-users and company regulators in Australia will only benefit from the recent activation of SBR from July, 2010 by the major regulatory bodies (ASIC, APRA, ATO, ABS and State Revenue) if it is voluntarily taken-up by company management-preparers. At the moment, implementation rests with the preparers. The literature on SBR adoption from the management-preparers viewpoint suggests that preparers have much to weigh up. There is the issue of costs. SBR (or XBRL) would reduce information processing cost in the long run but could cause competitive disadvantage by the more timely public availability of company proprietary data. There will be short-term costs involving the project for installing the SBR platform, the potential disruption to vital information processing and reporting systems, and management training costs.
These short-term costs would involve the issue of reorganization of IT systems even though it is suggested XBRL is compatible with disparate computing platforms.

The preparers can facilitate continuous reporting to the benefit of regulators and users by implementing SBR. If, through the SBR facility, preparers were placed in a position to have their databases opened up to not only regulators but also analysts and investors, then much proprietary information would become accessible. This has the potential to impair competitive advantage. There would also be a risk of hostile takeover. These concerns mean preparers need assurances that their firm’s sensitive business and financial information is protected under the SBR facility. Even then, the risk of suffering a competitive disadvantage from providing more proprietary information than competitors would suggest that firms are reluctant to be industry leaders in the voluntary take-up of SBR. Moreover, the slow economic recovery from the global financial crisis may also prompt business managers to defer the decision to adopt XBRL. These factors re-enforce a ‘wait and see’ strategy for SBR preparers.

A critical aspect of getting wide take-up by manager-preparers of SBR in Australia is the regulators’ ability to gain their trust in the fact that data transmitted to government electronically will remain under the participating businesses’ control. The design of the SBR transmission process in a way that ensures data is routed to relevant regulatory agencies in limited information packages, and more comprehensive information is not centrally stored by government or shared between regulators, is a suitable way of allaying fears of manager-preparers about the loss of control of proprietary information. The transmission design, however, weakens the benefits that regulators and users could gain from the adoption of SBR in Australia.

An interesting question arises: why Australian regulators did decide not to mandate SBR? One answer may be because they feared that it may cause a fundamental shift in accounting and financial reporting practice in Australia. Another view could be that the regulators want the law of supply and demand to dictate terms. As explained by Hunton et al. (2003), if the capital market places a premium on more frequent disclosure of
information, firms that respond accordingly will reap financial benefits such as lower cost of capital and higher share price values. Firms that refuse to address marketplace demands for more timely information will suffer the economic consequences. Over time, firms will eventually find their break-even point with respect to the incremental cost of providing more frequent information (i.e., technology, opportunism, and competitiveness) and resulting benefits. (Hunton et al., 2003, p.12).

From the normative discussion of prospects of SBR take-up by management/preparers in listed companies in Australia, a pessimistic conclusion could be drawn from a 2002 survey in the US. This survey, conducted by PWC amongst senior financial executives, found that only 42 percent believed that XBRL would enhance the usefulness of financial reports to users, while 47 percent admitted that the role of XBRL remains uncertain (Cuneo, 2002). The inference is that preparers perceive that user groups will not necessarily benefit if their company implements XBRL. There has also been a call by some researchers (e.g., Locke & Lowe, 2007) to take steps to trigger end user adoption before pushing XBRL to preparers. Given managements’ perceived doubts about incremental benefits accruing to shareholders and other users of their corporate financial information arising from adoption of SBR, together with concerns about potential competitive disadvantage from taking the lead in SBR adoption, the prognosis is for a slow take-up by Australian businesses.

3.6 Summary of the chapter

SBR is an example of using new technology (XBRL) to achieve a policy objective; in this case, reducing the cost of financial reporting from business to government. The key components of technical interest for SBR adoption are robustness of the mapped taxonomy, and the use of the complete system when it is progressively taken up. SBR can become part of the standard functionality in accounting software. But the benefits will accrue through the financial reporting supply chain only when a critical mass of business preparers of external financial and business reports implement that
functionality in accordance with the relevant government regulators’ requirements. A critical aspect of getting wide take-up by manager-preparers of SBR in Australia is the regulators’ ability to gain their trust in the fact that data transmitted to government electronically will remain under the participating businesses’ control. The design of the SBR transmission process in a way that ensures data is routed to relevant regulatory agencies in limited information packages, and more comprehensive information is not centrally stored by government or shared between regulators, is a suitable way of allaying fears of manager-preparers about the loss of control of proprietary information. The transmission design, however, weakens the benefits that regulators and users could gain from the adoption of SBR in Australia. Normative assessment, therefore, does seem to point to advantages to all participants from a controlled adoption of SBR, with doubt remaining about net benefits to manager-preparers. This doubt may emanate from the fact that there is a lack of evidence to manager-preparers that the SBR benefits will materialize. This could have well contributed to creating hype about XBRL based medium (SBR) which might ultimately lead to disillusionment translating to weak adoption of SBR, as happened with XBRL in UK reported by Dunne et al (2009).
Chapter 2 provided a broad overview of revolutionary nature of SBR as a reporting medium. The technology enabler of SBR, XBRL, has been available for a number of years with limited adoption in Australia (Doolin & Troshani, 2007). In providing the features of XBRL, its general benefits are also detailed in chapter 2. Chapter 3 then proceeds to make a normative assessment on the likely success of SBR by evaluating the features of SBR in respect of three general parties in the financial reporting supply chain, namely, users, regulators and preparers. The Australia government’s initiative to get the SBR facility into operating mode in major regulatory agencies is coupled with its decision to allow the adoption of SBR by business entities to be voluntary. As a consequence, the preparers of business entity reports, led by Chief Financial Officers (CFOs), have become the key party in the financial reporting supply chain to determine the extent of success of implementation of the SBR reporting medium in Australia. Therefore, evidence about the explanatory factors that drive or inhibit CFOs’ intention to adopt SBR in their organisation can provide insights to the three broad parties in the supply chain on strategies to take and needs to be met in order to have a successful program of voluntary take-up of SBR by business entities. A suitable conceptual model of the determinants of the intention to adopt a technological innovation like SBR is sought in this chapter.

This chapter deals with a review of relevant literature on adoption from which hypotheses are developed for this study. The structure of this chapter is as follows: first the need to model adoption is discussed followed by a review of relevant theories/frameworks for adoption to model the factors relating to the take up of a technology led project. The chapter then goes on to discuss applicability of those models for the current study followed by the hypotheses developed for this study.
4.1 The need to model adoption of the change in financial reporting media

Accounting reporting is highly regulated. Corporate scandals (e.g., Enron) and financial market shocks have heightened the case for more regulation of corporate financial reporting. Accounting regulation, as defined by Baruch Lev (1988), is “the existing laws, rules and generally accepted principles concerning the timing, content and form of verifiable corporate records (periodic and annual)”. These accounting regulations are developed on the premise that users use financial information to make economic decisions and that the mandated provision of such information improves the allocation of resources. Accounting standards in Australia are given the force of law through the Corporations Act and their implementation is enforced by ASIC. Additionally, there are other regulatory requirements that the companies must follow. Examples include Australian Prudential Regulations Authority (APRA) reporting requirements for banks and financial institutions, Australian Securities Exchange (ASX) reporting requirements for listed companies in Australia, etc. The existence of the various requirements suggests that the corporate reporting regulators are concerned with controlling the flow of financial information to users (Ashbaugh et al., 1999). Over the years, accounting standards have dealt with the content of financial reports. With the exception of recent mandated XBRL reporting in some parts of the world (e.g., USA), financial reporting medium has traditionally been limited to paper format. As discussed in Chapter 2, by the time the paper version of accounting reports reach the users, the reports lose the timeliness attribute making the report less relevant. It is, therefore, commented that due to the dynamic nature of business, traditional paper-based corporate reporting is becoming increasingly less timely and less useful to decision makers (Green, 1997; Koreto, 1997; Ashbaugh et al., 1999). Regulators around the world are also aware of the problems with the paper-based corporate reporting (Butler et al., 2007). This prompted security market regulators in both the USA and Europe to require more frequent reporting so that decision makers receive timely information (Butler et al., 2007). Preapres have incentives to send information to users on a timely basis to reduce
information asymmetries (Yoon et al., 2011). As already discussed in chapter 2 the spread of the internet allowed firms to disseminate financial information via their websites. Companies’ websites can reach a wider audience and present more detailed information to decision makers than what is possible with traditional printed financial reports (Kaplan, 1996).

There is a wide range of opinions regarding the potential use of the internet as a conduit of financial information. Ettredge et al (2001) found that the Internet, as viewed by Investor Relations (IR) directors, as important information channel reducing administrative costs and providing a “level playing field” for all investors. These directors tend to actively experiment with new technologies, such as audio and video, and consider their Web sites to be integral components of their communication strategies (Ettredge et al., 2001). These directors also say that the primary reason why financial information may be excluded (even though the company may use a Web site for other purposes) in the websites is the perceived lack of demand for Web-based financial information from their investors (Ettredge et al., 2001). Interestingly, these directors were not worried about litigation risk (if any) from web site disclosures. When asked, the IR directors said that this risk is controlled by posting only information on their Web sites that has been approved by the corporate disclosure committee and is also available through traditional channels. Ettredge et al’s (2001) finding suggests that the role of web site reporting is merely a complementary one. At present, financial disclosures at corporate Web sites are mainly voluntary and unregulated. Companies are under no obligation to maintain a Web site. If they do, the site content is largely discretionary. There is no governing body or set of regulations that either requires or forbids the disclosure of any specific data at Web sites (Prentice et al., 1999). In the US context, the primary restriction on website reporting is that information cannot be fraudulent, since the SEC interprets “written communication” to include electronically distributed information (Bell, 1998). Even though reporting by companies is voluntary, almost all of the listed companies in Australia present their financial reports on their
websites and ASX website contains links to those reports (www.asx.com.au). The popularity and accessibility of internet by the users of financial information made the companies disseminate the information via the company website. In addition to disseminating information to existing shareholders, a site can also create interest among potential investors and provide a “boost to the corporate image” (Ettredge et al., 2001). The medium allows the company to control the context in which data are presented, emphasizing the positive and providing interpretation for potentially negative information. The advantages to a corporation of supplying financial information at a company Web site include providing individual (retail) investors with timeliness of information previously available only to select parties, such as institutional investors and analysts. There is also potential for cost savings as corporate costs of printing, mailing and staffing IR phone lines can be reduced (Ettredge et al., 2001).

Due to the above advantages it is predicted that firms will continue to provide online key financial information about their firms to current and potential investors in the future (Ettredge et al., 2001). Leveraging on the internet, other real time reporting tools would be considered by the preparers. Financial reporting at corporate Web sites is not particularly timely when compared with other sources of real-time information like stock quotes and news releases (Ettredge et al., 2001). In 1997, the AICPA Special Committee on Assurance Services (the Elliott Committee), predicted that firms would soon maintain continuously updated on-line financial databases that would allow the transmission of real-time financial reports to investors, analysts, creditors, customers and suppliers over the Internet. The Committee also suggested that relevant nonfinancial data would be included in the real-time information set. The efforts of regulators, litigators and accounting professionals are all likely to play important roles in shaping the emerging standards and conventions (Ettredge et al., 2001).

The examination of the determinants of disclosure in corporate annual reports represents one of the most systematic and sustained research efforts in the financial reporting
literature (Oyelere, 2003; Asbaugh, 1999). Variables hypothesized to influence voluntary disclosure levels in these studies include a variety of firm specific characteristics, such as size, profitability, listing status, and leverage (Oyelere, 2003). A meta-analysis by Ahmed and Courtis (1999) attempted to integrate prior voluntary disclosure studies and identify some of the underlying factors contributing to the variations in the results of these studies. Using 29 voluntary disclosure studies, they found a significant association between disclosure levels and firm size, listing status, and leverage. The same is true for researches involving alternative (e.g. Website) medium for financial reporting. Substantial researches have been devoted to studying the initial disclosure of financial information, and to examining managers’ decisions to voluntarily disclose non-obligatory (financial) data (Botosan, 1997; Frankel et al., 1999, FASB, 2000, Van de Wiele, 2001, amongst others). However, we know little about what motivates firms to bear the incremental costs of additional dissemination, via websites or any other medium.

Indeed Oyelere (2003) identified the gap by saying that future research should consider explanatory variables specific to the reporting environment, which may provide further insights into reporting practices. Such factors should not be limited to only company size, profitability etc but should also extend to the age and levels of education of company directors/ managers, attitude of management to IT and new ideas, the age and strategic position of each company in its industry etc. These factors may influence voluntary use of the Internet for financial reporting purposes (Oyelere, 2003). The study by Beyer et al. (2009) also leads to suggestions for future research for reporting environment. They noted that the description of the corporate information environment highlights aspects of the environment that are still unknown. Several factors in the environment interrelate with each other which shape the decision of managers/accountants. The discussion of this interrelationship has so far been ignored in the literature (Beyer et al., 2009). An appropriate theoretical model is needed to describe the relationship. These gaps and suggestions in the field of financial reporting
research indicate that there is need to model the voluntary adoption of any future development of financial reporting medium in Australia.

Australian SBR is built on an advanced version of internet language. Chapters 2 & 3 detailed the SBR project in Australia with its benefits. Despite the heavy promotion of technological benefits to businesses and the efforts to make SBR use user-friendly, only 25 business organizations registered to voluntarily adopt the SBR system in the first 3 months (Stafford, 2010). Why have businesses been so hesitant to adopt this technological innovation? The benefits and costs claimed for XBRL can only be empirically determined by a business in Australia if it takes up and operates SBR. But the voluntary adoption of XBRL in Australia (in the form of take up of the SBR initiative) has been slow. One important broad research question may arise ‘why’, especially when the advantages of reporting via SBR (or XBRL) are well understood. Some descriptive studies have been done in Australia focusing on the reasons for limited adoption but no major research has been framed by looking at theories behind the adoption of this new technology. There is a need to model the adoption of SBR applying appropriate theoretical framework from relevant discipline. The attributes of SBR suggest that IT adoption theories would be most appropriate to model adoption of SBR. The most widely studied IT adoption theories/models are discussed in the following section with a view to discerning a suitable model to explain SBR adoption in Australia.

4.2 Adoption theories/models

The importance of researching the user adoption of information technology (IT) has been recognized since the mid-1980s because user adoption is a prerequisite for technology’s utilization and realization of its potential value, regardless of the advancement of the technology (Qingfei, 2008). Among the IT adoption theories, the most important and influential theories are technology acceptance model (TAM) (Davis,
1986; Davis, 1989), extended technology acceptance model (TAM2) (Venkatesh & Davis, 2000), diffusion of innovation theory (Rogers, 1983; 1995), technology-organization – environment Framework (Tornatzky et al 1990) and most recently, the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003). These theories to model adoption of a new technology have behavioural intention at the heart of the investigation. Therefore it is useful to explore the original behavioural intention framework – a model from behavioural psychology and originally associated with the work of Fishbein and Ajzen (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). These theories include the Theory of Reasoned Action and the Theory of Planned Behaviour.

4.2.1 Theory of Reasoned Action

Developed by Fishbein and Ajzen (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the Theory of Reasoned Action (TRA) attempts to provide an explanation of a certain behaviour based on the individual’s expectations of outcomes of the behaviour. The Theory of Reasoned Action is based on the assumption that individuals make decisions rationally by constantly calculating and evaluating the relevant behaviour beliefs in the process of forming their attitude toward the behaviour. TRA thus attempts to explain the relationship between beliefs, attitudes, intentions and behaviour. TRA holds that the most immediate antecedent of behaviour is behavioural intention. The direct determinants of people’s behavioural intentions are their attitudes towards performing the behaviour and the subjective norm associated with the behaviour (Ajzen & Fishbein, 1980). The resulting model is as follows (Figure 4.1):
Figure 4.1 The Theory of Reasoned Action (Ajzen & Fishbein, 1980)

As the figure suggests, TRA postulates that there are two direct determinants of behavioural intentions, namely the attitudinal component and the normative component. People develop belief on these two components before forming their intention to behave in a certain manner. The attitudinal component refers to a person’s attitude towards performing the behaviour under consideration (Ajzen & Fishbein, 1980). Attitudes can be defined as an individual’s positive or negative feelings toward an object or behaviour. Intuitively, people’s likelihood of performing a given behaviour will be strong if they hold a favourable attitude towards the performance of that object or behaviour. Fishbein & Ajzen (1975) made a distinction between attitude towards an object (for example, attitude towards XBRL) and attitude towards a behaviour in relation to an object (for example, attitude towards incorporating XBRL in financial reporting). Attitude formation is an iterative process by which an individual considers a small number of salient beliefs related to a particular behaviour. Beliefs can be formed as a result of direct observation, indirectly by accepting information from outside
sources, or can be generated through the process of inference. Although a person may hold many beliefs about any given object, s/he can only attend to a relatively small number of salient beliefs at any given moment. It is these salient beliefs that serve as the determinants of attitude. To understand a person’s attitude towards an object, it is necessary to assess the person’s salient beliefs about that object (Qingfei et al., 2008). The first few beliefs that a person reports are usually their salient beliefs - however, it is difficult to determine the point at which a person shifts from non-salient to salient beliefs (Ajzen & Fishbein, 1980). Once a person’s salient beliefs about performing a behaviour are known, it becomes possible to determine their attitude towards performing that behaviour. After assessing salient beliefs, the next step is to assess how confident the person is that performing a given behaviour will produce the desired outcome. This is a measure of the individual’s belief strength. Belief strength is measured by asking a person to indicate the likelihood (subjective probability) that performing a behaviour will result in a given outcome or that it is associated with some attribute (Ajzen & Fishbein, 1980). According to the theory of reasoned action, a person’s attitude towards a behaviour can be predicted by multiplying his/her evaluation of the consequences of each behaviour by the strength of his/her belief that performing the behaviour will have a particular outcome, and then summing the products for the total set of beliefs. Thus, this expectancy-value model of attitude maintains that attitude towards behaviour corresponds to the favourability or unfavourability of the total set of consequences, each weighted by the strength of the person’s belief that performing the behaviour will lead to each of the consequences (Ajzen & Fishbein, 1980).

The second determinant of behavioural intention, subjective norm, refers to a person’s perception of the social pressures to perform or not to perform a particular behaviour. The subjective norm is determined by whether important referents approve or disapprove of the performance of a behaviour, weighted by his/her motivation to comply with those referents (Genuardi, 2004). These beliefs, which underlie a person’s subjective norm, are termed normative beliefs. Thus, a person who believes that important referents think that s/he should perform a particular behaviour and is
motivated to comply with those referents’ wishes, will hold a positive subjective norm. The theory of reasoned action assumes a causal chain that links behavioural and normative beliefs to behavioural intention, and behaviour via attitude (towards behaviour) and subjective norm. This means that people are likely to perform behaviour when they evaluate it positively and believe that significant others think they should perform it (Ajzen & Fishbein, 1980).

By establishing these two components of behavioural intentions TRA then makes a correspondence between the intentions and behaviour. According to the theory of reasoned action, intention is the immediate determinant of behaviour (King et al., 2006). When an appropriate measure of behaviour has been obtained, it will provide the most accurate prediction of that behaviour. It should, however, not be taken for granted that a measure of intention will always be an accurate predictor of behaviour. Two factors will influence the strength of the relationship between intention and behaviour. These are firstly, the degree of correspondence between intention and behaviour, and secondly, the degree to which intentions remains stable over time (Ajzen & Fishbein, 1980). Regardless of the influences of the two factors, Ajzen and Fishbein (1980) view the intention-behaviour relationship as significant in the prediction of outcomes. Although outcomes are not under a person’s control, the desire for a particular outcome will determine whether or not a person engages in a particular behaviour.

Whilst the theory of reasoned action is effective in explaining behaviour, Ajzen (1985; 1991) suggested that the TRA is relevant when the subjective probability of success or perceived and actual control over the behavioural goal is at its maximum level. However, when the possibility of failure is salient and actual control is limited, it becomes necessary to go beyond the theory of reasoned action. The theory of planned behaviour, an extension of the theory of reasoned action, provides better understanding of behaviour in this situation (Ajzen, 1985; Ajzen, 1991; Ajzen & Fishbein, 1980; Montano & Kasprzyk, 2002).
4.2.2 Theory of planned behaviour (TPB)

Ajzen (1991) proposed this theory in an attempt to explain the behaviour by addressing the factors outside a person’s control that may affect his/her intentions and behaviour. A new construct, perceived behavioural control (PBC), is added to TRA and the extension was based on the idea that behavioural performance is determined by motivation (intention) and ability (behavioural control) (Genuardi, 2004). PBC is composed of an individual’s perceptions that they are able to perform a particular behaviour. Individuals assess PBC using a method similar to the expectancy-value model. For each in a set of control beliefs – those related to factors inhibiting or supporting an individual’s ability to perform a behaviour – individuals multiply the belief’s strength by the perceived power of the control factor. The TPB model then looks very much like the TRA, with PBC as the third antecedent of behavioural intention (BI) added, as follows (Figure 4.2)

Figure 4.2: Theory of Planned Behaviour (Ajzen, 1991)

According to Ajzen (1991), actual behavioural control should be distinguished from perceived behavioural control, which refers to people’s perception of the ease or
difficulty of performing a given behaviour. Montano and Kaspyzyk (2002) regard perceived behavioural control as being similar to Bandura’s (1977;1982) concept of self-efficacy, which refers to an individual’s judgement of how well he can perform a behaviour under various conditions. Both TRA and TPB fall within the realm of cognitive theories (Genuardi, 2004). These two theories are based on the assumption that humans are endowed with the ability to reason, and that reason is the primary psychological process involved in decision-making (Leviton, 1989). As such these two theories are tested in a variety of setting. In the IT contexts, Davis (1989) used TRA to explain use of a word processing application by MBA students, Davis administered a questionnaire to students just after an orientation to the application but prior to use (T1) and again after a semester of use (T2) (Davis, 1989). Analysis indicates the TRA model accounted for approximately 32% and 26% of the variance of Behavioural Intentions at T1 and T2 respectively. Behavioural intention (BI) was highly correlated with actual use. As for the individual constructs, Attitude (A) was found to have a significant influence on intention. Subjective norm (SN), however, was shown to have a minimal influence on intentions. TRA was tested again in the context of IT adoption in a study of consumer intention to use online shopping outlets (Shim & Drake, 1990). The sample for this study was drawn randomly from a list purchased from a direct mail vendor. Subjects were mailed a questionnaire developed with demographic items and items based on the TRA. Analysis found that the overall TRA strongly predicted intention. Differing from Davis’ study, SN was shown to have a stronger effect on determining BI than Attitude. Both studies in the IT context demonstrate the overall strength of the model. The two core constructs – A and SN – have been shown to influence intention and behaviour. Similarly TPB was tested and found useful in explaining behavioural intention. A test of TPB to explain college students’ use of spreadsheet software found the model to explain approximately 60% of variance in intention (Mathieson, 1991). When PBC construct is added, TRA seems to provide higher predictive ability (Madden & Ajzen, 1992). Both these theories (TRA and TPB) and following empirical tests in a variety of setting establish the importance of Intention as the focal point of investigation.
as intention was found to be directly related to actual behaviour that follows. Following the tenets of these two theories in psychologies a number of adoption theories were developed in the IS area which are relevant for this current study. These theories are explored in the following sections.

Subsequent to the innovation of technologies associated with the world wide web, Electronic Data Interchange (EDI), e-commerce and others, applied studies were carried out to investigate the adoption of these technologies- both from an individual perspective and organizational context. Cross-functional theories are used in those studies to get a deeper understanding of the problem. The first and probably the most widely used theory is technology acceptance model (TAM).

4.2.3 Technology Acceptance Model (TAM)

Over the past 2.5 decades, there has emerged a body of research on how users’ beliefs and attitudes affect adoption of a new technology (e.g. Davis, 1989; Davis et al., 1989; Moore & Benbasat, 1995; Taylor & Tood 1995; Leaderer et al., 2000; Teo, 2010). These investigations have resulted in several theories of which the “Technology Acceptance Model” (TAM) probably has been the most popular. TAM is generally referred to as the most influential and commonly employed theory in the information systems discipline (Lee et al. 2003). TAM was first proposed by Davis (1986) in an attempt to understand why people accept or reject a system. Basically TAM is an adaptation of the theory of reasoned action (TRA) from psychology specifically tailored for modelling user acceptance of information technology (Al-Gahtani, 2001, Troshani & Doolin, 2005). As discussed earlier, the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen 1975) posits that behavioural intentions, which are the immediate antecedents to behaviour, are a function of salient information and/or beliefs about the likelihood that performing a particular behaviour will lead to specific outcome (Madden et al., 1992). TRA bears considerable importance in business and management
to the modelling of user behaviour towards a specific product or service. Taking TRA as a theoretical construct, TAM theorizes that an individual’s intention to use a system is determined by two beliefs – perceived usefulness, defined as the extent to which using the system will enhance his or her job performance and ease of use, defined as the extent to which a person believes using the system will be free of effort (Davis, 1986). TAM suggests the following sequence of factors: (i) external variables, e.g., system design characteristics, (ii) beliefs and evaluations of consequences of use (iii) attitudes (iv) decision making and intentions to use and (v) usage.

Diagrammatically the original TAM is depicted in Figure 4.3.

![Diagram of Original TAM](image)

**Figure 4.3 Original TAM (Davis, 1986)**

A revision to the model was proposed by Davis et al. in 1989. The revised model explains user behaviour based on only three theoretical constructs – intentions, perceived usefulness and perceived ease of use and has two versions- pre implementation and post implementation. The revised model shows direct effect of perceived usefulness and ease of use during pre implementation stage but only usefulness criteria has direct effect on intentions during post implementation; ease of use has a direct relationship with perceived usefulness during post implementation.
stage. The reason for this was attributed to experience with the system which largely reduces the effect of ease of use on behaviour during post implementation. The revised model do not have attitude construct in it. Because attitudes towards objects do not cause behaviours but rather specific motives to act do. People do not necessarily adopt technologies because of the features per se. They do so more for the benefits to which the technologies lead (Davis et al., 1989). The revised model seems logical but a study by Bernadette Szajna (1996) provided little support for the revised model. Therefore, Szajna (1996) suggested the use of original single model rather than two models (Pre-implementation and post implementation). The study by Szajna (1996) confirmed the abolition of ‘attitude’ component from the original TAM model making it simpler to use. In over two decades, the TAM has become a widely used and tested model in technology acceptance literature (Teo, 2010).

Several studies, including two conducted by Davis – one measuring current use and one measuring self-predicted use of software applications – confirm both the overall predictive strength of TAM as well as the relationships among the constructs (Davis et al., 1989). Adams et al (1992) replicated TAM in their study to investigate the usage of three software applications. This is one of the earlier studies using TAM and proved the importance of perceived usefulness & ease of use to predict usage of the softwares. In a small firm level study in New Zealand Igbaria et al (1997) tested personal computing acceptance factors. The study found considerable support for TAM in small firms. Perceived ease of use was found to be a more important determinant of personal computing acceptance than perceived usefulness (Igbaria et al., 1997). One study that closely matches SBR research in Australia is a study by Lederer, Maupin, Sena & Zhuang (2000) who used TAM to understand the user acceptance of World Wide Web (WWW). The study predicts that perceived usefulness has a stronger effect on “actual use” than perceived ease of use. The study confirmed that the user’s perception of the system benefits and its ease of use are directly related to user acceptance of new technology. In similar study on WWW acceptance Moon et al (2001) applied TAM and found that perceived ease of use and perceived usefulness as important determinants of
behavioural intention by users. But previously Fenech (1998) reported poor fit of TAM to predict acceptance of WWW. Yang (2005) supported the applicability of TAM and its extension when Yang (2005) examined the M-commerce adoption by Singapore consumers. This research also validates the robustness of TAM to study emerging technologies (Yang, 2005). In another study on M-commerce, Burner et al (2005) successfully used TAM to model adoption by concluding that perceived usefulness is the predominant driver of adoption in workplace setting. Luarn et al (2005) attempted to model behavioural intention to use mobile banking in Taiwan and noted high applicability of TAM when they added a trust based construct. The researchers further conclude “By explaining usage intention from a user’s perspective, the findings of this research can not only assist mobile banking authorities in the development of better user-accepted mobile banking systems, but can also provide insight into how to promote the new IT to potential users (Luarn et al., 2005)”. Therefore, the use of TAM (whether extended or in its original form) can be found to model intention for a variety of technologies (in different fields) in the adoption literature. Lee (2009) combined TAM and TPB to explain customers’ intention to use online banking. With a “R square” of 0.8, Lee (2009) was able to conclude that the research model based on TAM is highly capable of explaining the variance in intention to adopt. Lee (2009) further found that perceived benefits of the new technology was the most important predictor to customers’ intention to use. Kuo et al (2009) used TAM to understand the behavioral intention to use 3G mobile value-added services in Taiwan. They found that the intention was low but perceived usefulness had no significant relationship with behavioural intention. This finding is in contrast to similar study by Liao et al (2007) who found that perceived usefulness and ease of use had positive relationship to intention via attitude construct. Nonetheless, TAM offered a suitable theoretical framework to both the studies. Teo (2010) used TAM to predict intention to use technology by teachers. Teo (2010) found TAM effective in predicting intention and suggested TAM is still suitable to explain the adoption behaviour. In more recent study Pai et al (2011) applied TAM to understand the acceptance of health care information
systems by health care professionals. TAM revealed that perceived ease of use is stronger predictor than perceived usefulness to adoption intention. Jan et al (2011) used TAM to explain the use of IT in universities. Perceived usefulness as opposed to ease of use was found to be significantly related to use of technology. Empirical studies above (and others) suggest that TAM is extremely powerful when explaining adoption and therefore, the model is still used (as it was used two decades ago) by some researchers investigating adoption of a new technology. Perhaps, the usefulness of TAM is best documented by King et al (2006) when they did a meta-analysis of 88 prior TAM studies involving more than 12,000 observations. The meta-analysis rigorously substantiates the conclusion that TAM is a powerful and robust predictive model. Among others, the meta-analysis confirms the following:

- The TAM measures are highly reliable and may be used in a variety of contexts.
- The influence of perceived usefulness on behavioural intention is profound, capturing much of the influence of perceived ease of use.

(King et al., 2006)

There are some reasons why researchers use TAM to explain adoption of a new technology. The appeal of this model lies in that it is both specific and parsimonious and displays a high level of prediction power of technology use (Chee, 2008). The determinants in the model are also easy for developers to understand and can be specifically considered during requirement analysis and other system development stages. These factors are common in technology-usage settings and can be applied widely to solve the acceptance problem (Taylor and Todd, 1995). The advantage of TAM is its simplicity as the model predicts ‘use’ (adoption) based on two independent variables. This simplicity led some researchers to extend TAM (Wixom and Todd, 2005). Extensions of TAM were made by including some additional constructs into original TAM. For instance, some researchers introduce subjective norm, perceived behavioural control, and self-efficacy in TAM (Hartwick and Barki, 1994; Mathieson et al., 2001; Taylor and Todd, 1995). Other researchers introduce additional belief factors
from the diffusion of innovation literature, such as trialability, visibility, or result
demonstrability (Agarwal and Prasad, 1997; Karahanna et al., 1999; Plouffe et al.,
2001). Some other researchers went further by introducing external variables or
moderating factors to the two major belief constructs (perceived usefulness and
perceived ease of use), such as personality traits and demographic characteristics (Gefen
and Straub, 1997; Venkatesh, 2000; Venkatesh and Morris, 2000). The efforts by these
researchers show the flexibility of TAM to explain adoption. The importance of these
additional construct might have contributed to the development of TAM2. Venkatesh
and Davis (2000) develop TAM2 by adding social influences (subjective norm,
voluntariness, and image) and cognitive instrumental processes (job relevance, output
quality, result demonstrability, and perceived ease of use) to predict the adoption of an
information technology.

Though TAM is very extensively tested in the area of technology adoption, TAM is not
immune from critique. Benbasat (2007) reported that an undesirable, albeit unintended
side effect of TAM has been its diversion of researchers’ attention away from a key IS
research objective or theme. The research objective that had been diverted is the design
of a useful technology (Benbasat and Zmud 2003; Orlikowski and Iacono 2001). Davis
et al.’s (1989) original intention was that the influence of system and other
characteristics be studied through TAM’s constructs. But study after study (as detailed
before) has reiterated the importance of perceived usefulness, with very little research
effort going into investigating what actually makes a system useful. In other words,
perceived Usefulness and perceived ease of use have largely been treated as black boxes
that very few have tried to pry open (Benbasat, 2007). To this extent it might be argued
that TAM is making little contribution towards making the technology useful; rather
TAM is increasingly being used to explain the situation once the technology is
developed. TAM has had the potential to provide knowledge about perception of
usefulness of a technology but the knowledge that “usefulness is useful” has, in fact,
provided little in terms of actionable research (Benbasat and Zmud 1999) and hence a
paucity of recommendations to direct design and practice (Benbasat, 2007). The reason for this might be attributed to the design of TAM. While theorizing the relationship between the TAM constructs is easy, theorizing the effect of system characteristics on TAM factors is definitely harder (Benbasat, 2007). TAM conceptualizes adoption in a narrow manner and several researchers have pointed out, such a simplistic view of system use is a major weakness with TAM (DeLone and McLean 2003; Doll and Torkzadeh 1998; Straub et al. 1995). The intense focus on this narrowly conceptualized behaviour has also led to TAM researchers neglecting to study other important user behaviours (Agarwal 2000; Johnson and Rice 1987; Nambisan et al. 1999; Orlikowski 1992, 1996) such as reinvention (Rice and Rogers 1980) and learning (Papa and Papa 1992; Vandenbosch and Higgins 1996), which are not only interesting in their own right, but are also highly relevant to understanding IT implementation, adoption, and acceptance (Benbasat, 2007).

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

TAM mainly offers a basic framework so as to explain the influence of external variables towards the behavioural idea (Davis, 1989). Practically, one must cooperate with the theme characteristics to choose different external variables and probe into the roles that these variables play (Venkatesh & Morris, 2000). The flourishing development of TAM’s relevant studies in a wide range of disciplines showed the importance of the various external variables in the adoption model. Venkatesh et al.(2003) have done a review on relevant studies over the years, and found the models that were evidence based in the past differ from one another which have all been verified in each field and category separately. Ultimately Venkatesh et al.(2003) proposed a new IT acceptance and use model which is named the Unified Theory of Acceptance and Use of Technology (UTAUT). The authors contend that the new model successfully integrates all constructs in previous models and can explain variance in IT behavioural intention and use behaviour better than the previous models. As depicted in Figure 4.4, the basic UTAUT model contains several components or constructs that are
hypothesized to relate to the intention to use IT. Following the tenets TRA, intention to use IT in-turn predicts IT use. UTAUT suggests that three constructs (composed of the most influential constructs of previous theories) are the main determinants of intention to use an information technology. The three constructs are performance expectancy, effort expectancy, and social influence.

![UTAUT Diagram](image)

**Figure 4.4 : UTAUT (Venkatesh et al., 2003)**
Those three constructs are defined as follows:

(a) Performance expectancy is defined as “the degree to which the user expects that using the system will help him or her attain gains in job performance” (Venkatesh et al., 2003, p. 447). Venkatesh et al. (2003) integrated similar concept from other models, namely, perceived usefulness (Davis, 1989), outcome expectancy (Compeau & Higgins, 1999), relative advantage (Moore & Benbasat, 1991), job-fit (Thompson et al., 1992) and extrinsic motivation (Davis et al., 1992) into this construct. In several previous acceptance studies, performance expectancy was shown to be a strong predictor of intention to use IT (Taylor & Todd, 1995; Venkatesh & Davis, 2000; Chang et al., 2007).

(b) Effort expectancy is “the degree of ease associated with the use of the system” (Venkatesh et al., 2003, p. 450). TAM’s perceived ease of use construct attempted to measure some dimensions of effort expectancy. This ease of use construct is also included in Diffusion of Innovation (DOI) theory by Rogers (1995). Venkatesh et al (2003) believes another construct that might measure dimension of effort expectancy is the complexity of the technology in question. Although many previous studies have shown that effort expectancy was a significant influence on intention to use behaviour (Davis, 1989; Moore & Benbasat, 1991; Thompson et al., 1991, Chang et al., 2007; Agarwell & Prasad, 2000; Schaper & Pervan, 2007), some did not (Chau & Hu, 2002). Perceived behavioural control (from TPB) and compatibility (from DOI explained later) attempted to measure facilitating conditions. Previous technology adoption studies exhibited a positive effect of facilitating conditions on innovation use (Moore & Benbasat, 1991; Thompson et al., 1991, Chang et al., 2007; Venkatesh & Speier, 1999 etc). They found that facilitating conditions significantly predicted technology use but did not predict intention to use IT when both the performance expectancy and effort expectancy constructs are present in the model (Kijsanayotin et al., 2009).

In addition, the UTAUT model introduced such moderating factors as gender, age, experience, and voluntariness of use from the perspective of social psychology (Qingfei
et al., 2008) and these moderating factors are also tested. The UTAUT model is considered a comprehensive model as UTAUT has incorporated factors from TRA, TPB, and TAM. The fascinating part of UTAUT is that it includes several important constructs that are derived from the Social Cognitive Theory (SCT) and DOI (DOI will be discussed in detail later in this chapter) making the model even more comprehensive. Social Cognitive Theory, a competitor with the Behavioural Intention Framework, is primarily associated with the work of Albert Bandura (1986). Social Cognitive Theory is based on the idea that environmental factors, personal & cognitive factors, and behaviour are determined reciprocally (Bandura, 1986). Bandura (1986) termed them as ‘reciprocal determinism’ which suggests that an individual’s behaviour is at once shaped by internal, personal factors as well as by the environment. Studies that use Social Cognitive Theory to explain behaviours related to IT have focused on the role of cognitive factors in individual behavior (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999). Compeau et al. (1999) focus on two sets of expectations as the main cognitive factors influencing behaviour. The first set, expected outcomes, suggests that individuals are more likely to perform behaviours that they expect will have favourable outcomes. Measures similar to Social Cognitive Theory’s expected outcomes have been considered in a number of the models already addressed in this review (e.g. TAM). The second set of expectations, self-efficacy, are related to individual beliefs about their ability to perform a given behaviour. Bandura (1986) defines self-efficacy as “People’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skill that one has but with judgments of what one can do with whatever skills one possesses.” This definition suggests an appropriate level of behavioural specificity that should be observed when measuring self-efficacy. Compeau et al (1999) points out that this definition implies two types of abilities – individual skills (i.e. opening an application) and group sets of skills related to the completion of a larger task (i.e. creating a webpage). They assert that measurement of the expectations related to self-efficacy should focus on the latter. The UTAUT also includes constructs derived from DOI, a model
that explains the process by which innovations in technology are adopted by users. Rogers defines an innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 1995). 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).” Diffusion of innovation theory considers a set of attributes (Relative advantage, compatibility, complexity, trialability, observability) associated with technological innovations that affect their rate of widespread adoption. These attributes are included in performance expectancy, effort expectancy and social influence constructs of UTAUT.

After its introduction, the UTAUT model was tested and applied to several technologies, such as online bulletin boards (Marchewka & Kostiwa, 2007) and instant messengers (Lin, 2008). Lee et al. (2007) compared the acceptance of mobile technologies across Korea, Hong Kong, and Taiwan. All these researchers found UTAUT useful in modelling adoption. One limitation of their study, however, was that they compared countries with similar cultures in East Asia. The limitation seems to be avoided when Al-Gahtani et al. (2007) investigated the applicability of UTAUT to Saudi Arabia. They tested the moderating effects of several variables, such as gender, age, and experience. Instead of comparing the results from their Saudi Arabian sample with those from other countries, they indirectly addressed the effects of country or culture. Im et al (2011) examined the relationships of the constructs in the UTAUT model to determine how they are affected by culture. In their study, Im et al., (2010) used data from Korea and the U.S. to examine two technologies. Results showed that the UTAUT model fits their data well. The comparison of Korea and the U.S. revealed that the effects of effort expectancy on behavioural intention and the effects of behavioural intention on use behaviour were greater in the U.S. sample. The results based on a UTAUT research model allowed Im et al., (2010) conclude that the magnitudes of the impacts of the variables in the well-accepted UTAUT model vary across countries. These studies show that UTAUT can also be used to make a cross
cultural assessment of adoption of a technology. AlAwadhi et al (2008) adopted the unified of acceptance and use of technology (UTAUT) model to explore factors that determine the adoption of e-government services in a developing country, namely Kuwait. The empirical data reveal that performance expectancy, effort expectancy and peer influence determine students’ behavioural intention. Moreover, facilitating conditions and behavioural intentions determine students' use of e-government services. Moreover, the study by Anderson et al (2004) to understand SME adoption of wireless technology further validates UTAUT as a model for technology adoption studies.

It seems UTAUT makes a major contribution toward adoption research. The UTAUT synthesizes decades of behavioural psychology theory into a model consisting of only the most influential constructs and moderators affecting intention to use and actual IT use. The identification of constructs and moderators suggests to researchers where they should focus their efforts in order to determine the features of new IT applications that will have the greatest potential for adoption. Multiple studies have also tested the constructs of UTAUT which might help other researchers develop their own instruments. The methods associated with the constructs of UTAUT are relatively inexpensive to implement. In addition, carefully constructed instruments may be reused without much adjustment. The shortcoming of UTAUT is that the model focuses exclusively on individual perceptions of external circumstances that lead to behavioural intention and actual behaviour. But in reality, many individuals’ behaviour may be necessary to ensure IT use (e.g. organization).

4.2.5 Diffusion of Innovation Theory

Another theory that extended from TAM is the diffusion of innovation (DOI) theory developed by Rogers (1983;1995). The focus of DOI research, according to Chwelos et al. (2000), is the characteristics of the individual technology under study that either encourage or inhibit adoption. DOI seeks to explain the process and factors that influence the adoption of new innovations (Rogers, 2003). Rogers (p. 5) defines
diffusion as “a process in which an innovation is communicated through certain channels over time among members of a social system.” DOI, as with TAM, is largely a perception based theory. DOI holds that a concept or a product is an innovation if the adopters perceive it as new (Mark & Poltrock, 2001). Therefore, an innovation does not necessarily have to be new, it only needs to be perceived as new by the would-be adopters (Chigona et al., 2008). Rogers reviewed nearly 1,500 studies where variants of diffusion are used to investigate the adoption of technological innovations in an array of settings including agriculture, healthcare, city planning, and economic development (Genuardi, 2004). Rogers developed his DOI constructs by identifying the product attributes that most greatly influenced adoption. Moore and Benbasat phrased Rogers’ innovation attributes in terms of individual’s perceptions order to test the influence they had on behavioural intention and use of IT (Moore & Benbasat, 1991). They did this by developing valid and reliable instruments to measure the effects that user perceptions of these attributes had on use (Genuardi, 2004). Testing their measure, Moore and Benbasat (1991) found that several of Rogers’ attributes tapped more than one construct.

DOI posits that innovation, while entailing uncertainty, is supposed to bring at least some degree of benefit for its potential adopters. But innovation’s advantage is not always clear-cut to the intended adopters. Uncertainty about the innovation attributes can be reduced if the intended users hold a positive perception towards attributes of the innovation. Rogers (1995) theorizes that the likelihood that an innovation will be adopted depends partly on its attributes. These attributes of innovation, as perceived by the users, are identified by Rogers (1995) as: (1) relative advantage (the degree to which an innovation is perceived as better than the idea it supersedes): Relative advantage, as defined in DOI, is the degree to which an innovation is perceived as being superior to its precursor, which is either the previous way of doing things (if there is no current way), the current way of doing things, or doing nothing. It has been widely commented that the innovation must be understood in a wider context, which suggests the superiority of
An innovation is not only measured in economic terms but also may also be expressed in terms of enhanced personal status or other benefit terms. Rogers (1995) hypothesizes that the higher the perceived relative advantage, the higher the rate of adoption, all other factors being equal. It should be noted that perceived relative advantage of an innovation involves both perception (i.e., evaluation) of the proposed innovation as well as perceptions of other candidates and the status quo. It is not uniquely tied to objective characteristics of the innovation although, of course, perceptions usually, but not always, are influenced by objective reality. “Also, relative advantage must take into account “relative advantage for what?” What is the task to which the innovation is being put into operation?” (Chigona et al., 2008) (2) compatibility (the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and the needs of potential adopters): For an innovation to be adopted at a wider scale, the innovation must be perceived to be consistent with existing social cultural values, needs, and past experiences of potential adopters. In an organizational context the concept of compatibility has been extended to consistency with existing organizational structure and organizational existing IT philosophy. The makes compatibility positively correlated with the rate of adoption. (3) Complexity (the degree to which an innovation is perceived as difficult to understand and use): It is intuitive that if the innovation is complex to learn and use, people would not be interested to adopt the innovation (Cooper and Zmud, 1990). Therefore, this attribute of innovation correlates negatively with the rate of adoption. (4) trialability (the degree to which an innovation may be experimented with on a limited basis): Other way of referring trialability is the degree to which an innovation may be experimented with on a limited basis before adoption without undue cost. Some researchers like Niederman (1998) attempted to link trialability to divisibility of an innovation. Trialability/divisibility is “the degree to which an innovation can be adopted in phases, with each phase potentially leading to a greater adoption” (Niederman, 1998, p.153). Trialability might be influenced by cultural values, the task and its associated stresses, and even social influence (particularly where others might be observing the trials). Innovations that can be tried in pieces are
inherently more trialable than those for which the entire technology has to be mastered before any use can be made (Weiss and Dale, 1998). In these latter cases, the “trials” are often simply unproductive and unconvincing play-acting or marketing. These latter cases might inhibit adoption of the innovation as the uncertainty about the innovation was not resolved due to lack of trials and (5) Observability (the degree to which the results of an innovation are visible to others): This attribute of innovation places importance on the visibility of usefulness of the innovation to the potential adopters. To the extent that something has to be explained in complicated ways to others (i.e., complexity), it becomes less “observable,” too. In some innovation, it is easy for others to see the results of adoptions from those who have already adopted the technology (Chigona et al., 2008). However, this is not the case with all innovations. Moore and Benbasat (1991) split observability into two: result demonstrability (the ability to demonstrate that positive results have occurred for the user) and visibility (the ability to share those demonstrations with others). DOI assumes that observability is positively correlated with the rate of adoption. Abstract or ambiguous innovations are generally difficult to observe and therefore diffuse slowly. These five attributes make DOI more comprehensive than TAM in explaining technology adoption. Basically these attributes are economic in the sense that they relate to how much effort must be expended in adopting compared with the benefits of adopting, especially compared with the costs and benefits of not adopting (Chigona et al., 2008). Moore and Benbasat (1991) added voluntariness of use and image to Rogers’ five attributes. An innovation is most likely to be adopted if individuals perceive that the adoption enhances their images within the social system. Rogers however includes this concept under perceived relative advantage. Voluntariness of use is defined as the degree to which use of innovation is perceived as being voluntary or of free will (Moore and Benbasat, 1991). Chigona (2008) find it interesting to note that under DOI, many of the purported effects of an innovation’s characteristic are actually moderated significantly by the presence or roles of others: Relative advantage depends on the task and its definition, observability depends on the ability to communicate results to others, complexity might depend on
the ability to talk to oneself what one is doing, and trialability may depend on the social circumstances of the trial. All of these are enhanced if the innovation has an intended use in communication (Chigona, 2008). The existence of these moderating factors confirms the presence of communication channel, social system and length of time in the original DOI model by Rogers. Rogers proposes that innovation diffuse in the social system over a period of time and communication bears an important role for the successful diffusion of the innovation. DOI further proposes that there will be different adopter groups over innovation diffusion stages (Rogers, 2003). The classic Rogers model defines five adopter groups including innovators, early adopters, early majority, late majority, and laggards.

Prior DOI-based research indicates that three of these attributes are the most important in explaining adoption. First, Holland et al. (1994) investigates the use of EDI in cash management and finds a positive association between relative advantage and adoption decisions. Likewise, O'Callaghan et al. (1992) find a positive association between relative advantage and intention to adopt in their study of EDI in marketing channels. Second, the findings on the relationship between adoption or intention to adopt and compatibility are mixed. Ettlie et al. (1984) and Grover (1993) find compatibility to be positively related to adoption behaviour. But Teo et al. (1995) do not find a significant relationship between compatibility and intention to adopt. Faced with these mixed findings on compatibility Kishore et al (2007) reconceptualised compatibility as organizational alignment (OA), defined as the extent to which organizational components support the philosophy and technology of interest in IT innovation. Kishore et al (2007) find from a field survey that the OA construct is a significant predictor than compatibility construct. Third, Teo et al. (1995) find complexity to be a strong predictor of intention to adopt financial EDI in Singapore. Finally, in spite of their theoretical support, several studies found no significant relationship between observability and adoption behaviour (e.g. Bouchard 1993), and only a weak relationship between trialability and intention to adopt new technology (Teo et al., 1995). Other researchers
found the suitability of the DOI model to explain innovation adoption and diffusion. In an study by Chigona et al (2008) on the adoption of communal computing facilities (CCFs) in South Africa, the researchers conclude that DOI was able to explain most of the adoption decisions. All the five attributes of innovations were found to influence adoption according to DOI. Hsu et al (2007) used diffusion of innovation theory to examine the factors that influence the adoption of Multimedia Messaging Service (MMS). Using DOI the findings indicate that perceptions of use were different over innovation diffusion stages. Specifically, there was a significant difference between potential adopters and users. Agarwal and Prasad (1997) found that relative advantage and result demonstrability were relevant in explaining acceptance of the WWW. The two variables together explained 46% of the variance in future-use intentions. Slyke et al. (2002) used DOI to investigate factors that may influence intentions to use groupware applications. It was found that relative advantage, complexity, compatibility, and result demonstrability were significantly related to intention. Chen et al. (2002) applied DOI, in conjunction with TAM, to examine behaviour in the virtual-store context. Their findings indicated that compatibility, perceived usefulness, and perceived ease of use were the primary determinants of consumer attitudes towards using virtual stores. Brown et al (2002) analysed factors influencing cell phone banking using DOI and factors identified as influences on cell-phone banking adoption included relative advantage, trialability, and consumer banking needs. Alam et al (2007) examined the factors influencing internet-based e-commerce (EC) in the electronic manufacturing companies in Malaysia. They modelled their study based on DOI. Roger’s five innovation diffusion characteristics were considered as factors that affect EC adoption and security/confidentiality was taken as an additional factor for this study. The multiple regression analysis results indicate that relative advantage, compatibility, complexity, observability and security appear significant. Relative advantage and compatibility have positive and significant influence on EC adoption whereas complexity and security have negative effects. This study also revealed a non-
significant relationship between trialability and e-commerce adoption. This finding on trialability is similar to the previously mentioned find by Teo et al (1995).

Studies mentioned above and others (which are not mentioned here to make the chapter concise) show the validity of DOI in the innovation diffusion research. The main contribution of DOI is that the model allowed researchers to study how new innovations spread among groups of people. In addition DOI has opened up other factors not inherent in the technology itself (e.g. social system, communication etc) that might explain the adoption and diffusion better. This has particular implication for organization level studies as the organizations are affected by these other factors.

To sum up the above literature discussed so far on technology adoption, it can be said that the above theories are useful in modelling adoption behaviour. The findings are mixed as variables in the theories are found to be significantly associated in some studies whereas they are not significantly associated in other studies. But at least researchers had a starting point in modelling the behaviour. It is interesting to note that these theories are predominantly based on the features of the technology in question. Some researchers like Kishore et al (2007) extended the model by considering some organizational features. Now the question comes what can be said about SBR adoption in Australia in light of the above theories. As stated earlier, the technology enabler of SBR is XBRL. As such the benefits associated with XBRL are generally true for SBR. Australian Treasury, the initiator of the project, did not fail to mention the benefits of SBR. From their communication it can be established, SBR would provide added benefits to organizations in Australia. As Australian Treasury suggest, SBR would reduce the reporting burden of Australian entities (relative advantage), streamline business operation (relative advantage), reduce man hours for report preparation (relative advantage), be easy to use, not be complex, be compatible with existing technology used by the entities, and reduce cost for the entities. These benefits are in line with the XBRL benefits promoted by technologists and computer professionals.
When we consider theoretical assumptions of TAM and DOI, these benefits support the expectation that SBR would be adopted by organizations in Australia. But previous Australian experience with XBRL is not encouraging as there was not a single big story on XBRL adoption in Australia (Troshani & Doolin, 2005; Doolin & Troshani, 2007).

Organizations, because of their size and complexity in operation, are susceptible to several external forces and these forces play a part in decisions that organizations make. Therefore, the influences external to organizations need to be investigated to explain the adoption of a new technology. The adoption literature suggests that there is an alternative theory which considers environmental influences as one of the constructs. The framework, known as the technology-organization-environment (TOE) framework, was developed to specifically study the organizational adoption of new technology.

### 4.2.6 The Technological-Organizational-Environmental (TOE) Framework

The TOE framework for the study of organization’s adoption of technology was developed by Tornatzky and Fleischer (1990). Most of the literature prior to TOE focused on the adoption decisions of individuals which, according to Tornatzky and Fleischer (1990), involve technologies that are “too big and complex” for them. A more comprehensive framework was sought that featured three perspectives of the influences on the process of technology diffusion in organizations. These are a technological perspective, organizational perspective, and environmental perspective (Zhang et al., 2007). Perceptions on these perspectives by potential adopters of the innovation may either encourage or inhibit adoption (Huang et al., 2008). Back in 1975, Balridge et al. (1975) noted that organizational factors are rarely treated in the literature on diffusion of innovations. Since then the organizational adoption of a new technology started to receive attention and probably TOE framework was the outcome of the studies that followed. It was noted by Locke et al (2006) that Rogers' monumental review (1962) of
the innovation literature summarized the research conclusion in 52 major propositions—not one referred to a complex organization as the innovation adopter or to organizational features as independent variables affecting the process. The revision of the review was done by Rogers and Shoemaker in 1971. Even in the revision, they explicitly state (p. 71) that "By far the most popular diffusion research topic has been variables related to individual innovativeness." Although Rogers and Shoemaker added chapters that supposedly dealt with organizational innovation, once again they actually looked at individual behaviour, located this time within organizational settings (Locke et al., 2006). The inattention to organizational factors is perplexing due to the fact that most major social innovations are actually adopted by complex organizations, for example, educational innovations, community-action projects, new technologies in industry, and new health-delivery programs. Therefore, more attention to organizational features is needed and there are at-least two reasons for such attention: (1) organizations are major adopters of social inventions, and (2) organizational dynamics are the major independent variables that influence the amount, the rate, and the permanence of innovations (Locke et al., 2006). In recent years we have seen an increase in organizational research investigating adoption of a technology. A large portion of those studies adopted TOE framework as the research model for the investigation. A sample of those studies will be identified later in this section but first a description of the three perspectives of TOE framework is given below.

First, the technological perspective in the TOE model includes the innovation attributes that Rogers (1983) believed had influence on the likelihood of adoption. As stated earlier, a fundamental theory for the study of technology adoption is the Diffusion of Innovation (DOI) Theory (Rogers, 1983; 1995). TOE theorizes that the perceived characteristics of these innovation attributes either encourage or inhibit adoption. O’Callaghan, Kaufmann, and Konsynski (1992) find that the initiator firm “must build sufficient relative advantage into the IS system to induce adoption while ensuring that the system is not as complex as to make implementation problems insurmountable” (p.
Premkumar et al (1994) examine EDI adoption by splitting EDI diffusion process into two stages – adaptation and infusion. Their research results show that relative advantage and compatibility are two primary factors affecting IS adaptation. Ramamurthy and Premkumar (1995) find that compatibility and relative advantage, together with other factors, determine the extent to which EDI is diffused through an organization. Teo et al (1995) use DOI factors to examine organizational adoption of TradeNet, an EDI network in Singapore. They find that complexity and other variables such as operational risk significantly influence an organization’s intent to adopt EDI. In addition, Zhu et al (2006) investigate firms’ migration from EDI to Internet-based IS. They find that complexity is a key determinant of adoption. Lastly, Claycomb et al (2005) find that the compatibility with existing systems facilitates technology use by companies. Technology perspective of the TOE framework therefore proposes technological attributes of an innovation as just as important for organizational adoption as individual adoption, if not more important (Huang et al., 2008). Some researchers like Ye et al (2007) used the term “Technology readiness” instead of technology perspective. But essentially the focus is on the technology itself. Technology readiness "consists of technology infrastructure and IT human resources. “Technology infrastructure refers to technologies that enable Internet-related businesses...and IT human resources refer to IT professionals possessing the knowledge and skills to implement Internet-related applications” (Zhu and Kraemer 2005, p. 68)”. By this definition, technology readiness is reflected not only by physical assets, but also by human resources that are complementary to physical assets (Mata et al. 1995). Technology infrastructure establishes a platform on which new technology can be built; IT human resources provide the knowledge and skills to develop that technology’s applications (Zhu and Kraemer, 2005). Therefore, firms with greater technology readiness are in a better position to assimilate a new technology (Ye et al 2007).

Second, the organizational perspective of the model studies organization’s mechanism to influence diffusion of innovation within the organization. Tornatzky and Fleisher
(1990) posit that formal/informal intra-organizational mechanism, organization resources and innovativeness play roles in the organizational adoption of new technology (Dedrick and West, 2003). Some people call this perspective - “Organizational readiness”. Organizational readiness was defined by Iacovou et al. (1995) and adapted to the study of Grandon and Pearson (2004) as availability of the financial and technological resources to adopt e-commerce (a new technology). Grandon and Pearson (2004) summarized different aspects of organizational readiness found in previous studies, for example, organizational compatibility, technical compatibility, cost, etc. Their empirical study indicated that organizational readiness emerged as the best discriminator between organizational adopters and non-adopters of the technology which is also voiced by Ye et al., (2007). Organizational adoption of IS reflects “collective” individual reactions towards the technology. Several organizational dynamics, therefore, needs to be considered carefully before commenting on the potential adoption by organizations. Researchers have tested these organizational variables in organization level studies. As an example, organizational size has been evaluated as a critical factor that impacts an organization’s adoption decision (Daugherty, Germain, & Droge, 1995; Lee, 2001). In the meta research of the effects of organization size on innovation adoption, Damanpour (1992) finds a positive relationship between organization size and innovation adoption. In a recent study of B2B e-commerce adoption in industrial organizations, Claycomb et al. (2005) find large firms have greater levels of B2B e-commerce use than small firms. Similarly organizational learning and knowledge of the technology contribute noticeably to the extent of technology use (McGowan & Madey, 1998). The more knowledge a company has on a technology, the more likely it will adopt technological innovations (Zhu et al., 2006). The complexity of new technology may also demand technological expertise and experience for an organization to benefit from it. Computer upgrading is a typical example of the effects of technology knowledge on adoption. However, an organization’s experience may not necessarily lead to the adoption of new technology. In the study of firms’ migration from EDI to Internet-based IS, Zhu et al. (2006) find
“the experience with older technology may create switching costs and make it difficult to shift to open and potentially better technologies (p. 515)”. This suggests that only technological attractiveness might not be enough for the organizations to adopt the technology. The organization, as a unit, should also be receptive and that receptiveness depends on the organizations view of how the technology benefits the organization; whether the technology fits existing organizational systems or whether technology has support from the managers. All of these factors are included in organizational perspective of TOE framework.

Third, the environmental perspective is the arena in which a firm conducts its business — its industry, competitors, access to resources supplied by others, and dealings with government (Tornatzky and Fleischer 1990). It has been widely hypothesized that environment is a force that can encourage or impede an organization to adopt innovation. Organizations operate in societal environment. Therefore, the decision to adopt a new technology may also be influenced by the environment of the organization – customers, suppliers, trading partners, competitors, government regulations etc – and sometimes these factors may provide barriers and incentives to technology adoption (Lippert & Govindarajulu, 2006). Many studies (as described here) have proven the importance of environment pressure on innovation adoption. Environmental uncertainty, competitive pressure, industrial pressure, and government policy, all serve as pressures on organizations. Normally when a new technology is introduced, it is expected that the widespread adoption of that technology will gradually occur if the technology is a successful one. But it is plausible that the institutional environment of the firm will play a large role in the organizational adoption decision along with the characteristics of the technology. As such, it is appropriate to assume that the environmental factors have potential to influence the scope and degree of adoption of the new technology (Lippert & Govindarajulu, 2006). In many cases external pressure only may influence an organization to adopt a new technology. As for example, Teo et al (1995) found government pressure alone was only significant reason to adopt internet
by many Singaporean companies. Several studies find that network externalities are one of the most important environmental factors for communication technology adoption (Au & Kauffman, 2001; Gowrisankaran & Stavins, 2004; Wang, Hsu, & Fang, 2004). Network externalities, also called network effects, refer to collective actions of other firms joining the network (Chwelos et al., 2001) and therefore one of the external pressures that influence adoption of new technology by those organizations. In the case of a firm’s EDI adoption decision, one frequently cited example is the interdependence between hardware and software in the computer industry (Katz & Shapiro, 1985). Because the development of compatible software is contingent upon installed hardware, current users would prefer others to purchase similar equipment to form a pressure on software development. As more users join a network, the more an organization is interested in adopting it (Riggins, Kriebel, & Mukhopadhyay, 1994). To sum up, environmental pressures come from many different sources. The pressure can come from government, competitors, suppliers or even from information sources. But whatever the source is, environmental perspective of TOE framework suggests that these pressures have an impact on the organizational adoption of a technology. The degree of influence may vary across organizations (Huang et al 2008).

Prior findings from the use of the TOE framework include Kuan et al.’s (2001) study EDI adoption using TOE framework. They were able to characterize the adopter and non-adopter firms based on the TOE framework. Likewise Huang et al. (2008), Dedrick and West (2003) and Grover (1993) have utilized TOE when analysing organizational level adoption of new technology. Zhu et al. (2003) applied the TOE framework in the financial industry to explain determinants of e-business intent to adopt, finding support for the importance of technology readiness, financial resources, and firm size, as well as the regulatory environment. A more recent survey by Zhu and Kraemer (2005) validates a perception-based TOE framework incorporating five factors (technology competence, firm size, financial commitment, competitive pressure, and regulatory support) to identify important antecedents of e-business use and organizational outcomes.
Liao, and Hsiao (2005) applied the framework to look at the CRM systems, a technological innovation, adoption by service firms in Taiwan. In the tourism and hospitality related literature, Sigala (2003; 2006) applied a similar framework to understand the differences between adopter and non-adopter firms in the context of e-procurement technologies. Based on a comprehensive industry survey, the findings from these studies reveal that adoption is driven by both external and internal factors. External factors include pressure from distributors and suppliers, the general competitive intensity and other institutional influences, and internal factors include an assumption of business and technology risks, relative operational and competitive advantages and organizational skills sets and resources. These studies demonstrated the usefulness of the TOE framework for identifying facilitators and inhibitors of technology adoption. Overall the TOE framework has a solid theoretical basis and consistent empirical support (Xu et al., 2004).

To conclude the review of most prominent adoption theories and/or models (TAM, UTAUT, DOI and TOE), it can be said that innovation adoption and diffusion are well developed areas of research that are founded on sound philosophical and theoretical bases for explaining the underlying mechanism of adoption of technology. The research studies are also extended to macro levels investigations with an approach to investigate the relationship among and between various variables. A number of determinants have been suggested at quite a detailed level by various studies (Grey et al., 1998). These determinants vary depending upon the type of innovation and the category of adopters which can be individuals, organizational units or firms, and country(ies) (Myers, 1996; Larry, 1998). For each category of adopter, found in the literature, several factors are used as determinants of adoption and these factors can be classified in three broad categories; 1) Factors related to the innovation/technology features/characteristics and their diffusion context (relative advantage, compatibility, complexity, treatability and observability, communicability and divisibility; 2) factors related to the adopter category (individual, organization, country) and their adoption contexts (e.g. size related
variables especially for organizations, traits and characteristics of adopter category such as readiness, experience, maturity, information sources and communication channels, and resources; 3) Factors related to the external environment (economy, regulations). These theories have implication for this study on SBR since SBR represents an IT innovation specific to business reporting. Applicability of these adoption theories in the context of SBR adoption is discussed next.

4.3 Applicability of adoption theories/models
The adoption literature shows the applicability of the above theories/models in explaining adoption of new technology. The literature further suggests that these models are used in a variety of settings/fields of inquiry. As already explained, these models are tested successfully in the field of e-Business (Zhu and Kraemer, 2006); customer relationship management (Chang et al., 2005); Business to Business e-commerce (Claycomb et al., 2005); virtual store (Chen et al., 2002); cell phone banking (Brown et al., 2003); e-government (AlAwahdi, 2008); education (Teo, 2010, Jan, 2011); even in Health care (Pai et al., 2011) and others. The fact that these models are used in a variety of fields; it shows the robustness of these adoption models. The question is can we use those theoretical backgrounds to explain SBR adoption in Australia? Previously, any technological innovation in a variety of fields led the researchers use the above discussed adoption theories to explain the potential adoption pattern of the innovation. SBR is also not an exception. SBR brings a much needed technological innovation in the field of accounting reporting. The increasing influence of technology on all aspect of accounting has been overlooked by the broader accounting research community (Sutton, 2010) even though accounting information systems are fundamentally integrated across every aspect of the accounting discipline. Such lack of accounting research related to the wider effects of technology on accounting is evident in the case of the adoption of an alternative financial reporting medium.
The limited number of empirical studies undertaken to explain the adoption of alternative financial reporting media has increased with the advent of XBRL. But these studies have primarily been based on explanations of new media adoption from the perspective of the prospective individual user/operator of that technology rather than the perspective of the organisation. For example, Pinsker and Wheeler (2009) only modelled perceived ease of use and perceived usefulness as factors affecting individual user attitudes toward XBRL acceptance. One recent study has, in fact, sought to model a combination of individual and organisational perspectives. Selamat and Rewasdeh (2009) argue that ease of use and perceived usefulness to the individual operator/preparer, combined with compatibility to existing organisational systems and relative advantage to the organisation, will influence the intention to adopt XBRL. Voluntary SBR in Australia gives the opportunity to model the determinants of adoption of XBRL from the broader organisational perspective of the TOE framework.

4.4 Selection of the TOE model and development of hypotheses

TOE provides a more comprehensive conceptual framework than other adoption theories for organizational adoption study. TOE puts organization at the centre of the study. Dedrick and West (2004) find TOE to be ‘a useful analytical tool for distinguishing between inherent qualities of an innovation itself and the motivations, capabilities, and broader environmental context of adopting organizations’. Based on the merits of the TOE framework discussed above and following the works of researchers like Cheowls et al. (2001), Icavoue et al. (1995), Premkumar et al. (1995), Huang et al. (2008), a technology adoption model is developed in this study from an organisational perspective. As set out in figure 4.5, the proposed model follows Tornatzky and Fleisher’s (1990) TOE framework. Previously Doolin & Troshani (2007) used a similar framework to do an interview based study on organizational adoption of XBRL. Even though their study was a preliminary study Doolin & Troshani (2007), the study confirms the utility of the TOE model for understanding the drivers of adoption. Doolin & Troshani (2007) were able to describe the facilitating and inhibiting factors of
organizational adoption of XBRL using the framework. The fact that the TOE framework has been used in a qualitative study in a closely related context, gives added credibility to the pursuit of a quantitative study in this context that seeks to operationalize the TOE concepts.

In the above conceptual model (Figure 4.5), the dashed blocks and dashed arrows indicate that the original theoretical models that underlie the thinking in the TOE

Figure 4.5: Conceptual model for this study
framework. As many other IT adoption studies used and followed the tenets of TRA and TPB, intent to adopt SBR is identified as the dependant variable in the study. TRA and TPB assume that “intention” has strong predictive power over “actual behaviour”. Adoption studies, therefore, normally use intention to adopt to predict the adoption pattern of a new technology. This study does the same. There is also another reason why intent to adopt SBR has been included in the conceptual model as the dependant variable. The data collection period for this study is just before the initial roll out of voluntary SBR in Australia. No actual adoption would have occurred at the time of data collection. This makes “intent to adopt” the focal point of investigation.

As will be discussed in the following sections, the three TOE categories in Figure 4.5 will be operationalized as nine independent variables.

**4.4. 1 Technology Perspective**

From the perspective of the technology category, the focus of this study is on the potential advantages that SBR technology has to offer in relation to financial reporting. Previous adoption studies (in a variety of settings) have considered attributes of the technology under investigation from purely a technology perspective (Kuan et al., 2001). Some view technology attributes as the leading factors for organizational adoption of innovation (Claycomb et al., 2005). Technological factors are often operationalized in innovation adoption studies using innovation characteristics drawn from the work of Rogers (2003) on the diffusion of innovations. The characteristics that have been studied include relative advantage, compatibility, complexity, observability and trialability and these features have been hypothesized as having a strong influence on adoption. Tornatzky and Klein (1982) conducted a meta analysis and found evidence that only three attributes (relative advantage, compatibility and complexity) have a consistent association with adoption. Accordingly three variables are identified in the technology category of this study. They are Relative advantage, Compatibility and Complexity.
Relative advantage (RA) is viewed as an advantage for an organization over previous ways of performing the same task (Agarwal and Prasad, 1997). Originally, RA was employed to capture the relative superiority of an innovation (in a very broad sense) and was defined as “the degree to which an innovation is perceived as being better than the idea it supersedes” (Rogers 2003, p.229). Relative advantage has been found to be one of the best predictors and positively related to an innovation’s rate of adoption (Premkumar et al., 1994; Rogers, 1995; Tan and Teo, 2000). Recent studies also support the previous finding. As for example, Lin (2010) found significant relationship between relative advantage and intent to adopt mobile banking. This led Lin (2010) to conclude that users who have more positive beliefs about the perceived relative advantage of the technology (mobile banking), formed more favourable attitude toward adopting (or continuing to use) the technology. In a survey of 354 public relations professionals to identify the innovation attributes more likely to influence the adoption of the Internet, Al-Shohaib et al (2010) reported that only one perceived Internet attribute, relative advantage, was related to the Internet adoption. The same conclusion was found by Hovav et al (2011) who reported that relative advantage is a strong determinant of internet standards adoption in South Korea. Jeyaraj et al (2006) did a review of 51 previous studies on organizational IT adoption to identify the predictors used in the research. They found that Relative advantage was the most utilized independent variable. These studies and reviews confirm the existence of relative advantage as predictor of intent to adopt. One important point must be made here. Several researchers have suggested that relative advantage and perceived usefulness are interchangeable in studying IT adoption. For instance, Karahanna et al. (2006) asserted that perceived usefulness is equivalent to relative advantage. Similar idea is voiced by Moor & Benbasat (1991) and Admas et al (1992) who say that relative advantage can be considered analogous to perceived usefulness. Wang et al (2008) argue that treating Relative Advantage as identical to Perceived Usefulness could be problematic. They argue that relative advantage of a new technology has significant benefits than the existing one which drives adoption whereas perceived usefulness relate to perception of
the usefulness embodied in the new technology. SBR provides several relative advantages when compared with other existing format(s) of financial reporting. As detailed in chapter 2, SBR reduces time and effort in preparing financial reports; it reduces unnecessary duplication of data entry; it also saves cost as financial information will be extracted from existing software used by companies. Therefore relative advantage of SBR is hypothesized as having a positive relationship with intent to adopt.

**H1: There is a positive relationship between relative advantage and intent to adopt SBR**

‘Compatibility’ in the technology construct is operationalised as the extent to which SBR is perceived to be consistent with technological skills, IT infrastructure and overall IT strategy of the company. Innovation adoption decisions depend on both what is available and how well the available technology fits the organization’s existing technological base (DePietro et al. 1990). Grover (1993), therefore, reported that positive relationships have generally existed between perceived compatibility and adoption decision. Similarly some other researchers (Khazanchi, 2005; Lippert & Forman, 2005) found that a technology fit is critical for new technology adoption. Wu et al (2005) report the most important determinant of intent to adopt mobile commerce is compatibility. As discussed previously Claycomb et al (2005) find that the compatibility with existing systems facilitates technology use. Similarly Ramamurthy and Premkumar (1995) find that compatibility is one of the driving forces of EDI diffusion. Dedrick & West (2003) also commented that compatibility with current applications is a major concern in the adoption decision of a technology. It is expected that a new technology would present very different innovation opportunities to different organizations. Whether these innovation opportunities can be exploited depends on the degree of match between the innovation’s characteristics and the practices & equipment currently adopted by the organization (Chau et al., 1997). This concept of “match” or “compatibility” builds on the argument made by Tornatzky & Klein (1982). Tornatzky
and Klein (1982) hold that an innovation is likely to be adopted if it is compatible with existing ideas. Their view of compatibility is applied by researchers later (some which are stated here) and compatibility emerged as important variable in the technology perspective of the framework. Jeyaraj et al (2006) also found compatibility as one of the most frequently used predictors in organizational adoption studies. SBR is purported to automate business reporting to government. Intuitively the reporting medium (SBR) must be compatible with existing IT structure & strategy of the company to induce adoption by companies. Further, the existing data processing task (preceding idea) must also be compatible with SBR. Otherwise companies would have to modify a lot in their existing systems to voluntarily adopt SBR which might deter the adoption of SBR. Therefore higher levels of perceived technological compatibility of SBR will positively affect an organization’s intent to adopt SBR.

H2: Compatibility of SBR is positively related to intent to adopt SBR.

Complexity is the third variable in technology perspective of SBR adoption study. Complexity is defined as the degree of difficulty users experience in understanding the innovation (Grover, 1993; Tornatzky & Klein, 1982). Complexity is assumed as having negative association with the adoption of technology (Tornatzky & Klein, 1982). Tornatzky & Klein (1982) found in the meta analysis that 13 of 21 complexity studies contained meaningful statistical analyses and confirm the negative relationship between complexity of the innovation and its adoption. Several years later, Jeyaraj et al (2006) find in their review that complexity is still one of the most frequently used variables in the technology perspective. Some other researchers put some perspectives on why complexity is negatively related to adoption. Cooper & Zmud (1990) say that adoption of complex innovations requires organizational personnel to possess sufficient operational resources and technical competencies. These resources include adequate computer or IT infrastructure, technical skills among organizational personnel, and training systems which facilitate the installation and maintenance of the new technology
(Chong, 2004; Scupola, 2001). It would require an organization to spend a considerable time and effort to make these resources available only to use the complex technology. Therefore, the less complex the technology is, the higher the incentive for the organizations to adopt the technology. Zhu et al (2006) tested complexity when they investigated firms’ migration from EDI to internet based inter organizational system and found that complexity is a key determinant of adoption. Other studies like Alam et al (2007) prove the significance of complexity in predicting intent to adopt an innovation. In the context of SBR, the technology enabler (XBRL) was found to be complex out of the interviews conducted by Doolin et al (2007) which might explain the limited adoption of XBRL found by Doolin et al (2007). Following on the arguments above, it is hypothesized that perception of SBR as a complex technology would be negatively related to intent to adopt SBR.

H3: There is an inverse relationship between complexity of SBR and an organization’s intent to adopt SBR.

4.4.2 Organizational perspective

The organizational perspective investigates how different organizational components facilitate the adoption decisions of SBR. If the perceived benefits of SBR cannot be achieved due to lack of organizational capabilities, the adoption of SBR would be meaningless to the company regardless of how great the benefits are. It is also well established in the broader IT adoption contexts that aspects of the organizations may facilitate or inhibit adoption of an innovation and those aspects include but not limited to an organization’s structures and processes (DePietro et al. 1990) and the internal resources that constitute an organization’s readiness to introduce an innovation (Chau and Hui 2001, Chwelos et al. 2001, Kuan and Chau 2001, Wymer and Regan 2005). Huang et al (2008) suggest that the success of innovation adoption is dependent on an organization’s preparation for the innovation. In other word innovation adoption decisions are a function of the organizational context within which they are embedded. An organization's context evolves as a result of its past strategic and structural decisions.
which in turn affect its ability (or lack of it) to innovate effectively (Dougharty et al., 1996). It has been found that alignment with the organizational context is an important determinant of effectiveness of environmental scanning systems, a new technology (Yasai-Ardekani et al., 1996). These arguments are extended by Gopalakrishnan (2000) to innovation decisions by saying since contexts are predetermined, organizations need to align innovation adoption behaviour to their existing context in order to be effective in the present and future (Gopalakrishnan, 2000). Large organizations are more likely to have financial and human resources available for IT investment and adoption, have a greater need for internal and external coordination through IT, and be able to achieve benefits such as economies of scale (Zhu et al. 2003). However, Premkumar et al. (1997) note that smaller organizations may be less conservative than their larger peers, and more open to innovative ideas and technologies. Rather than relying on size some researchers investigated influence of perception of cost on adoption (e.g. Kuan et al., 2001). Both size and perceptive cost relate closely with resource readiness of the firm. Other researchers analysed organizational learning and found that organizational learning and knowledge about the technology contribute noticeably to the extent of technology adoption (McGowan & Madey, 1998). The more knowledge a company has on a technology, the more likely it will adopt technological innovations (Zhu et al., 2006). If the technology is a complex one, it demands technological expertise and experience for an organization to benefit from it. In the absence of that expertise there might be a barrier to adoption as the experience with older system may create a switching cost (Zhu et al., 2006). Infact it has been found that employees’ expertise and confidence to implement and operate a technology-related innovation affect both the human capital available for adoption and its acceptance within the organization (Chau and Hui 2001, Fillis et al. 2004). Organizational compatibility (or organizational readiness as some have referred), therefore, becomes an important variable that has been researched in this perspective (Huang et al., 2008). As discussed before top management support is also a widely accepted condition for implementation success of a technology (Premkumar & Ramamurthy, 1995). Doolin et al (2007) reported that
support within an organization for an innovation, either from top management (Grover 1993, Premkumar and Ramamurthy 1995) or an internal innovation champion (an important enabler in the adoption of the new IT) (Premkumar and Potter 1995, Russell and Hoag 2004). Following on these arguments, it is assumed in this study that organizational factors would affect SBR adoption in Australia. Three variables are identified in this perspective and are hypothesized as having relationship with SBR adoption. They are organizational alignment, top management support and perceived financial cost.

Organizational compatibility is widely used as variable in this perspective and refers to the degree to which innovation is perceived as being consistent with organizational practices, values and needs (Ramamurthy et al., 1999). Several studies found positive association between organizational compatibility and adoption decision. The studies generally found an important organizational factor in technology adoption is the alignment between IT and organizational objectives (Cline et al., 2001; Gefen et al., 2005). Technical expertise within the organization, as discussed before, is a component of organizational compatibility. It was found that firms are more likely to adopt an innovation when technical expertise is available, and technical expertise thus can increase levels of firms’ technology adoption (McGowan and Madey, 1998; Thong, 1999). Cragg and Zinatelli (1995) identified lack of technical expertise as a key factor inhibiting adoption of technology. Overtime there has been an effort to further improve the definition of organizational compatibility as some studies (Agarwal & Prasad, 1998, Chau et al., 2002 etc) started give mixed finding (for complete list see Kishore et al., 2007). Ultimately Karhanna et al (2006) attempted to overcome the shortcoming of the traditional definition of organizational compatibility by dividing the concept into four construct: compatibility with preferred work style, compatibility with existing practices, compatibility with prior experience and compatibility with values. But Kishore & Mclean (2007) found the difficulty with conceptualizing this development by Karhanna et al (2006) in an organizational setting. They note that adoption of technology does not
depend only upon the four constructs defined by Karhanna et al (2006); but also require a good fit within the overall organizational architecture (Nadler et al., 1992). Kishore & Mclean (2007) then went on to reconceptualise the compatibility as Organizational alignment (OA) and the define OA as “the extent to which the various organizational components support the philosophy and technology of interest embedded within the focal IT innovation so that the full potential of the innovation can be harnessed (p.758)”. Kishore & Mclean (2007) then tested this definition of OA and traditional concept of compatibility. They found that OA is better predictor than organizational compatibility for IT use. Adoption of SBR needs to be investigated in this broader context as adoption of SBR brings a fundamental change in company reporting. Adoption of SBR needs a good fit with existing organizational structure so that specific role is delegated to specific person. This study, therefore, adopts the finding by Kishore et al. (2007) and hypothesizes a positive association of OA with intent to adopt SBR.

**H4: Organizational alignment is positively related to an organization’s intent to adopt SBR.**

The second variable in the organization perspective of this study is the level of top management support. Top management vision, commitment and support have emerged as key variables in past research of innovation adoption (Zmud, 1984). It has been found that active involvement and support of senior management enables development of a strategic vision and direction in addition to sending appropriate signals to various parts of the organization about the importance of the adoption of the innovation (Ramamurthy et al., 1999). In many circumstances, the top management team must mediate between technology and business requirements and resolve the conflict of interest among a large number of stakeholders (Grover et al 1995). This is because top management can provide a vision, support, and a commitment to create a positive environment for innovation (Lee et al., 2007, Wang et al 2010). Top management also can send signals to various parts of the organizations about the importance of the innovation (McGowan and Madey, 1998). Several other studies confirm the influence of top management support on adoption of technology. Empirical study by Igbaria et. al.
(1998), found that the key role in driving the technology innovation lies on the shoulder of top management. This was supported by Gould (2001) study, which has identified that senior management support is one of the three main factors necessary for successful e-commerce investment. This is also consistent with a study undertaken by Quinn et. al. (1997), which found that the most critical single factor in stimulating innovation is top management leadership. In their study of organizational adoption of XBRL, Doolin et al (2007) found that one of two aspects of organizational context affecting limited adoption of XBRL is the efforts of a small visionary people higher up in the organization. In addition Jeyaraj et al (2006) reported top management support as one of the best predictors of organizational adoption of technology. SBR has the potential to influence investor and regulator relations because of automated reporting, it is important for top management to get closely involved to gain a good understanding of the tasks involved. Consequently the following hypothesis is developed.

**H5: Top management support is positively related with intent to adopt SBR by organizations.**

Third variable in the organizational perspective is the perceived financial cost to implement SBR in the organization. Attempting widespread use of innovation can be a very resource intensive process (Ramamurthy et al., 1999). Generally it is considered that resource intensity has negative relationships with adoption decisions. Kuan et al (2001) used perceived financial cost in their model to study EDI adoption and found that perceived financial cost significantly differentiates adopters from non-adopters (Adopters firms perceive lower levels of financial cost than non-adopter). The finding mirrors the comment made by Tornatzky & Klein (1982) out their meta-analysis – “The cost of the innovation is assumed to be negatively related with adoption of technology”.

They further note that because the cost is relatively easy characteristic to measure, cost studies typically provided better measurement and those studies confirm that the less expensive the innovation, the more likely it will be adopted (Tornatzky & Klein, 1982). Adoption of SBR requires an initial set up cost, costs to run and investment to train
staff. Some organizations may perceive this as a high cost burden while other organizations may not perceive such a high cost. Varying degrees of perceived start-up and operating cost would predict varying degrees of intention to adopt. The hypothesis is:

**H6: Perceived financial cost is inversely related to an organization’s intent to adopt SBR.**

### 4.4.3 Environmental perspective

External pressure is also included in the proposed research model and is encapsulated as the environmental category of the TOE framework. As discussed before, the environmental perspective constitutes the arena in which adopting organizations conduct their business (Doolin et al., 2007). Within this context, relationships with business partners, competitors, industry associations and government may influence adoption decision (DePierto et al., 1990). As such external influences (or environmental impacts) get some attention by technology adoption researchers. Jeyaraj et al. (2006) find from their review that two of the four best predictors of organizational adoption of technology relate to external environment. Doolin et al. (2007) concluded that environmental variables are likely to be more prominent in explaining the organizational adoption of XBRL. Organizational adoption of SBR should follow the conclusion made by Doolin et al. (2007). As the organizations, in particular listed companies, are heavily influenced by environmental factors, the existence of these factors needs to be carefully monitored to ensure the successful adoption of the new technology of SBR. It is reasonable to expect that different environmental pressures would affect the adoption of SBR in the Australian corporate sector. Three variables are identified in this perspective: competitive pressure, government pressure and communication in the industry. The pressure exerted by Australian Treasury-led SBR project may be perceived differently by different firms and firms make adoption decisions accordingly. For an innovation to be adopted, information about it must be available to potential adopters (Premkumar et al. 1994, Rogers 2003). The extent of information available will depend on the level and nature of communication within the
industry (Frambach 1993). An environment with success stories and pioneering adopters can also raise awareness and encourage innovation adoption (Elliot 2002, Gharavi et al., 2004).

The first environment factor include in the research model for this study is competitive pressure. Several empirical studies confirm the importance of competitive pressure in technology adoption (Chwelos et al., 2001, Teo et al., 1995). Kuan et al (2001) believes in many cases a company may adopt a technology due to influences exerted by its competitors and the decision has nothing to do with the technology or organization per se. Similarly a firm may also feel pressure when it sees more and more companies in the industry adopting SBR (or XBRL) and therefore feels the need to adopt SBR in order to remain competitive. Competitive pressures are examined in the adoption studies of internet reporting. Debreceny et al., (1999) say that given the possibility for firms to make on-line information available for a broad array of stakeholders, it may not be surprising that the Internet can give these firms a competitive advantage over competitors who do not provide Internet disclosures (Debreceny et al., 1999). Ashbaugh et al. (1999) found out that firms generally agree that an important reason for establishing a website reporting is the need to keep pace with their competitors. Therefore, these researchers are convinced that companies are (partly) inspired by their competitors. The same result is found in the IT literature as well. Some researchers (e.g. Webster and Trevino, 1995) believe that social influence can affect intentions to adopt a new technology. This is because adoption decisions may be influenced by socialization forces due to the desire to align one's behaviour with the rest of the group (Songpol et al., 2009). As a group of organizations emerges as an industry, institutional theory suggests they develop a set of organizational norms and behaviours that define the environment within which organizations operate (Powell & DiMaggio 1991). This argument has been tested in organizational setting (e.g., Hausman & Stock, 2003). Wang et al (2010) found the adopters of new technology perceived significantly higher competitive pressure than non-adopter firms. Russel & Brown (2007) and Fosso et al. (2009) had the same finding. It can be explained that demand uncertainty or
competitiveness tends to increase a firm’s incentive to adopt new technologies (Zhu & Weyant (2003). The findings from these studies indicate that the competitive pressure is an important environmental stimulator for adoption of a new technology and therefore competitive pressure has long been recognized as an adoption motivator in the innovation adoption literature (e.g., Grover, 1993; Iacovou et al., 1995; Premkumar et al., 1997; Crook & Kumar, 1998, Lin, 2008). It is only logical because when competitors implement a new technology, they would try to reap competitive benefits out of the technology; same way the other firms will feel pressure and be more receptive towards the technology. Porter and Millar (1985) suggested that by adopting a new information system (or a new technology), firms might be able to alter rules of competition, affect the structure of the industry, and leverage new ways to outperform their competitors, thereby changing the competitive environment. Thus, new technology adopters (especially the voluntary adopters) are more concerned about the competitive differentiation than non-adopters. The positive relationship between competitive pressure and adoption of technology can be extended to adoption of SBR in Australia. It can be said that an organization would feel pressure to adopt SBR when it sees more and more companies in the industry are adopting SBR. Therefore, perceived competitive pressure is positively related to intent to adopt SBR.

H7: Competitive pressure is positively related to intent to adopt SBR.

Another external environment factor that influences the adoption of new technology, especially in a regulated environment, is government pressure. Saunders (1998) states that one of the two main sources of external pressure to a new technology is imposition by others such as government and industry association. This means the role of government in shaping technology adoption by organizations needs some consideration too. As argued by Teo et al. (1995) government can exert a significant pressure on organizations to adopt a new technology, which sometimes is enough to induce adoption. Government pressure to adopt a new technology comes with cost to comply. But Delmas (2002) noted that even though firms may experience higher transaction
costs in order to meet government requirements, the non-compliance may produce additional transaction costs. From this suggestion it might be assumed that if government makes the objectives and benefits clear to organizations, it might lead to quicker adoption of the technology by the organizations (Lippert & Govindarajulu, 2006). This argument is supported by Xu et al. (2004) who assert that governments can encourage adoption by taking appropriate action. A survey on Korean companies by Hovav et al (2006) gives some interesting finding on an internet protocol adoption in Korea. The protocol was pushed by Korean government in the same way as SBR is being pushed by Australian government. It was found that few organizations agree that the Korean government provides enough information regarding the benefits (38%), technical issues (23%) and risks (23%) associated with the adoption of the protocol. But 42% of organizations surveyed felt that the Korean government involvement would affect their adoption decision. The surveyed organizations also felt that they are not provided with enough information regarding the risks involved in adopting the new standard. These findings go to indicate that organizations increasingly evaluate government actions before adopting a new technology when it is pushed by government. This study bears a considerable relevance to SBR in Australia. SBR in Australia is being pushed by the regulators and therefore it is only logical to assume that Australian entities would evaluate government actions before they decide for wide scale adoption. This is supported by Lin (2008) who suggests that the government can draw up public policies to encourage companies adopt a new system by seeing the benefits in the system. Therefore it is hypothesized that perceived government pressure is positively related with intent to adopt SBR.

**H8: Perceived government pressure is positively related to an organization’s intent to adopt SBR**

For an innovation to be adopted, information about it must be available to potential adopters (Premkumar et al. 1994, Rogers 2003). The extent of information available will depend on the level and nature of communication within the industry (Frambach
An environment with success stories and pioneering adopters can also raise awareness and encourage innovation adoption (Elliot 2002, Gharavi et al., 2004). Proper and adequate communication in external environment makes the decision maker aware of the new technology. Researchers view the communication as vital to encourage voluntary adoption of a new technology. That communication may come from regulatory agencies, may come from vendor or may even come from other organizations. As Ellis & Belle (2009) demonstrated that the key problem areas when it comes to selecting a new technology (software in their study) is the fact that decision makers are not adequately informed about the alternative solutions available (Johnston & Seymour, 2005). In the same study it was revealed that organizations in general feel more confident about the technology which they have had more exposure to. This factor feeds directly into product knowledge and is a fundamental barrier to the widespread use of the new technology. The study by Hovav et al (2006) provides some insight into the role of communication leading to adoption of a new technology. The study found that Korean firms actively searched for information regarding the new internet protocol before adopting it. They found that government did not provide enough information. More organizations agree that local trade magazines provide enough information about the protocol (44%-50%) while international trade magazines provide less information (ranging from 15% to 35%). In addition, the survey indicates lack of information regarding adoption patterns in other countries. This lack of information can increase concerns of interoperability and deter adoption especially for global companies (Hovav et al., 2006). These findings show that companies need enough information about the technology if the technology is pushed by government. In a voluntary environment, the lack of information might prompt the organizations view the technology as risky which works against their adoption. It is not necessary that the communication will only come from the regulators or professional bodies though they may be a major source. The communication may come from the peers and other companies in the industry. It depends on how the network system is working. Direct and frequent communication strengthens attitude and behavioural similarity between two companies (Erickson 1988).
Marsden and Friedkin (1993) suggest that in situations of uncertainty, decision makers unintentionally rely upon inter-organizational network ties to gather information. Therefore, if the network is cohesive, it will speed up the pattern of innovation adoption (Davis and Greve 1997; Ahuja 2000). While Gibbons (2004) suggests different network structure affects the diffusion of innovation differently, it is clear that communication plays a vital role in shaping the adoption pattern. Klein et al (2007) attempted to explain this argument from institutional perspective by saying that interaction within institutional networks may encourage institutional isomorphism with respect to technology adoption. On the issue of XBRL adoption, interviews conducted by Doolin et al (2007) suggest that availability of information and its benefits are important during the early stage of adoption. SBR in Australia is pioneered by Australian treasury with the involvement of several other regulators (ATO, state revenue offices etc). Professional bodies like CPA Australia are recommending its use. Level of communication received from these parties or any other party would have an impact on the organizational intent to adopt SBR.

**H9: There is a positive association between communication to entities about SBR and intention to SBR by entities.**

In total nine hypotheses are developed to study adoption of SBR in Australia. Diagrammatically the hypotheses, and their categorisation under the TOE framework, are depicted in Figure 4.6.
Figure 4.6: Empirical schema with the hypotheses
CHAPTER 5: RESEARCH METHOD

This chapter explains the research method that has been applied to collect the primary data to test the nine hypotheses developed in the previous chapter. As this chapter details below, the appropriate empirical method is selected after reviewing methods used in prior studies on technology adoption. Those considerations led to a mail survey approach being adopted to collect primary data from CFOs in a sample of listed companies. The literature review, as detailed in Chapter 4, has led to the identification of constructs within the TOE framework adapted for this study. These constructs are defined, operationalized and tested for validity and reliability in this chapter.

5.1 Research approach

The aim of this research, in a nutshell, is to identify factors that influence the adoption of SBR into an existing business framework that can assist and/or clarify an organisations adoptive position (the possibility of successful adoption) prior to the adoption process starting. Consistent with this aim, this research employs a descriptive and explanatory approach to understand the issues surrounding SBR adoption; in particular SBR adoption among the listed companies in Australia. Quantitative method is employed to conduct this study. More precisely, the study adopts a positivist-objectivist epistemological approach based on a quantitative research strategy. A positivist view is adopted in this study based on its assumptions on particular social reality (Rahman, 2008), such as intention toward an invention concerning accounting reporting. This social reality is objectively measured through adopting a positivist paradigm via the use of scientific method on the basis of facts and observations (quantitative nature) (Veal, 2005, Rahman, 2008). As will be discussed below, a questionnaire is used to collect data for this quantitative research. Quantitative strategy
adopted in the questionnaires is normally associated with positivist research (Henn et al., 2006). It is believed that it is more likely that participant’s experience the reality (adoption of SBR in this context) in different ways. The study is also interested in gaining some information about the meaning or reasoning behind participant actions in adopting SBR by gathering open ended responses for example, their knowledge and understanding about the new reporting medium, how they think about the technology advancement in their jobs. This information, if received, will provide additional explanation of behaviour (Veal, 2005).

A quantitative method is appropriate in situations in which the researcher is attempting to establish the existence of a relationship between two or more variables in a study (Denzin and Lincoln, 1994). Some other characteristics of quantitative method led the researcher to adopt this method. One of the characteristics is the use of a standard procedure to determine the existence of a relationship between variables (Neuman, 2000). Quantitative research also incorporates the practices and norms of a scientific model and embodies a view of social reality as an external, objective reality. Random sampling process enables the researcher to maintain representativeness and generalizability to a whole population. These characteristics of quantitative method enable the researchers to generalize the results of the study to other situations (Denzin and Lincoln, 1994). This study intends to gather data from a large target population with the intent of generalising results to target population. This study, therefore, requires a structured approach with a standardized instrument capable of collecting data. Data for this study would be collected from a geographically dispersed population, which calls for the respondents being capable of provide data with no interference from the researcher. The use of qualitative (e.g interview, case study) method, thus, was not practical or feasible for this study.

As described in the previous chapter, the hypotheses for this study were developed to determine the existence of relationships between nine independent variables and organization’s intention to adopt SBR. The study sought to gain an understanding of the extent of potential adoption of SBR as a reporting medium in the context of regulatory
reporting in Australia. The extent of adoption is expected to be impacted on by factors such as the relative advantage, compatibility, complexity, organizational alignment, top management attitude, perceived financial cost, competitive pressure, government pressure and communication in the industry. This study investigates the adoption of SBR by addressing the relationship of the above factors with intention to adopt. As there is very little published research because of the newness of SBR project, the study was designed to be descriptive to enable the researcher make a commentary on the success of SBR. This study meets the definition of use for a quantitative research design. To overcome the difficulties with data collection from a geographically dispersed population, a standard instrument (self administered questionnaire) was developed and used as data collection medium. This approach makes the study based on primary data collected from field surveys. The data is cross-sectional from a sampled population of listed organisations in Australia. The perspective to be taken is a technocratic perspective which fits with positivism (Neuman, 2000).

Therefore, the communication approach, as distinct from the observation approach, is employed to collect data for the research (Neuman, 2000). The communication approach involves questioning or surveying people and recording their responses for analysis. The strength of this approach is its versatility in obtaining both standardized and unstandardized data through closed and open-ended questions, its ability to study attitudes, values, beliefs and motives of respondents, its ability to allow confidentiality and/or anonymity to respondents so as to encourage their frankness, and its efficiency in providing data from a large sample at relatively low cost (Sekaran, 2000). As noted earlier, this is primarily a descriptive study which describes the distribution within a population of certain characteristics. It is also maintained that the survey is the preferred means of data collection from a large population and that the survey is an excellent vehicle for measuring attitudes and orientations in a large population (Kerlinger and Lee, 1999). As the study is a perception and attitude based study, a quantitative method which is based on survey is suited to conduct the study. Furthermore, survey research, particularly postal surveys, allows access to the widest potential sample of entities (de
A survey approach is, therefore, identified as the most appropriate method for this research.

5.2 Data collection method

Various survey techniques are available. In this study three distinctive methods have considered. They are face to face interview, telephone interview and mail survey. These three methods are widely used in the literature. De Vaus (1996) evaluated the three methods against three criteria. The criteria are limitations of questionnaire design, quality of responses and implementation problems. De Vaus (1996) found that mail survey performs better in two of the three criteria (quality of responses and implementation problems). Mail survey allows respondents time and space while avoiding undue influence to answer. This makes mail survey the best performer in obtaining accurate answers (i.e. quality of responses) though mail survey technique performs poorly in handling long, complex and open ended question (i.e. limitation on questionnaire design). Mail survey also has the least onerous implementation method in terms of staffing, speed and cost. Mail survey, therefore, is chosen as the data collection method for this study. The performance of mail surveys in handling open-ended and complex questions is not considered to be a problem as the ‘questions’ (or more accurately, statements) to be developed for this study would neither be complex nor open-ended. In fact the questionnaire would more likely consist of a series of statements with which respondents are requested to indicate the extent to which they agree/disagree. Logistical issues such as the potential for wide geographic dispersion of the sample and the large number of respondents also commend a mail survey as the most appropriate technique.

Adoption and diffusion research in an organizational context can be described as macro level studies investigating the relationship among and between various variables. The
determinants of Innovation Adoption in the wide range of studies are quite similar. Knowledge about these determinants leads to many useful inferences and analysis. Researchers need data on the determinants for that knowledge to occur. Design of an appropriate data collection method was a priority for the previous scholars doing research in this area. This research is also not an exception. Data collection methods adopted in previous adoption studies were consulted before deciding on the data collection method for this project. Data collection methods employed in a sample of quite a large number of adoption studies are presented in the Table 5.1 (on the next page). The table shows that survey method is the most preferable data collection method to the scholars in the adoption literature. The list of studies provided in the above table is not an exhaustive list. Due to the large number of studies conducted in the literature, only a selection of studies is presented; the table represents the most widely used technique to gather data to study adoption. Moreover, table 5.1 distinguishes three units of analysis. A self administered questionnaire/survey method was found to be the most widely used method. Of particular importance to this research is the method employed in the organizational level studies (as this study investigates the adoption of SBR in an organizational setting). Though all the three methods are used in the sampled organizational level studies, the mail survey method is the most prevalent. Similar to these prior organization level studies, this study also investigates the hypothesized relationships between variables. Therefore it was decided that a mail survey would the most appropriate method to collect data for this study.

Having selected the technique, the next important question to be considered is the respondents to be sampled. This calls for the considerations of sampling frame and the criteria that respondents meet to answer the questionnaire.
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<th>Unit of analysis</th>
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5.3 Sampling procedure

The population of this study is the ASX listed companies in Australia. Consistent with the purpose of this research project, the study limits its empirical analyses to listed companies in Australia. Australia has detailed reporting requirements for listed companies. In addition to periodic reporting to ASX and ASIC/APRA, listed companies also need to meet the reporting requirements of ATO, state/territory offices (if required), ABS, RBA etc. Any reporting initiative which can streamline the reporting process for compliance with the requirements of multiple regulatory bodies would be expected to be attractive for the listed companies. While SBR initiative is available to all business entities in Australia, this study restricts its empirical investigation to listed companies only because these entities have the more complex and comprehensive reporting requirements to be processed. In order to avoid confounding effects due to different legal, institutional and cultural factors, the study is concentrated on companies listed in one country, i.e. Australia. The names of the listed companies were collected from “Connect 4” database which has a list of all the listed companies and their annual report information.

The sampling frame consists of ASX listed companies (as at March 2010 when the data collection was carried out) in Australia. The sample size selected is top 500 ASX listed companies. In deciding to use the ASX top 500 companies as the sample, several factors were considered. First due to the lack of a similar study in Australia, the researcher was unable to seek help from previous research. Troshani & Doolin (2005) investigated XBRL situation in Australia by sending open ended questions to and interviewing organizations who were members (27 in total) with XBRL Australia at that time. This study has sought a larger sample. Second, larger companies are chosen because the SBR medium is a new concept in Australia and it requires knowledge and investment by companies to implement SBR. The information systems literature suggests that larger companies are more interested in adopting IT innovations than smaller companies. Troshani & Lymer (2010) find that it is probably the big organizations that would be interested to invest in XBRL related reporting endeavours. Trosahi & Lymer (2010)
further state that cost savings due to reporting via SBR is not quite obvious for small organizations. Therefore, the researcher has decided the sample size for this project would be top 500 companies (based on market capitalization at year end) listed in ASX.

The hypotheses stated in the previous chapter were applied at the organizational level. Respondents for this study, therefore, are required to be sufficiently informed about the policy position and current thoughts of senior management of the organization. The researcher considered both the purpose and nature of SBR before making the decision as to who, within the senior management, the questionnaire would be addressed to. The initial scope of application of SBR is financial and other compliance reporting by business to government regulatory agencies. This makes organization as the unit of analysis for this study. However, as explained by Henderson et al (2012), perceptions of senior executives strongly influence how organization’s policies are enacted; thus the SBR adoption decision is influenced by the perceptions individual executives in the organization. Following this logic, the survey should be addressed to potential decision makers of an organization. This reporting function by a listed company would come under the responsibility of the Chief Financial Officer (CFO). At the same time the implementation of SBR requires use of a sophisticated information technology medium. This makes Chief Information Officer (CIO) an important person in making the decision to adopt SBR. It seems both these persons would expect to have involvement in the investigation and decision making about SBR adoption. Initially it was planned to send the questionnaire to both the CFO and CIO of each company. The final decision on the respondent was taken after evaluating the result of a pilot test of the survey instrument sent separately to the CFO and CIO of 20 listed companies. The response was 8 CFOs and no CIO. Hence, the inference from this pilot test was that CIOs have much less engagement in, or awareness of, the SBR initiative than CFOs. The decision was taken to make CFOs the target respondent in the main administration of the survey.

A current list of company addresses was obtained from Connect 4 database as the basis for distributing the questionnaire. It is expected that not all CFOs would be interested or have time to complete the questionnaire. Therefore the cover letter had a provision for a
senior manager (nominated by CFO) to complete the questionnaire. Therefore the target respondents were the CFO or senior managers with knowledge in SBR (or XBRL) of the top 500 listed companies in Australia.

5.4 Instrument development

A mail questionnaire is developed as the survey instrument. There is no one best way to design a questionnaire, but wordy and poorly formatted questionnaires can result in respondent misunderstanding, noncompliance and bias (Nardi, 2006). The researcher has taken care when developing the instrument for this study. Preparation of the questionnaire involved several drafts in order to seek the information required but also to avoid possible problems. To ensure the satisfactory measurement of the variables, previous technology adoption studies have been carefully reviewed and items used in those studies selected. Table 5.2 details the sources used to develop questions for each variable in the questionnaire.

Table 5.2: Studies used to develop questionnaire items

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<th>Groups</th>
<th>Variables</th>
<th>Sources</th>
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<td>Perspective</td>
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<tr>
<td>Organizational</td>
<td>Organizational</td>
<td>Kishore et al (2007)</td>
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<tr>
<td>Perspective</td>
<td>alignment</td>
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<td></td>
<td>cost</td>
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<tr>
<td>Environmental Perspective</td>
<td>Competitive pressure</td>
<td>Government pressure</td>
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The references in table 5.2 permitted the identification and application of key influential factors to be included into the questionnaire both before and after the review was complete. Therefore, the design of the questionnaire of this study adopted several sources of data, including previous instruments developed by other researchers and the research framework developed from the relevant literature; questions that demonstrated high reliability and validity from prior empirical work were adapted. Where unavailable, questions were constructed from key statements in the literature. All core questions (to measure variables) were anchored in a 1 to 6 Likert scale with 1 denoting “Strongly disagree” and 6 denoting “Strongly agree”.

### 5.4.1 Survey Item Selection and Construction

The survey instrument was designed as an explanatory tool to gather a representative data set of information relevant to adoption of SBR as a financial reporting medium. It was expected that the results from the survey would be used to: (a) provide a commentary on the expected adoption of SBR (b) identify the factors driving the adoption (c) differentiate between groups of adopters (if possible). Due consideration was provided to these points before constructing the survey instrument. The 51 items of the final survey instrument (Appendix 2) were divided into demographic information, ten subscales for closed answer responses, and a section that asked the participants for their open ended comments (if any). Since a single standardized survey instrument capable of measuring TOE from the literature was not available, a systematic approach
to items selection in the questionnaire, grounded in consideration of the basic purposes and hypotheses (as given above) for which the measures would be used, was employed to develop the present survey instrument.

The questionnaire has two parts. Part 1 includes questions on demographic information about the respondents. The following questions formed Part 1:

1. Familiarity with SBR
2. Position of respondent
3. Gender
4. Age
5. Experience
6. Company size
7. Industry type
8. Current online reporting medium

The first question in this section made sure respondents with having some degree of SBR familiarity before complete the survey. Those respondents not familiar with SBR were asked to pass it to a senior colleague that had SBR familiarity. This made it reasonably safe for the scales in the questionnaire to exclude a ‘don’t know’ box.

Part 2 contains the items to measure the nine independent and one dependent variable. These questions are the core questions for this study. The following section discusses the method by which items in each subscale were selected from (i) prior research and/or (ii) constructed to gather information about the variables in the research model

**Subscale 1: Relative advantage**

The scale items in subscale 1 relates to relative advantage that the new reporting medium (SBR) expected to bring when compared to the current reporting format. Previous adoption research using this variable [Grover (1993), O’ Callaghan et al. (1992), Huang et al. (2008), Teo et al. (1995)] indicates that the questions in this scale
sought the respondents’ extent of agreement or disagreement on potential direct or indirect improvements to their organization (e.g. cost reduction, generating profit, social benefit, removal of hazards) of adopting the new technology (such as EDI). The wording of the questions varied to reflect the nature of the technology being investigated. Taking EDI adoption as an example, the scale items to measure relative advantage were mostly worded as improvement of data accuracy, improvement of data security, improvement of operational efficiency, reduction of errors, speeding up application process, and improvement of customer services. It has been suggested that the questions must be simply worded (Moore & Benbasat, 1991). The features of SBR, as discussed previously in Chapters 2 and 3, were closely analysed before finalizing the scale items in this subscale. It is found that following six relative advantages of SBR appear to have similarities with dimensions that have been used as scale items in the previous studies:

i) Quick processing of statutory reports  
ii) Less burdensome reporting process  
iii) Facilitating decision making  
iv) Greater personal control  
v) Saving processing cost  
vi) Increasing productivity

Therefore, six scale items are included in the subscale of “Relative Advantage”. The Appendix contains the actual questions included in the questionnaire.

Subscale 2: Compatibility

As discussed earlier compatibility is found to be one of the only three innovation attributes that shows a consistent relationship with adoption in Tornatzky & Klein’s (1982) meta-analysis. Therefore, the adoption studies that followed tended to use compatibility as predictor in the research models. Relevant studies are used as reference points to develop the items in this subscale. Gorver (1993) used 5 items to measure compatibility whereas Ramamurthhy et al (1999) used 3 items to measure compatibility.
Later Hunag et al (2008) adapted those items into their study of Inter-organizational EDI which is relevant to the current study. SBR is expected to bring a change into the legacy accounting system that is structured to support traditional reporting. Compatibility of SBR can simply be stated as issues surrounding its integration with the existing system. The scale items in the previous studies (as listed above) are adapted to reflect the nature of SBR, which resulted in 4 scale items to measure “Compatibility” in this study. Those scale items relate to following dimensions:

i) Compatibility with IT infrastructure
ii) Compatibility with data resources
iii) Compatibility with transaction processing task
iv) Compatibility with financial reporting practice

Subscale 3: Complexity

Technological innovations are generally considered complex, possessing unfamiliar attributes to adopters (Gorver, 1993). The same could be said for SBR. The technology enabler of SBR, XBRL, might not be complex in itself. But maintaining the SBR medium and operating it easily might be a challenge for the entities. The scale items for this construct are developed to measure the complexity associated with SBR adoption. There are 2 scale items in this subscale and they are:

i) Not complex to maintain SBR
ii) Not complex to operate SBR

Though, there are only two scale items to measure “Complexity”, this is not unusual. Some researchers [e.g. Grover (1993)] previously used only two items to measure “Complexity” and the construct was also validated in their studies.

Subscale 4: Organizational alignment (OA)

This study adopts Kishore & McLean’s (2007) construct of “Organizational Alignment” as an organization specific predictor of adoption. Kishore & McLean (2007) empirically
evaluated the construct through a field survey and the results provided a good support for the construct. The construct also showed significant relationship with adoption behaviour. Kishore & McLean (2007) measured the construct as perceptions about the state of alignment within the organization. As they operationalized the construct for the first time, Kishore & Mclean (2007) took a comprehensive approach for developing the items. The identified four dimensions in this construct: task alignment, control system alignment, technology alignment and structural alignment. Kishore & Mclean (2007) used 11 scale items to measure these four alignment dimensions. Even though they used four alignment dimensions, Kishore & Mclean (2007) note that these four dimensions capture the overall state of OA. This study adopts this notion overall state of OA from the study by Kishore & Mclean (2007) and consequently 6 scale items related to the following are adapted in this study:

i) Ability to interface with current organizational system
ii) Facilitating accountability
iii) Consistency with skill base
iv) Consistency with coordination of Accounting and IT
v) Organization’s existing technical competence
vi) Easy Realignment of roles

Subscale 5: Top management support

The importance of active and enthusiastic support from top management for the proposed adoption of technology is paramount (Grover, 1993). Organizational adoption studies, therefore, normally had top management support as one the variables in the model. Gorver (1993) & Ramamurthy et al (1999) used 3 items to measure the construct. These 3 items relate to management’s support to accommodate a new technology, management’s consideration of the importance of the new technology and management’s interest in the new technology. Thong & Yap (1995) measured the support in three stages – i) CEO innovativeness (3 items), ii) CEO attitude towards
adoption (3 items) and iii) CEO IT knowledge (2 items). While this three stage method is not adopted in this study, the study by Thong & Yap (1995) provided additional hints when developing scale items for this construct. While these and other studies [e.g. Huang et al (2008)] provide good reference points, rewording and adaptation of the items were necessary to measure Top management support in this study. This process results in 6 scale items for this construct and they relate to-

i) Proactiveness to change reporting process  
ii) Good understanding of the technology  
iii) Close interest in SBR  
iv) Importance of the technology  
v) Role of IT in shaping strategy  
vi) Not consider difficult to adopt SBR.

Subscale 6: Perceived financial cost

SBR adoption requires a) initial investment to set up, b) resources (both human and capital) to maintain and c) training of staff for operation. As such 3 scale items are included in this subscale and they are:

i) High set up cost  
ii) High running cost  
iii) High training cost

These 3 scale items are also used by Ramamurthy et al. (1999) and Kuan et al. (2001) in their studies where the eventual construct of “Perceived financial cost” was validated.

Subscale 7: Competitive pressure

Both theoretical and empirical studies have revealed the importance of competitive pressure in adoption of new technology (Huang et al., 2008). The logic behind using
this construct is already established in the previous chapter. Several adoption studies used this construct in field surveys to gather information. The scale items used by Thong et al. (1995) in this construct measure the nature of competitiveness within the industry that calls for adoption of a new technology by entities. They use 3 items in the questionnaire. The items are similar to what Grover (1993) had used in his study. It seems these researchers were interested in intensity of competitiveness among firms that lead to adoption of innovation in the hope market penetration. Ramamurthy et al. (1999) also used the 3 items to measure the intensity of competition but their focus shifted somewhat to customer’s needs and demands. Kuan et al. (2001) used 6 items in a similar construct where they concentrated more on request and recommendation by majority/important business partners. So, they were mostly concerned with the reputation of the business in the industry. SBR adoption would not only help reduction of cost and time in financial report preparation, but also streamline internal information flow due to the nature of the technology (XBRL) behind SBR. This study adapted 6 scale items in the competitive pressure subscale and they relate to:

i) Fast access and analysis of data

ii) Need for sophisticated system to remain competitive

iii) Need for timely and reliable information

iv) Free time for staff to make decision

v) Follow competitors adopting

vi) Be a leader in adoption.

Subscale 8: Government pressure

Not all the studies in the adoption literature used this construct. This is partly because of the nature of the technology in question as the innovation might not have been initiated by government watchdog. Being in a highly regulated environment, business entities carefully monitor government actions before making decision to bring a change in their
reporting practices. This study adapted Kuan et al (2001) and Xu et al (2004) to develop 3 scale items in the subscale of Government pressure. These 3 scale items relate to:

i) Government recommendation
ii) Government agencies’ request
iii) Changes initiated by government

Subscale 9: Communication in the industry

Items for this subscale are developed to measure the communication pattern in the industry. Statements from Rogers (1995) and Dunne et al. (2009) about the need for communication for the diffusion of new technology were carefully reviewed to develop the items. Ultimately 3 scale items are generated and they relate to:

i) Receipt of considerable information
ii) Attendance in information seminars
iii) Visit to relevant websites

Subscale 10: Intent to adopt SBR

The final subscale is the dependent variable of the research model employed in this study, which is “Intent to Adopt SBR”. Some researchers (e.g. Thong & Yap, 1995) measured intent to adopt as a ‘Yes/No variable’ (Dichotomous measurement). Other researchers (e.g. Huang et al., 2008) measured the intention using a Likert scale. This study adopts the later approach of measurement (i.e. on a Likert scale). This is because SBR adoption is a staged process instead of a yes-or-no decision. Further, Chwelos et al. (2001) suggest using a Likert scale to measure an organization’s adoption intention, rather than using a binary-answer question (Huang et al., 2008). It is believed that measuring intention on a scale is a better indicator of how likely an organization is to adopt a technology. Three statements are utilized to measure, on a strongly disagree to strongly agree scale, an organization’s SBR adoption intention in this study:
These subscale items constitute the major part of the questionnaire developed for this study. These items measure the variables to determine the support for hypothesized relationship among the variables. As can be seen from the above sections most of the subscale items are developed from the validated instruments used in previous adoption studies. As already stated above, the subscales are measured using a 6 point Likert scale (1= strongly disagree; 6= strongly agree). In addition to these questions, another question was included to measure the likelihood of adopting SBR 2011 and was anchored at 1 = Highly Unlikely to 4 = Highly likely. At the end of the questionnaire respondents were asked to give their comments on the proposed introduction of SBR by the Australian regulators.

5.4.2 Content validity of the questionnaire (Pretesting and pilot testing)

Content validity of the questionnaire is undertaken via a two stage process – i) pretesting and ii) a pilot survey. First pretesting was undertaken to identify any wording issues with the draft instrument. Pre testing was intended to identify whether there were any ambiguous or unanswerable questions, to identify whether the wording or layout could be improved, whether the meaning the researcher believed was associated with a question was how others perceived it (content, scope and purpose of questionnaire). A draft of the questionnaire was formally evaluated by and discussed with four academics in the University of South Australia and RMIT University and two senior regulators at APRA to pretest the questionnaire. They each provided valuable suggestions on aspects of the draft questionnaire. Their comments and suggestions were used to revise the instrument in terms of presentation and wording. They did not have any concern about
the length of the questionnaire and they confirmed that the estimate of time required was reasonable and the questions were suitable for the intended participants.

Next, the initial questionnaires were pilot tested by sending them to 20 listed companies in the sample. The aim of the pilot study was to refine and further develop the model and questionnaire used in the main survey. The pilot study was conducted towards the end in 2009 and two questionnaires were sent to each entity and addressed to both the CFO and CIO respectively. Eight responses (all from the CFOs) were received. The results from this study fuelled the development of the models and the final questionnaire that was subsequently developed. These two steps (pretesting and pilot testing) led to minor editing and some additions/deletions being made (mostly to the wording) to the instrument which included:

- Refining the questions to increase clarity and remove ambiguities (e.g. use of term XBRL in addition to SBR),
- Reducing some redundant statements to achieve concise and precise, and
- Increasing the range of choices for the type of industry the company operates in

The pilot also led to the decision that the questionnaire would be addressed to CFOs only. This is because only the CFOs in the pilot sample responded to the questionnaire when the questionnaires were sent to the CIOs also. When all the revisions were incorporated in the initial questionnaire, the final questionnaire for this study was administered.

5.4.3 Ethics approval

Ethics approval was sought to administer the survey to by mail to senior corporate managers. The approval from the ethics committee of RMIT University was obtained to preserve the rights, liberties and safety of the participants. In addition, an information letter (cover letter), including the name of the university and school, was prepared to explain the purpose of the study and the ethics rules. This letter was enclosed in the
package of questionnaire materials. The participants were informed that under the ethics rules, they were participating voluntarily and no risks, such as psychological, moral, legal or other risks, was intended to them. The information letter further reinforced the anonymity of the responses. It also advised the respondent to refer any queries or complaints they may have about the way the study was conducted to the PhD candidate or the senior supervisor. Telephone numbers and email addresses were provided on the cover letter to that effect.

5.5 Administration of survey

Finally the researcher proceeded with data collection using the questionnaire after the above steps were completed. The data collection took place during February – May, 2010. As already noted earlier, the target sample for this study is top 500 listed companies. Therefore, the survey package was sent to the CFOs of 480 companies from the top 500 listed companies in Australia (excluding the list of 20 companies already used at the pilot test stage). The respondents were assured of confidentiality and no personal information (other than age and gender) was asked in the questionnaire. The respondents were also not required to disclose their organizations’ name when completing the questionnaire. The survey packages included a cover letter asking for their cooperation, a postage-paid return envelope, and a copy of the questionnaire. The cover letter informed recipients about the objectives of the study, a guarantee of the confidentiality of the respondent, an estimate of time for the respondent to complete the questionnaire and the expected date for the respondent to return the completed questionnaire. It also thanked the respondents for their time and effort in participating in the study. The cover letter was printed on the RMIT University letterhead. It includes the name and contact information of the researcher and signed by both the researcher and senior supervisor of this PhD project.

At the end of first round of data collection 44 useable responses were received. To pick up the response rate, a reminder was sent to the respondents during mid April. Finally
data collection was stopped at the end of May, 2010. The reminder resulted in 10 more useable responses. Therefore, 54 responses, in total, were received after the administration of the survey. The number of respondents represents 11.25% of the sample (i.e., 54/480). The researcher acknowledges that the number of responses is low for this type of study. As SBR was a new project yet to be launched at the time of data collection and there had not been a significant story in newspapers/ media concerning a case of XBRL adoption in Australia, it was probable that many recipients of the questionnaire felt they had insufficient knowledge about the technology to make an attempt at completing the questionnaire. However, the results of factor analyses and sampling adequacy tests presented in the next chapter, will reveal that this dataset is sufficient for the construct validity tests and multiple regression analysis that will be applied.

5.6 Response bias test

As some responses were received after the reminder, a time response bias test is carried out before proceeding with other data analyses. Any time response bias, if existed, would limit the generalizability of analyses. The test result is presented in Table 5.3 (on the next page).
Table 5.3: Response bias test results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response Period</th>
<th>No.</th>
<th>Mean</th>
<th>Difference between means t stat and Sig</th>
<th>Difference between std. deviations Levene’s stat and Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage</td>
<td>Before Reminder</td>
<td>44</td>
<td>3.2197</td>
<td>(t=-1.11; \text{sig}=0.272)</td>
<td>(F=0.033; \text{sig}=0.856)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>3.6500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatibility</td>
<td>Before Reminder</td>
<td>44</td>
<td>3.0682</td>
<td>(t=-0.369; \text{sig}=0.714)</td>
<td>(F=0.194; \text{sig}=0.662)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>3.2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexity</td>
<td>Before Reminder</td>
<td>44</td>
<td>3.5682</td>
<td>(t=0.992; \text{sig}=0.326)</td>
<td>(F=0.063; \text{sig}=0.802)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>3.2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Alignment</td>
<td>Before Reminder</td>
<td>44</td>
<td>2.9697</td>
<td>(t=-0.229; \text{sig}=0.820)</td>
<td>(F=2.972; \text{sig}=0.091)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>2.9000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top management Support</td>
<td>Before Reminder</td>
<td>44</td>
<td>2.6193</td>
<td>(t=-1.13; \text{sig}=0.264)</td>
<td>(F=610; \text{sig}=0.438)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>2.9500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Financial cost</td>
<td>Before Reminder</td>
<td>44</td>
<td>3.9773</td>
<td>(t=0.134; \text{sig}=0.894)</td>
<td>(F=0.033; \text{sig}=0.856)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>3.9333</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitiveness</td>
<td>Before Reminder</td>
<td>44</td>
<td>4.2614</td>
<td>(t=-0.379; \text{sig}=0.706)</td>
<td>(F=2.498; \text{sig}=0.120)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>4.4000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Before Reminder</td>
<td>44</td>
<td>2.1212</td>
<td>(t=-0.742; \text{sig}=0.461)</td>
<td>(F=0.177; \text{sig}=0.676)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>2.3667</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government Pressure</td>
<td>Before Reminder</td>
<td>44</td>
<td>4.0568</td>
<td>(t=-1.025; \text{sig}=0.310)</td>
<td>(F=2.833; \text{sig}=0.098)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>4.4500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intent to adopt</td>
<td>Before Reminder</td>
<td>44</td>
<td>2.4242</td>
<td>(t=0.437; \text{sig}=0.664)</td>
<td>(F=0.000; \text{sig}=0.999)</td>
</tr>
<tr>
<td></td>
<td>After Reminder</td>
<td>10</td>
<td>2.2667</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the table 5.3 shows, there are no significant differences between the means or standard deviations of the variables for the main and late batch of respondents. Given that late respondents are deemed to be representative of non-respondents, these results
suggest there is not a systematic non-response bias due to the low response rate. According to Van der Stede et al (2005), the results are still generalizable even when the response rate is low if there is a low non response bias in the sample. This comment by Van der Stede et al (2005) seems to suggest that data analyses on the sample data can be carried out to test the hypotheses as no non-response bias has been found in the sample of this study.

5.7 Data analysis techniques

The quantitative data for this study are analysed using the recent version SPSS. A range of statistical procedures are adopted to explore the research questions posed and to test the hypotheses. Initially descriptive analysis is undertaken to explore the results prior to in-depth analysis to test the hypotheses. Descriptive statistics of the variables include discussion of the frequencies, means and standard deviation of the variables. Before proceeding on to other analyses, confirmatory factor analyses are conducted on the attributes of the variables to test for their construct validity. In addition, a comparison of means analysis (using one-way ANOVA) is conducted to test how the attributes of the variables differ among different groups of respondents on the basis of their familiarity with SBR. Then univariate analysis is carried out. The univariate analysis consists of correlation analysis of each of independent variables with the dependent variable. Measurements of association via correlation indicate the strength and the direction of the relationship between a pair of variables. A linear correlation analysis is adopted to explore the relationships of the variables under three perspectives and intent to adopt SBR. As the variables in this study are measured as means of scales from multiple items, the data becomes continuous, allowing parametric analysis using Pearson’s product-moment correlation. The correlation analysis also provides an initial indicator of the presence of multicollinearity between the independent variables. Finally multiple regression analysis, modelled from this study’s empirical schema, is carried out to test hypotheses. The multiple regression analysis, in this study, establishes that the set of independent variables explains a proportion of the variance in a dependent variable (intent to adopt SBR) at a significance level (significance test of R squared) and
establishes the relative predictive importance of the independent variables. Additionally, independent samples t-tests are carried out to categorise groups of adopters (likely vs less likely) as a form of sensitivity testing of the multiple regression results. As an alternative dependent variable to the ‘intent to adopt’ construct used in the multiple regression analysis, data was collected from the questionnaire on the “likelihood to adopt SBR by 2011” (i.e., within the first financial year after SBR became activated by government regulators). This alternative dependent variable was dichotomised into ‘0’ for “less likely” and ‘1’ for “likely”. The t-test is used to compare the means of the two groups to assess whether there is a significant difference of the TOE constructs between the groups.

5.8 Summary of chapter

This chapter explains the research method and the development and administration of the survey questionnaire. The invoking of the TOE framework and the hypothesis-based approach has meant that this study is suited to an objectivist-positivist epistemological position. The survey method is adopted to collect mainly closed-answer data scales for this quantitative research. The target sample for this study is CFOs of the top 500 listed companies in Australia. The chapter discusses how items in the questionnaire have been developed. As the chapter detailed, previous studies have been reviewed and items that were validated in those studies are adapted for this study. The draft questionnaire was revised and refined through a process of pretesting and pilot testing. The survey administration procedure included getting an ethics approval, mailing the survey to the respondents and sending a reminder survey to improve the response rate. Finally, this chapter gives an overview of the statistical techniques that will be applied to the data. Data analysis and discussion of is presented in the next chapter.
CHAPTER 6: RESULTS AND DISCUSSION

This chapter provides a detailed analysis of the dataset and variables used in this study. As the chapter details below, analyses on the data are carried out to test the hypothesized relationships given in chapter 4. The analysis also endeavours to conclude on the applicability of the TOE framework used in this study by identifying the predictive power of the model. The chapter starts with descriptive analysis of the data to reveal the respondents’ characteristics. The validity and the reliability of the constructs modelled in this study are discussed next. ANOVA tests are also carried out to show whether dimensions of the constructs vary among different groups of respondents on the basis of their familiarity with SBR. Then the chapter proceeds to multivariate analyses to test the hypotheses, followed by a discussion of the results of these analyses. The final set of analysis is an independent samples t-test conducted to give a more detailed understanding on the relationships.

6.1 Sample and data characteristics

As previously mentioned, organizations making up the sample are listed companies domiciled in Australia. The respondents are either CFO (64.8%) or a nominated senior manager involved in corporate financial reporting (35.2%). The demographic profile of the respondents reveals that most are male (more than 80%). More than 75% of the respondents fall into the age group of over 40. On a scale of 6, the average SBR (or XBRL) familiarity amongst the respondents is 2.48 which means they are better than vaguely familiar, but with only 25% reporting somewhat familiar or better. Of these respondents, less than 25% represent companies with less than 100 employees, around 50% represent companies with 100 to 1000 employees and the rest of the respondents represent companies with more than 1000 employees. The data set reveals a good distribution of data received from companies operating in various sectors. Almost all of the respondents report that they use ‘pdf” as the main electronic medium of reporting financial results.
The frequency distribution of responses on the likelihood of actual adoption of SBR in the near future is presented in Table 6.1. It shows that 33% of respondent companies are likely (or highly likely) to adopt SBR in their first full financial year of the facility being made available by key government agencies.

### Table 6.1: Frequency Distribution of Likelihood of adoption in 2011

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Unlikely</td>
<td>13</td>
<td>24.1</td>
<td>24.1</td>
</tr>
<tr>
<td>Unlikely</td>
<td>23</td>
<td>42.6</td>
<td>66.7</td>
</tr>
<tr>
<td>Likely</td>
<td>12</td>
<td>22.2</td>
<td>88.9</td>
</tr>
<tr>
<td>Highly Likely</td>
<td>6</td>
<td>11.1</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>54</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Before proceeding to parametric analysis of the data, all the constructs created in the data set were tested for normality assumptions (even though some of the statistical tests are fairly robust to violation of normality assumptions). As there is no single test for evaluating normality assumptions, three separate tests were conducted on the dependent and independent variables. First, descriptives (including skewness and kurtosis) were checked and then visual inspection (fitting normal curves to histograms) were carried out. Lastly, the rigorous Kolmogorov-Smirnov test was carried out to empirically test normality of distributions. Based on the above three tests, it was concluded that all the constructs had distributions that are sufficiently normal to justify their use in parametric statistical analysis, without the need for transformation of data.
6.2 Construct validity and reliability

In this study, construct validity is assessed in terms of convergent and discriminant validity. For testing convergent validity, the researcher evaluated the item-to-total correlation, that is, the correlation of each item to the sum of the remaining items. The discriminant validity of each construct was assessed by principal components factor analysis with VARIMAX rotation. To validate the appropriateness of the factor analysis, several measures were applied to the entire correlation matrix. Here, Bartlett’s test of sphericity (p < 0.000) is used which indicates the statistical probability that the correlation matrix has significant correlations among at least some of the items. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy is used to show the acceptable sampling adequacy. The Cronbach Alpha coefficient is also used to assess the reliability of the measures. The factor analysis of the constructs used is presented below for each construct in turn.

6.2.1 Relative advantage (RA)

The questionnaire had 6 items measuring Relative Advantage, and they are:

i) Could enable quick processing of statutory reports (RA1)
ii) Could make less burdensome reporting process (RA2)
iii) Could facilitate more effective decision making (RA3)
iv) Could give greater personal control (RA4)
v) Could save processing cost (RA5)
vi) Could increase productivity (RA6)

The correlation matrix for the above dimensions of ‘Relative Advantage’ construct showed that all the correlation coefficients are higher than 0.3 and no individual correlation is higher than 0.9 (i.e. no multicollinearity). The KMO measure of sampling adequacy is 0.865 and Bartlett’s test of sphericity shows that the result is significant at
0.000 level. All these indicate that the correlation matrix is factorable. Subsequently factor analysis is carried out and the results are presented in Table 6.2.

Table 6.2 shows that only one factor is extracted which had an Eigenvalue of 4.229 and explains 70.477% of the total variance of all attributes. The reliability analysis for this variable results in a Cronbach alpha of more than 0.7. Therefore, the six-item measure of the variable “Relative Advantage” meets the tests for both discriminant construct validity and internal reliability.

**Table 6.2: Validity and Reliability tests for ‘Relative Advantage’**

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Advantage</td>
<td>.865</td>
<td>210.917</td>
<td>70.477</td>
<td>.916</td>
</tr>
<tr>
<td>RA1</td>
<td></td>
<td></td>
<td></td>
<td>.821</td>
</tr>
<tr>
<td>RA2</td>
<td></td>
<td></td>
<td></td>
<td>.839</td>
</tr>
<tr>
<td>RA3</td>
<td></td>
<td></td>
<td></td>
<td>.880</td>
</tr>
<tr>
<td>RA4</td>
<td></td>
<td></td>
<td></td>
<td>.806</td>
</tr>
<tr>
<td>RA5</td>
<td></td>
<td></td>
<td></td>
<td>.824</td>
</tr>
<tr>
<td>RA6</td>
<td></td>
<td></td>
<td></td>
<td>.865</td>
</tr>
</tbody>
</table>
As the validity of the construct “relative advantage” is established, this study uses one-way ANOVA to analyse whether the perception of each item (or dimension) in the construct differs across groups of respondents with different levels of familiarity with SBR. The concern is that the extent of familiarity with SBR could be a factor that distorts the ability of respondents to unambiguously understand a set of items about SBR or to recognise that this set of items relates to a common concept. The results of differences between respondents who are very familiar, somewhat familiar or vaguely familiar with respective items about SBR are presented in Table 6.3.

Table 6.3: Comparison of Means of Familiarity for Dimensions of Relative Advantage

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could enable quick processing of statutory reports</td>
<td>Very familiar with SBR</td>
<td>4.00</td>
<td>.000</td>
<td>F= 2.769; Sig.=0.072</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.05</td>
<td>1.395</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>3.23</td>
<td>1.223</td>
<td></td>
</tr>
<tr>
<td>Could make less burdensome reporting process</td>
<td>Very familiar with SBR</td>
<td>3.75</td>
<td>.500</td>
<td>F= 1.902; Sig.=0.160</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.15</td>
<td>1.387</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>3.43</td>
<td>1.251</td>
<td></td>
</tr>
<tr>
<td>Could facilitate more effective decision making</td>
<td>Very familiar with SBR</td>
<td>2.75</td>
<td>1.500</td>
<td>F= 3.679; Sig.=0.032</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.35</td>
<td>1.496</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.33</td>
<td>1.124</td>
<td></td>
</tr>
</tbody>
</table>
| As can be seen in Table 6.3, only one of the dimensions of “Relative Advantage” is significantly affected by the respondent’s degree of familiarity with SBR. That dimension relates to ability of SBR to facilitate more effective decision making within the organization (RA3). Interestingly, RA3 is rated below ‘slightly agree’ by both the ‘very familiar’ group (mean = 2.75) and the ‘vaguely familiar’ group (mean = 2.33). So the perception that the SBR facility will have minimal effect on management decision-making in the company is held by respondents at both ends of the SBR familiarity scale.

The mean ratings on the other five dimensions of “Relative Advantage” are not significantly different among the three groups of respondents. Such a result was expected. XBRL, the technology enabler of SBR, has been in the industry for about a decade now (Troshani & Doolin, 2005). Respondents would have at least come across the normative literature on claimed advantage that the XBRL/SBR protocol can provide to a company’s accounting and financial reporting system. Overall, the result in Table |
6.3 suggests that the validity and reliability of the construct of “Relative Advantage” of SBR is not confounded in this study by respondents having different levels of familiarity with SBR.

6.2.2 Compatibility (COMP)

The construct to measure “Compatibility” of SBR had been based on four items or dimensions from the questionnaire. They are:

i) Compatibility with organization's IT infrastructure (Comp1)

ii) Compatibility with organizations computerised data resources (Comp2)

iii) Compatibility with transaction processing tasks (Comp3)

iv) Compatibility with financial report preparation practices (Comp4)

The correlation matrix for the above dimensions of the ‘Compatibility’ construct show that all the correlation coefficients are higher than 0.3 and no individual correlation is higher than 0.9 (i.e. no multicollinearity). The KMO measure of sampling adequacy is 0.720 and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. These tests indicate that the correlation matrix is factorable. Subsequently factor analysis was carried out the results are presented in Table 6.4.

Table 6.4 shows that and only one factor was extracted which had an Eigenvalue of 3.007 and explained 75.166% of the total variance of all attributes. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Therefore, the 4-item measure of the variable “Compatibility” meets the tests for both discriminant construct validity and internal reliability.
Table 6.4: Validity and Reliability tests for ‘Compatibility’

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibility</td>
<td>.720</td>
<td>157.87</td>
<td>.000</td>
<td>75.166</td>
</tr>
<tr>
<td>Comp1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To test for possible confounding effects of the degree of respondent familiarity with SBR on these validity and reliability tests, Table 6.5 presents the comparison of means of each item in the Compatibility’ construct across groups of respondents with different levels of familiarity with SBR.

Table 6.5: Comparison of Means of Familiarity for Dimensions of Compatibility

<table>
<thead>
<tr>
<th>Variable Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibility with organization's IT infrastructure</td>
<td>Very familiar with SBR</td>
<td>2.25</td>
<td>1.500</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.65</td>
<td>.933</td>
</tr>
</tbody>
</table>

To test for possible confounding effects of the degree of respondent familiarity with SBR on these validity and reliability tests, Table 6.5 presents the comparison of means of each item in the Compatibility’ construct across groups of respondents with different levels of familiarity with SBR.
<table>
<thead>
<tr>
<th>Compatibility with organization’s computerised data resources</th>
<th>Vaguely familiar with SBR</th>
<th>Very familiar with SBR</th>
<th>Somewhat familiar with SBR</th>
<th>Vaguely familiar with SBR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.03</td>
<td>2.25</td>
<td>3.55</td>
<td>3.07</td>
</tr>
<tr>
<td></td>
<td>.890</td>
<td>1.500</td>
<td>1.234</td>
<td>.980</td>
</tr>
<tr>
<td></td>
<td>F= 2.640; Sig.=0.081</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compatibility with transaction processing tasks</th>
<th>Vaguely familiar with SBR</th>
<th>Very familiar with SBR</th>
<th>Somewhat familiar with SBR</th>
<th>Vaguely familiar with SBR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.00</td>
<td>2.00</td>
<td>3.55</td>
<td>2.70</td>
</tr>
<tr>
<td></td>
<td>1.414</td>
<td>1.414</td>
<td>1.191</td>
<td>.952</td>
</tr>
<tr>
<td></td>
<td>F= 5.455; Sig.=0.007</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compatibility with financial report preparation practices</th>
<th>Vaguely familiar with SBR</th>
<th>Very familiar with SBR</th>
<th>Somewhat familiar with SBR</th>
<th>Vaguely familiar with SBR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.75</td>
<td>2.75</td>
<td>3.70</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>1.500</td>
<td>1.500</td>
<td>1.418</td>
<td>1.192</td>
</tr>
<tr>
<td></td>
<td>F= 4.390; Sig.=0.017</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Three of the four compatibility dimensions differ significantly among the groups of respondents. Only one dimension that does not differ significantly among the groups is the perception that SBR is compatible with the current organization’s data resources. SBR does not bring any change to data resources of the company. Therefore, it is expected that there would be no difference among the groups assessing this dimension. The significant difference in familiarity in the other three dimensions is related to either technical specification of the IT infrastructure or financial accounting processes of transaction processing or financial reporting preparation practices. The ANOVA results also indicate that, on average, respondents with high familiarity with SBR gave the lowest ranking for the compatibility of SBR on all four items. It is evident that the rating of the widely advocated technological compatibility attribute of SBR (or XBRL) with the company’s IT and accounting infrastructure is affected by the respondent’s
degree of familiarity with SBR’s technical capabilities. The concern is whether familiarity has had a confounding effect on the validity and reliability tests for the Compatibility’ construct in this study? Respondents in the ‘vaguely familiar’ group would have been less able to accurately judge the compatibility of the SBR protocol to their company’s existing IT and accounting infrastructure. However, as respondents were CFOs or their nominee, they would be expected to have a high level of understanding of the wording of the items in this construct, including notions of computerised data resources, transactions processing tasks and financial reporting preparation practices. Consequently, regardless of the respondents’ degree of familiarity with SBR, they would all be likely to understand the technical meaning, and to conceptualize about, the four items in this construct used in the questionnaire. Therefore, low familiarity with SBR is not expected to confound the validity and reliability tests in the case of this particular construct.

6.2.3 Complexity (COMPLEX):

There are only two items (or dimensions) in this construct:

i) Not complex to maintain (Complex1)

ii) Not complex to operate for business reporting (Complex 2)

The results of sampling adequacy, sphericity, principal components factoring and Cronbach alpha tests are presented in Table 6.6. The KMO measure of sampling adequacy is 0.5 (considered acceptable due to the fact there are only two dimensions) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. Subsequently factor analysis reveals that only one factor has been extracted which has an eigenvalue of 1.692 and explained 84.619% of the total variance of the attributes. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Therefore, the two-item construct, “Complexity”, meets validity and reliability tests.
Table 6.6: Validity and reliability tests for ‘Complexity’

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chi-sq          Sig.</td>
<td>% Variance Explained</td>
<td>Loadings Factor 1</td>
</tr>
<tr>
<td>Complexity</td>
<td>.500</td>
<td>33.62           .000</td>
<td>84.619</td>
<td>.818</td>
</tr>
<tr>
<td>Complex 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complex 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.7 gives the result for a comparison of means of each item in the Complexity’ construct across groups of respondents with different levels of SBR familiarity. The result reveals no significant difference in the dimensions of the complexity construct between respondent groups, suggesting that familiarity with SBR does not confound the validity or reliability tests for this construct.

Table 6.7: Comparison of Means of Familiarity for Dimensions of Complexity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not complex to maintain</td>
<td>Very familiar with SBR</td>
<td>3.50</td>
<td>1.291</td>
<td>F = .078;</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.40</td>
<td>1.273</td>
<td>Sig.=0.925</td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>3.30</td>
<td>1.088</td>
<td></td>
</tr>
<tr>
<td>Not complex to operate for business reporting</td>
<td>Very familiar with SBR</td>
<td>4.00</td>
<td>.816</td>
<td>F = .599;</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.80</td>
<td>1.281</td>
<td>Sig.=0.553</td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>3.50</td>
<td>1.106</td>
<td></td>
</tr>
</tbody>
</table>
6.2.4 Organizational alignment (OA):

The first construct in the organizational perspective of the research model is “Organizational Alignment”. This construct is about how well the SBR reporting mechanism is expected to align with the current organizational system/structure. The questionnaire has used 6 dimensions for measuring Organizational Alignment. They are:

i) Ability of SBR to readily interface with current organization system (OA1)
ii) Facilitates an increase in the accountability (OA2)
iii) Consistency of SBR with the skill base of the employees (OA3)
iv) Consistency of SBR with the current coordination of Accounting and IT department (OA4)
v) Organization has existing technical competence (OA5)
vi) Organization can easily realign roles (OA6)

The results of sampling adequacy, sphericity, principal components factoring and Cronbach alpha tests are presented in Table 6.8. The KMO measure of sampling adequacy is 0.746 (considered very acceptable) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. Subsequent factor analysis reveals that only one factor has been extracted which has an eigenvalue of 3.515 and explains 58.567% of the total variance of the attributes. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Therefore, the six-item construct, “organisational alignment”, meets validity and reliability tests.
Table 6.8: Validity and reliability tests for ‘Organizational Alignment’

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chi-sq. Sig.</td>
<td>% Variance Explained</td>
<td>Loadings on Factor</td>
</tr>
<tr>
<td>Organizational Alignment</td>
<td>.746</td>
<td>147.203 .000</td>
<td>58.576</td>
<td>.856</td>
</tr>
<tr>
<td>OA1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OA2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OA3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OA4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OA5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OA6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.9 gives the results for a comparison of means of each item in the ‘Organizational alignment’ construct across groups of respondents with different levels of SBR familiarity. There is found to be no significant difference in the dimensions of the construct between respondent groups, suggesting that familiarity with SBR does not confound the validity or reliability tests for this construct.

Table 6.9: Comparison of Means of Familiarity for Dimensions of Organizational Alignment

<table>
<thead>
<tr>
<th>Variable and Items</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability of SBR to readily interface with current SBR</td>
<td>Very familiar with SBR</td>
<td>2.25</td>
<td>1.500</td>
<td>F= 2.123; Sig.=0.130</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.50</td>
<td>1.147</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SBR Familiarity</td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>F</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-----------------</td>
<td>------</td>
<td>--------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Facilitates an increase in the accountability</td>
<td>Vaguely familiar</td>
<td>3.23</td>
<td>1.040</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar</td>
<td>3.05</td>
<td>1.146</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar</td>
<td>2.70</td>
<td>.952</td>
<td></td>
</tr>
<tr>
<td>Consistency of SBR with the skill base of the employees</td>
<td>Very familiar</td>
<td>3.00</td>
<td>.816</td>
<td>F= .159;</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar</td>
<td>3.15</td>
<td>1.226</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar</td>
<td>2.97</td>
<td>1.098</td>
<td></td>
</tr>
<tr>
<td>Consistency of SBR with the current coordination of Accounting and IT department</td>
<td>Very familiar</td>
<td>2.50</td>
<td>1.291</td>
<td>F= .691;</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar</td>
<td>3.15</td>
<td>1.182</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar</td>
<td>2.87</td>
<td>1.106</td>
<td></td>
</tr>
<tr>
<td>Organization has existing technical competence</td>
<td>Very familiar</td>
<td>2.75</td>
<td>1.258</td>
<td>F= 1.209;</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar</td>
<td>3.25</td>
<td>1.293</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar</td>
<td>2.73</td>
<td>1.081</td>
<td></td>
</tr>
<tr>
<td>Organization can easily realign roles</td>
<td>Very familiar with SBR</td>
<td>2.50</td>
<td>1.291</td>
<td>F=.138; Sig.=0.871</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------------------</td>
<td>------</td>
<td>--------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Somewhat familiar with SBR</td>
<td></td>
<td>2.80</td>
<td>1.322</td>
<td></td>
</tr>
<tr>
<td>Vaguely familiar with SBR</td>
<td></td>
<td>2.83</td>
<td>1.085</td>
<td></td>
</tr>
</tbody>
</table>

6.2.5 Top management support (TMGT)

The second construct in the organizational perspective is “Top management support”.

The questionnaire has 6 items measuring top management support, and they are:

i) Proactive to change reporting process (mgt1)

ii) Has good understanding of the technology (mgt2)

iii) Has close interest in SBR (mgt3)

iv) Considers the issue of adoption as important (mgt4)

v) Strongly recognizes the role of IT in shaping strategy (mgt5)

vi) Does not consider difficult to adopt SBR (mgt6)

The results of sampling adequacy, sphericity, principal components factoring and Cronbach alpha tests are presented in Table 6.10. The KMO measure of sampling adequacy is 0.642 (considered quite acceptable) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. Subsequent factor analysis reveals the extraction of two factors. The scree plot also confirms the existence of the two factors. Factor 1 had an Eigenvalue of 2.569 and explains 42.672% of the total variance of all attributes, while Factor 2 had an Eigenvalue of 1.199 and explains 19.987% of all attributes. The factor matrix is considered to find out how the dimensions are loaded
onto factors. It is found that four (mgt 2, mgt3, mgt4, mgt6) of the scale items load onto factor 1. The remaining two items (mgt1 and mgt5) load onto factor 2.

It is also found that each individual item in both the factors correlated at above 0.4 with the specific factor, which is considered to be adequate loading. No item is evenly distributed over the two factors. Additionally an oblique rotation using direct oblimin method was performed. Oblique rotation gives a similar result to varimax rotation except that there is no cross loadings under direct oblimin. The pattern matrix is reproduced in the Table 6.10. The factor correlation matrix also shows that there is little correlation (less than 0.3) between factors.

Table 6.10: Validity and reliability tests for Top management support

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chi-sq.       Sig.</td>
<td>% Variance Explained</td>
<td>Loadings on Factor</td>
</tr>
<tr>
<td>Top management support</td>
<td>.642</td>
<td>77.915        .000</td>
<td>42.672</td>
<td>0.764</td>
</tr>
<tr>
<td>Factor 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mgt4</td>
<td></td>
<td></td>
<td></td>
<td>.850</td>
</tr>
<tr>
<td>mgt3</td>
<td></td>
<td></td>
<td></td>
<td>.820</td>
</tr>
<tr>
<td>mgt2</td>
<td></td>
<td></td>
<td></td>
<td>.743</td>
</tr>
<tr>
<td>mgt6</td>
<td></td>
<td></td>
<td></td>
<td>.595</td>
</tr>
<tr>
<td>Factor 2</td>
<td>19.987</td>
<td></td>
<td></td>
<td>0.437</td>
</tr>
<tr>
<td>mgt5</td>
<td></td>
<td></td>
<td></td>
<td>.773</td>
</tr>
<tr>
<td>mgt1</td>
<td></td>
<td></td>
<td></td>
<td>.758</td>
</tr>
</tbody>
</table>
Finally reliability analysis for both factors is carried out. The analysis results in Cronbach alpha of 0.764 for factor 1 but only 0.437 for factor 2. The four items in factor 1 show appropriate loading with an acceptable Cronbach alpha figure. However, the Cronbach alpha for factor 2 is below the acceptable limit of 0.7. There is, therefore, an indication that factor 2 is an unstable measure. The decision is taken that factor 2 be omitted from this study resulting in the omission of original scale items of mgt1 and mgt5. Factor 1 is retained and termed as “Top management support”. As discussed before, the four items measuring the variable are mgt2, mgt 3, mgt4 and mgt6.

ANOVA test results for these four dimensions of “Top management support” are presented in Table 6.11. The results show that there is a significant difference between respondent familiarity groups in one of the four items – the item is “close interest in SBR”. Since the means of the other three items are not significantly affected by levels of respondent familiarity with SBR, it was decided to retain this 4-item construct. But it is recognised that some element of respondent familiarity with SBR could limit the validity and reliability of the measure of the variable “Top management support” in this study.

<p>| Table 6.11: Comparison of Means of Familiarity for Dimensions of Top Management Support |
|---------------------------------|----------------------------------|-----------------|-----------------|-----------------|
| Variable                        | Type of respondents              | Mean  | Std. Deviation | F Stat and Sig. |
| Has good understanding of the technology | Very familiar with SBR            | 2.75  | 1.500          | F= .493; Sig.=0.614 |
|                                 | Somewhat familiar with SBR       | 3.00  | 1.170          |                 |
|                                 | Vaguely familiar with SBR        | 2.67  | 1.124          |                 |</p>
<table>
<thead>
<tr>
<th>Has close interest in SBR</th>
<th>Very familiar with SBR</th>
<th>3.75</th>
<th>2.217</th>
<th>F= 3.608; Sig.=0.034</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>2.30</td>
<td>.801</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.33</td>
<td>.959</td>
<td></td>
</tr>
<tr>
<td>Considers the issue of adoption as important</td>
<td>Very familiar with SBR</td>
<td>2.50</td>
<td>1.000</td>
<td>F= .124; Sig.=0.883</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>2.55</td>
<td>1.276</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.70</td>
<td>1.119</td>
<td></td>
</tr>
<tr>
<td>Does not consider difficult to adopt SBR</td>
<td>Very familiar with SBR</td>
<td>3.00</td>
<td>1.414</td>
<td>F= 2.793; Sig.=0.071</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.25</td>
<td>1.020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.60</td>
<td>.855</td>
<td></td>
</tr>
</tbody>
</table>

**6.2.6 Perceived financial cost (PFC):**

The results of sampling adequacy, sphericity, principal components factoring and Cronbach alpha tests are presented in Table 6.12. The KMO measure of sampling adequacy is 0.726 (considered very acceptable) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. Subsequent factor analysis reveals that only one factor has been extracted which has an eigenvalue of 2.262 and explains 75.394% of the total variance of the attributes. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Therefore, the three-item construct, “perceived financial cost”, meets validity and reliability tests.
Table 6.12: Validity and Reliability tests for ‘Perceived financial cost’

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chi-sq. Sig.</td>
<td>% Variance Explained Loadings on Factor</td>
<td></td>
</tr>
<tr>
<td>Perceived Financial cost</td>
<td>.726</td>
<td>60.286 .000</td>
<td>75.394</td>
<td>.836</td>
</tr>
<tr>
<td>FC1</td>
<td></td>
<td></td>
<td></td>
<td>.874</td>
</tr>
<tr>
<td>FC2</td>
<td></td>
<td></td>
<td></td>
<td>.866</td>
</tr>
<tr>
<td>FC3</td>
<td></td>
<td></td>
<td></td>
<td>.866</td>
</tr>
</tbody>
</table>

Table 6.13 gives the result for a comparison of means of each item in the ‘Perceived financial cost’ construct across groups of respondents with different levels of SBR familiarity. The result reveals no significant difference in the dimensions of the complexity construct between respondent groups, suggesting that familiarity with SBR does not confound the validity or reliability tests for this construct.

Table 6.13: Comparison of Means of Familiarity for Dimensions of perceived financial cost

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High set up cost</td>
<td>Very familiar with SBR</td>
<td>3.75</td>
<td>.957</td>
<td>F= .617; Sig.=0.544</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.90</td>
<td>1.294</td>
<td></td>
</tr>
</tbody>
</table>
Vaguely familiar with SBR

<table>
<thead>
<tr>
<th>High running cost</th>
<th>Very familiar with SBR</th>
<th>4.00</th>
<th>1.826</th>
<th>F= .446;</th>
<th>Sig.=0.643</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.50</td>
<td>1.100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>3.73</td>
<td>1.048</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High training cost</td>
<td>Very familiar with SBR</td>
<td>4.75</td>
<td>1.258</td>
<td>F= 1.034;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.00</td>
<td>1.076</td>
<td>Sig.=0.363</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>4.23</td>
<td>.898</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.2.7 Competitive pressure

‘Competitive pressure’ is the first construct identified in this study under the environmental perspective of the TOE framework. The questionnaire has 6 dimensions measuring Competitive pressure. They are:

i) Require fast access and analysis of data to remain competitive (compete1)

ii) Require more sophisticated system to remain competitive (compete2)

iii) Require timely and reliable information to make decision (compete3)

iv) Free time for staff to make decision (compete4)

v) Follow important competitors adopting innovation (compete5)

vi) Want to be leader in the industry to introduce innovation (compete6)

The KMO measure of sampling adequacy is 0.618 and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. These tests indicate that the correlation
matrix of the six items is factorable. Subsequently factor analysis is carried out and two factors are extracted. Scree plot also confirms the existence of the two factors. Factor 1 has an Eigenvalue of 2.863 and explains 47.708% of the total variance of attributes, while Factor 2 has an Eigenvalue of 1.497 and explains 24.943% of total variance. As shown in Table 6.14, four of the scale items load onto factor 1. The remaining two items load onto factor 2.

Table 6.14: Dimensions of the two factors of competitive pressure

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>compete1</td>
<td>Factor 1</td>
</tr>
<tr>
<td>compete2</td>
<td>Factor 1</td>
</tr>
<tr>
<td>compete3</td>
<td>Factor 1</td>
</tr>
<tr>
<td>compete4</td>
<td>Factor 1</td>
</tr>
<tr>
<td>compete5</td>
<td>Factor 2</td>
</tr>
<tr>
<td>compete6</td>
<td>Factor 2</td>
</tr>
</tbody>
</table>

It is also found that each individual item in both the factors correlated at above 0.4 with the specific factor, which is considered to be adequate loading. No item is evenly distributed over the two factors. Subsequently an oblique rotation using direct oblimin method is performed.

The pattern matrix is reproduced in Table 6.15.
Table 6.15: Validity and reliability tests for Competitive pressure

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chi-sq.</td>
<td>Sig.</td>
<td>% Variance Explained</td>
<td>Loadings on Factor</td>
</tr>
<tr>
<td>Competitive pressure</td>
<td>.618</td>
<td>135.104</td>
<td>.000</td>
<td>47.708</td>
</tr>
<tr>
<td>Factor 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>compete1</td>
<td></td>
<td></td>
<td></td>
<td>.861</td>
</tr>
<tr>
<td>compete2</td>
<td></td>
<td></td>
<td></td>
<td>.827</td>
</tr>
<tr>
<td>compete3</td>
<td></td>
<td></td>
<td></td>
<td>.795</td>
</tr>
<tr>
<td>compete4</td>
<td></td>
<td></td>
<td></td>
<td>.742</td>
</tr>
<tr>
<td>Factor 2</td>
<td></td>
<td>24.943</td>
<td>.000</td>
<td>0.777</td>
</tr>
<tr>
<td>compete5</td>
<td></td>
<td></td>
<td></td>
<td>.900</td>
</tr>
<tr>
<td>compete6</td>
<td></td>
<td></td>
<td></td>
<td>.888</td>
</tr>
</tbody>
</table>

The factor correlation matrix also shows that there is little correlation (less than 0.3) between factors. Finally reliability analysis for both factors is carried out. The analysis results in a Cronbach alpha of 0.828 for factor 1 and 0.777 for factor 2. Thus, both the Orthogonal and Oblique rotation for the scale items confirmed the existence of two distinct factors and those factors passed the reliability tests as well. Factor 1 deals with IT requirements to remain competitive. This factor is retained and termed as “Competitiveness”. The four scale items in this construct are compete1, compete2, compete3 and compete4. Factor 2 is also retained even though only two scale items
loaded onto this factor. Factor 2 is found to be a reliable measure and largely independent of Factor 1. Therefore, it has been decided that factor 2 would be suitable for shedding extra light in the data analysis for this study. This factor is termed as “Industry force” and the two scale items included in this factor are compete5 and compete6.

ANOVA results for both the factors are given in Table 6.16 and Table 6.17.

Table 6.16: Comparison of Means of Familiarity for Dimensions of Competitiveness

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Require fast access and analysis of data to remain competitive</td>
<td>Very familiar with SBR</td>
<td>4.00</td>
<td>2.160</td>
<td>F= .618; Sig.=0.543</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.35</td>
<td>1.268</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>3.90</td>
<td>1.398</td>
<td></td>
</tr>
<tr>
<td>Require more sophisticated system to remain competitive</td>
<td>Very familiar with SBR</td>
<td>4.00</td>
<td>2.160</td>
<td>F= .091; Sig.=0.913</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.25</td>
<td>1.020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>4.13</td>
<td>1.252</td>
<td></td>
</tr>
<tr>
<td>Require timely and reliable information to make decision</td>
<td>Very familiar with SBR</td>
<td>3.75</td>
<td>2.062</td>
<td>F= 2.253; Sig.=0.115</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.90</td>
<td>.912</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>4.37</td>
<td>1.159</td>
<td></td>
</tr>
</tbody>
</table>
Free time for staff to make decision

<table>
<thead>
<tr>
<th>Familiarity with SBR</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very familiar with SBR</td>
<td>4.50</td>
<td>1.000</td>
<td>F= .154; Sig.=0.858</td>
</tr>
<tr>
<td>Somewhat familiar with SBR</td>
<td>4.50</td>
<td>1.100</td>
<td></td>
</tr>
<tr>
<td>Vaguely familiar with SBR</td>
<td>4.30</td>
<td>1.466</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.17: Comparison of Means of Familiarity for Dimensions of Industry force

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow important competitors adopting innovation</td>
<td>Very familiar with SBR</td>
<td>2.75</td>
<td>1.258</td>
<td>F=.623; Sig.=0.540</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>2.85</td>
<td>1.226</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.47</td>
<td>1.196</td>
<td></td>
</tr>
<tr>
<td>Want to be leader in the industry to introduce innovation</td>
<td>Very familiar with SBR</td>
<td>3.25</td>
<td>1.708</td>
<td>F=1.093; Sig.=0.343</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>3.05</td>
<td>1.356</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.53</td>
<td>1.358</td>
<td></td>
</tr>
</tbody>
</table>
The results show that there is no significant difference in all the six dimensions (Factor 1 and Factor2) of the competitive pressures felt by respondents regardless of their level of familiarity with SBR.

**6.2.8 Government pressure (GOV)**

The correlation matrix for above dimensions of ‘Government pressure’ construct shows that one of the three scale items (Gov1) correlates very weakly with other two items. The KMO measure of sampling adequacy is only 0.491 and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. There are, therefore, signs of instability in the measure as the sampling adequacy test is not met. Factor analysis results in one factor being extracted which has an eigenvalue of 1.607 and explained 53.574% of the total variance of all attributes. The factor matrix shows that Gov1 correlates at less than 0.4 with the factor while the correlation coefficients of Gov2 and Gov3 are much higher than 0.4. Additionally, Gov1 correlates inversely with the factor which is in direct contrast toGov2 and Gov3. It is, therefore, decided to drop scale item Gov1 from this construct.

Analysis for this construct (‘Government pressure’) is again performed and this time only two scale items are considered (Gov2 and Gov3). The KMO measure of sampling adequacy is now 0.5 (considered acceptable) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. The analysis results in one factor and the new eigenvalue of the factor is 1.570 and represents 78.492% of total variance of the two items. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Table 6.18 presents the results for this two-item construct.
Table 6.18: Validity and reliability tests for ‘Government pressure’

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chi-sq.</td>
<td>Sig.</td>
<td>% Variance Explained</td>
</tr>
<tr>
<td>Government pressure</td>
<td>.500</td>
<td>20.220</td>
<td>.000</td>
</tr>
<tr>
<td>Gov2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gov3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANOVA results (Table 6.19) show that there is no significant difference in the dimensions of Government pressure amongst the respondents regardless of their familiarity with SBR.

Table 6.19: Comparison of Means of Familiarity for Dimensions of Government Pressure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request by government agencies has high priority for the organization</td>
<td>Very familiar with SBR</td>
<td>3.25</td>
<td>1.708</td>
<td>F= 1.230; Sig.=0.301</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>4.30</td>
<td>1.174</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>4.20</td>
<td>1.215</td>
<td></td>
</tr>
<tr>
<td>Company monitors</td>
<td>Very familiar with</td>
<td>3.75</td>
<td>1.258</td>
<td>F=.513;</td>
</tr>
</tbody>
</table>
changes initiated by government

<table>
<thead>
<tr>
<th></th>
<th>SBR</th>
<th></th>
<th>Sig. = 0.602</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somewhat familiar</td>
<td></td>
<td>4.30</td>
<td>1.218</td>
</tr>
<tr>
<td>with SBR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaguely familiar</td>
<td></td>
<td>4.00</td>
<td>1.259</td>
</tr>
<tr>
<td>with SBR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 6.2.9 Communication in the industry (COMM)

The last variable in the environmental perspective is “Communication in the industry”. The questionnaire has 3 items measuring the variable. They are:

1. Organization has received considerable information (Comm1)
2. Organization attended information seminar (Comm2)
3. Regular visit of SBR website (Comm3)

The results of sampling adequacy, sphericity, principal components factoring and Cronbach alpha tests are presented in Table 6.20. The KMO measure of sampling adequacy is 0.684 (considered quite acceptable) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. Factor analysis reveals that only one factor has been extracted which has an eigenvalue of 2.220 and explains 74.005% of the total variance of the attributes. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Therefore, the three-item construct, ‘Communication in the industry’, meets validity and reliability tests.

Table 6.20: Validity and reliability tests for ‘Communication in the industry’

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication in the industry</td>
<td>.684</td>
<td>60.021 .000</td>
<td>74.005</td>
</tr>
</tbody>
</table>
Table 6.21 gives the result for a comparison of means of each item in the ‘Communication’ construct across groups of respondents with different levels of SBR familiarity. The result reveals no significant difference in the dimensions of the communication construct between respondent groups, suggesting that familiarity with SBR does not confound the validity or reliability tests for this construct.

Table 6.21: Comparison of Means of Familiarity for Dimensions of Communication in the industry

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of respondents</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Stat and Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization has received considerable information</td>
<td>Very familiar with SBR</td>
<td>2.25</td>
<td>1.258</td>
<td>F= .550; Sig.=0.580</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>2.40</td>
<td>1.095</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>2.10</td>
<td>.885</td>
<td></td>
</tr>
<tr>
<td>Organization attended information seminar</td>
<td>Very familiar with SBR</td>
<td>2.50</td>
<td>1.000</td>
<td>F= 1.466; Sig.=0.240</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>2.40</td>
<td>1.231</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>1.90</td>
<td>1.029</td>
<td></td>
</tr>
<tr>
<td>Regular visit of SBR website</td>
<td>Very familiar with SBR</td>
<td>2.75</td>
<td>.957</td>
<td>F= 2.669; Sig.=0.079</td>
</tr>
<tr>
<td></td>
<td>Somewhat familiar with SBR</td>
<td>2.50</td>
<td>1.395</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vaguely familiar with SBR</td>
<td>1.83</td>
<td>.950</td>
<td></td>
</tr>
</tbody>
</table>
6.2.10 Intent to adopt SBR (INTENT)

The dependent variable in this study is “Intent to adopt SBR”. The questionnaire has 3 dimensions measuring the variable. They are:

i) Strong intention to adopt (Intent1)
ii) Preparation of proposed plans to adopt (Intent2)
iii) Very positive view about adopting (Intent3)

Table 6.22 presents the results of sampling adequacy, sphericity, factor analysis and Cronbach alpha tests. The KMO measure of sampling adequacy is 0.736 (considered very acceptable) and Bartlett’s test of sphericity shows that the result is significant at 0.000 level. This indicates the correlation matrix of the three items in this construct is factorable. Subsequent factor analysis reveals that only one factor has been extracted which has an eigenvalue of 2.499 and explains 83.291% of the total variance. The reliability analysis for this factor results in a Cronbach alpha of more than 0.7. Therefore, the three-item construct, “Intent to adopt SBR”, meets validity and reliability tests.

<table>
<thead>
<tr>
<th>Latent Variable and Items</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Sphericity Test</th>
<th>Factor Analysis</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chi-sq.       Sig.</td>
<td>% Variance Explained</td>
<td>Loadings Factor 1</td>
</tr>
<tr>
<td>Intent to adopt SBR</td>
<td>.736</td>
<td>98.596        .000</td>
<td>83.291</td>
<td>.895</td>
</tr>
<tr>
<td>Intent1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intent2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intent3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.22: Validity and reliability tests for ‘Intent to adopt SBR’
To sum up the section on construct validity and reliability, it can be concluded that the concepts operationalised in this study as the independent and dependent variables are able to credibly and consistently represent the meaning deemed to be attached to these variables. The section found ten independent constructs instead of nine independent constructs originally proposed in the study. The scale items of the original construct of “Competitive pressure” led to two distinct independent constructs: competitiveness (COMPETE) and industry force (IF), as are named here. Therefore it is necessary to break down hypothesis 7 into 7(a) and 7(b) as follows:

H7(a): Competitiveness is positively related to intent to adopt SBR.
H7(b): There is a positive association between industry force felt by the organizations and intent to adopt SBR.

6.3 Regression analysis

The multiple regression analysis to test the hypotheses in this study is presented in this section. It is conducted in four blocks using the hierarchical regression method. The variables in the technology perspective are included in the first block and the variables in organizational perspective and environmental perspective are progressively added in the next two blocks. Finally control variables (Dholakia & Kshetri, 2004; Huizing and Brand, 2009; Askarany & Smith 2008) are included in the model to determine whether control variables significantly change the predictive power of the three perspectives of the model used in this study. The regression analysis returns important information regarding the descriptives and correlation of the variables. These figures are presented in Table 6.23 and Table 6.24.
The results of the four blocks of hierarchical regression analysis are now presented in Tables 6.25 to 6.28. Table 6.25 gives the technology variables only as determinants of intent to adopt SBR. Table 6.26 combines the organisational variables and the technology variables as determinants. Table 6.27 adds the environmental variables so that the full TOE framework is modelled as the determinants of intention to adopt SBR.
Finally, Table 6.28 presents results for the full TOE framework together with selected control variables.

### Table 6.25: Technology perspective and intent to adopt SBR (Block 1)

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>R Square change</th>
<th>Std. Error of Estimate</th>
<th>ANOVA</th>
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<tbody>
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<td>.081</td>
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### Dependent Variable: Intent to adopt SBR

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<th>Collinearity Statistics</th>
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<td>.188</td>
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<td>Model Summary</td>
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<td>Model 3</td>
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**Dependent Variable:** Intent to adopt SBR

**Independent Variables**

| Model 2 | (Constant) | .731 | 1.055 | .693 | .492 |
| Model 2 | Relative Advantage | .081 | .142 | .088 | .571 | .571 | .553 | 1.808 |
| Model 2 | Compatibility | -.090 | .194 | -.089 | -.464 | .645 | .354 | 2.822 |

**Table 6.26: Technology + Organization perspective and intent to adopt SBR (Block 2)**
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<td>.550</td>
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<td>.000</td>
<td>.665</td>
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<td></td>
<td></td>
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<td>ANOVA F Change</td>
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**Table 6.27: The three perspectives and intent to adopt SBR (Block 3)**

**Dependent Variable:** Intent to adopt SBR  
**Independent Variables**  

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<th>Model 3 (Constant)</th>
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<th>Standardized Coef</th>
<th>Std. Error</th>
<th>Beta</th>
<th>T</th>
<th>Sig.</th>
<th>Tolerance</th>
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</table>

165
| Model 2 | Competitiveness | -0.054 | 0.115 | 0.054 | 0.467 | 0.643 | 0.726 | 1.378 |
| Industry Force | 0.371 | 0.123 | 0.425 | 3.007 | 0.004 | 0.492 | 2.034 |
| Communication | 0.344 | 0.141 | 0.316 | 2.444 | 0.019 | 0.586 | 1.705 |
| Government pressure | 0.075 | 0.100 | 0.081 | 0.750 | 0.457 | 0.851 | 1.175 |

Table 6.28: The three perspectives + control variables and intent to adopt SBR (Block 4)

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<th>R Square</th>
<th>Adjusted R Square</th>
<th>R Square change</th>
<th>Std. Error of Estimate</th>
<th>ANOVA</th>
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Dependent Variable:
Intent to adopt SBR

Independent Variables

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<th>Unstandardized Coefficients</th>
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<th>Collinearity Statistics</th>
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<td>.098</td>
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The first aspect of these regression results is that there are significant increases in the values of ‘R square’ in each of the steps from Block 1 to Block 3. In the end a relatively high ‘R square’ value of 0.578 has been achieved for the full TOE model employed in this study with a fairly good predictive ability (adjusted R square .480). Block 1 (technology perspective) shows an ‘R square’ of .133 with only one variable weakly related to intent to adopt SBR. That variable is relative advantage. When the organization perspective is added to block 1, the change in ‘R square’ is .252 and the variable of “Top management support” shows a significant relationship with intent to adopt SBR. Finally when all three perspectives are added (Block 3), the value of ‘R square’ furthers increases by 0.193. Two variables are found to have significant relationship with “intent to adopt SBR” and they are “communication in the industry” and “industry force”. The inclusion of control variables in Block 4 marginally increases the value of ‘R square’ by 0.029. The ‘tolerance’ and ‘VIF’ values remain acceptable across all of the four blocks. There is, therefore, no concern for multicollinearity among variables.

6.4 Discussion of the results

This section discusses and interprets the statistical analyses of the previous sections. First the level of intent to adopt SBR by listed companies in Australia is considered, then a detailed consideration is given of the strength of the TOE model and its hypothesised explanations of intent to adopt SBR. This will include a comparison of the explanatory power of the three perspectives of the TOE framework.

It was concluded from the normative evaluation (presented in Chapter 3) that the case in support of voluntary adoption of SBR by preparers (i.e., the CFOs of listed companies
in this study) is disputable. The low mean value of intention to adopt SBR is evidence of a hesitation by CFOs to adopt the SRB technological innovation purely on the espoused technical advantages it could provide for the company’s financial and other compliance reporting. The survey suggests that voluntary adoption of SBR is not expected to happen on a large scale as the intention is quite low.

It could be claimed that entities are not assessing medium to long-term cost efficiencies that SBR’s well established technological strengths can provide. Troshani and Doolin (2005), for example, considers Australian managers are more reactive than proactive in that they tend to take a “wait-and-see” approach when it comes to adopting a new system. This view is supported by respondents’ comments given in the open ended section of the questionnaire. One respondent indicated that “Voluntary adoption would be limited due to other revenue based initiatives having priority”. Another respondent stated a scepticism about voluntary SBR as “XBRL (has) been considered for a long time without gaining too much traction”. The preparers of financial reports in listed companies, therefore, appear to have sympathy with a follow, not lead, approach to implementing SBR. Interestingly, though not surprisingly, SBR adoption in Australia is likely to follow what XBRL adoption experienced during its early stages. Locke and Lowe (2007) commented that “the early optimistic projections about adoption (of XBRL) may have been a part of the ‘hype’, making it hard to draw a convincing conclusion about the real anticipated rate of adoption (of XBRL)” (p.609). Similarly, a Delphi investigation by Bonson et al. (2009) found that the diffusion of XBRL did not happen as quickly and successfully as had been foreseen. An ACCA research report commented that there is a resistance to adopt of XBRL and a good business case needs to be developed to break that resistance (Dunne et al., 2009). Other commentators suggest that XBRL has not taken off (Yudkowsky, 2003; Keeling et al., 2004). Some earlier surveys even found that there is a significant lack of knowledge about XBRL among financial executives and accountants (Cuneo, 2002; Kelcher, 2003). Magliery (2005) commented that XBRL is in the ‘trough of disillusionment’ since at least 2004.
Overall, there were some indications that XBRL adoption has not met expectations (Locke and Lowe, 2007).

It is difficult to draw conclusions from Australian experience with SBR as the SBR roll out is still in its early stage. But early signs of SBR adoption are not encouraging since only a very few listed companies have registered with one or more of the participating government regulatory agencies since SBR became available in July, 2010, according to the Australian Treasury. The finding in this study, from the survey data obtained shortly prior to this SBR activation date, confirms the low take-up as seen in the low mean ‘intention to adopt’ score. Therefore, it is evident that SBR adoption will follow the pattern of an early period of attempt by XBRL Australia Inc (a consortium of mainly accounting and IT professionals) to encourage XBRL adoption.

The model used in this study offers evidence about which factors, amongst factors from a broad set of perspectives, can help explain the degree of intention to adopt SBR. The regression analysis finds that 57.8% of the variation in the level of intent to adopt SBR can be explained by a combination technological, organizational and environmental-related factor. That predictive power increases to more that 60% when controlled for respondents’ familiarity, age and company size. The tolerance and VIF values suggest that there is no issue with multicollinearity. This strong explanatory power of the model is evidence of the utility of a multiple theoretical perspective, as provided by the TOE framework, for understanding the adoption of a technological innovation in the media for corporate financial processing and external reporting.

The results reveal that the expected net benefits of SBR, from a technology perspective in isolation, cannot predict the success of SBR adoption in Australia. In a related qualitative study on XBRL adoption in Australia, Doolin and Troshani (2007) noted the importance of facilitating and inhibiting factors which led them to develop the conceptual model of XBRL adoption. Their conceptual model considered several
technological, organizational and environmental factors. Cordery et al. (2011) also invoked the TOE model in a qualitative study to understand XBRL adoption in New Zealand and were able to discuss the factors affecting adoption from the three perspectives. This study quantitatively establishes that organizational and environmental factors, in addition to technological factors, significantly improve the predictive power of adoption of a XBRL driven reporting medium. Pearson’s correlation coefficients give a preliminary idea about how these factors correlate with intent to adopt SBR. The coefficients suggest that seven out of ten factors (relative advantage, compatibility, complexity, organizational alignment, top management support, industry force and communication) significantly correlate with intent to adopt SBR. Four of these seven factors are from organizational and environmental perspectives. Thus, both bivariate and multivariate analyses confirm the applicability and utility of the TOE framework in understanding the adoption of SBR.

6.4.1 Technology perspective on Intent to adopt SBR

The technology perspective in the model is invoked to argue that the benefits and problems perceived to arise from technological attributes of SBR will be determinants of intention to adopt SBR. Three variables are identified in this perspective of the research model – Relative advantage, compatibility and complexity. The results (Block 1) suggest that technology perspective of the model explains only 13.3% (R square of 0.133) of the variation in the intent to adopt SBR among the respondents. The inclusion of control variables (familiarity of SBR, respondent’s age and company size) marginally increases the value of R square (increase of 0.009). Adjusted R square of 0.081 indicates that the predictive ability of the technology perspective is quite low. Adjusted R square further decreases when the control variables are added. It is difficult to draw a conclusion on the technological benefits of SBR (as promoted by regulators in Australia) based on these results because SBR is still at an early stage. But it might be assumed that technological variables alone cannot significantly explain organization’s
intention to report via SBR. A similar conclusion was made by Doolin and Troshani (2007) in their investigation of adoption of XBRL in Australia. They further state that the absence of readily available tools contributes to such a result (Doolin & Troshani, 2007). Some researchers say that the primary reason for entities to adopt XBRL is to gain a deeper understanding of how the technology benefits the organization (Bonson et al., 2009). These comments suggest that the benefits are not well established in the eyes of the potential adopters. The discussion on each variable in this perspective might reveal if this is the case with the roll out of SBR.

Hypothesis 1: Relative advantage and intent to adopt SBR
The first hypothesis explores the relationship between relative advantage and intent to adopt SBR. As discussed earlier, relative advantage is commonly found as having a positive relationship with adoption intention in studies of IT innovation. There was a similar argument for XBRL (the technology enabler of SBR) adoption. The relative advantages claimed for XBRL reporting are the reduction of information asymmetry and facilitating continuous disclosure. When investigating these two factors in the Korean stock market, Yoon et al. (2011) found XBRL adoption positively relates to reduction of information asymmetry. The study further confirms the facilitation of continuous disclosure by XBRL adoption. Contrary to this Doolin and Troshani (2007) reported no relationship between relative advantage and XBRL adoption. Six dimensions have been used in this study to measure the relative advantage of SBR in Australia. It was found that relative advantage is significantly correlated with intent to adopt SBR (coefficient of 0.337; sig: .006). But the multiple regressions paint a different picture. When intent to adopt SBR is regressed against only variables of technology perspective (Block 1), relative advantage is found to be weakly related to intent to adopt SBR (sig.=0.090). That weak relationship disappears when the control variables are added to Block 1. Inclusion of Organizational perspective (Block 2) and environmental perspective (Block 3) render the relationship of relative advantage insignificant. Hypothesis 1, therefore, is not supported in this study. Relative advantage
loses the ability to explain variation in intent to adopt SBR in the presence of other variables in the model, though relative advantage is (individually) significantly correlated with intent to adopt SBR.

Even though no relationship is found between relative advantage and intent to adopt SBR, a further assessment of prospective adoption of SBR is given using an alternative adoption measure. The questionnaire in this study contained a question that asked respondents about the likelihood of their company adopting SBR by July 2011, given the Australian Treasury’s announcement that the SBR project would go live in July 2010. The data from this question has been dichotomised into lower likelihood of first wave adoption (i.e., unlikely and highly unlikely) versus higher likelihood of first wave adoption (i.e., likely and highly likely). A comparison of means of the items in Relative advantage between these two groups of likelihood of adoption in the first wave (i.e., first financial year after SBR became available) is given in Table 6.29.

**Table 6.29: Relative Advantage and the Stated Likelihood of First Wave Adoption of SBR**

<table>
<thead>
<tr>
<th>Items and their latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std Dev</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick processing of statutory reports</td>
<td>Unlikely</td>
<td>3.22</td>
<td>1.149</td>
<td>-3.222</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>4.33</td>
<td>1.283</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Makes less burdensome reporting process</td>
<td>Unlikely</td>
<td>3.36</td>
<td>1.199</td>
<td>-3.130</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>4.44</td>
<td>1.199</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could facilitate more effective decision</td>
<td>Unlikely</td>
<td>2.33</td>
<td>1.095</td>
<td>-3.404</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>Unlikely</td>
<td>b</td>
<td>p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>-------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could give greater</td>
<td>3.56</td>
<td>2.67</td>
<td>0.171</td>
<td>0.035</td>
<td></td>
<td></td>
</tr>
<tr>
<td>personal control</td>
<td>3.44</td>
<td>1.17</td>
<td>1.385</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could save processing</td>
<td>4.08</td>
<td>3.08</td>
<td>1.296</td>
<td>0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cost</td>
<td>4.17</td>
<td>1.200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could increase</td>
<td>4.33</td>
<td>2.89</td>
<td>1.328</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>productivity</td>
<td>4.05</td>
<td>2.92</td>
<td>1.171</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative advantage</td>
<td>4.17</td>
<td>2.92</td>
<td>1.171</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The inference from the above table is that the 33% of CFO respondents who indicate a likely/highly likely adoption of SBR in the near future have significant more favourable perception of relative advantage of SBR technology than the remaining 67% of CFO respondents who are less likely to adopt SBR in the near future. That result is consistent across all the six dimensions of the construct “Relative advantage”. Therefore, stated likely adopters of SBR believe that SBR provides their businesses the ability to leverage XBRL metadata, including business rules, allowing better reuse of financial information (Bonson et al., 2009). Cordery et al. (2011) also found relative advantage of XBRL as the most important technological factor driving XBRL adoption in New Zealand.

The absence in multiple regression results of a significant relationship between relative advantage and intent to adopt is difficult to explain. It might be the case that the advantages of SBR are not proven as yet. XBRL was previously pushed in Australia with no apparent successful adoption (Doolin & Troshani, 2007). As the benefits are
largely unproven, the relative advantage of SBR has not been a sufficiently accepted incentive to preparer-managers to adopt SBR. The responses to the open ended question in the survey reveal that respondents have concerns about cost-benefit implications of SBR rollout. The comments gathered from the questionnaire related to relative advantage are reproduced below:

“Reporting to government is well managed and does not take a great deal of time. The cost/benefit of changing the existing process is not considered worthwhile”

“All this (SBR roll out) will do is save the government money at the expense of business”

“There seems little advantage for company to do it (adopt SBR)- it is the users of this information who will benefit.”

“As a company, with relatively simple financial reporting, I am not convinced of the benefits.”

These comments complement the regression analysis findings on relative advantage. Many preparers are not yet convinced that SBR would provide significant benefit to them; some even believe that the advantages would primarily accrue to users and regulators. The comments also indicate that existing systems within the entities are perceived as having the as much functionality in terms of electronic data exchange with respect to internal reporting. Their belief is that the XBRL platform would not provide any extra advantage to the organization. These comments support the claim by Cordery et al. (2011) who say that unless the current legacy system is in crisis, XBRL reporting would not take off in New Zealand.

**Hypothesis 2: Compatibility and intent to adopt SBR**

Compatibility is hypothesized as having a positive relationship with intent to adopt SBR. The SBR taxonomy has been developed using XBRL (Madden, 2009) which makes the facility highly compatible with existing IT systems. Earlier Yoon et al. (2011) found that XBRL information is highly compatible among different information systems. The results in this study suggest that (with a correlation coefficient of .256 and
p value of 0.031) compatibility is significantly correlated with intent to adopt SBR. But again multiple regression tells a different story. Across all the three blocks of regression analyses, ‘t’ tests fail to show a significant relationship of compatibility with intent to adopt SBR. Therefore, compatibility also loses the individual predictive ability in the presence of other factors in the model. Hypothesis 2 is also not supported. Though H2 is not supported, T test reveals that the likely adopters of SBR consider SBR as more compatible than the less likely adopters. Table 6.30 depicts the result.

Table 6.30: –Compatibility and the Stated Likelihood of First Wave Adoption of SBR

<table>
<thead>
<tr>
<th>Items and their latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std Dev</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatible with organization's IT infrastructure</td>
<td>Unlikely</td>
<td>3.00</td>
<td>.956</td>
<td>-2.153</td>
<td>.036</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>3.61</td>
<td>1.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatible with organizations computerised data resources</td>
<td>Unlikely</td>
<td>3.00</td>
<td>1.042</td>
<td>-1.703</td>
<td>.095</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>3.56</td>
<td>1.294</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatible with transaction processing tasks</td>
<td>Unlikely</td>
<td>2.61</td>
<td>1.076</td>
<td>-3.446</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>3.67</td>
<td>1.029</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatible with financial report preparation practices</td>
<td>Unlikely</td>
<td>2.42</td>
<td>1.131</td>
<td>-5.734</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>4.22</td>
<td>1.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatibility</td>
<td>Unlikely</td>
<td>2.76</td>
<td>.901</td>
<td>-3.876</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>3.76</td>
<td>.897</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6.30 shows that compatibility has an influence on the stated likely adopters on their decision to adopt SBR in near future. Perception of compatibility can be used for distinguishing likely adopters from unlikely adopters of SBR.

**Hypothesis 3: Complexity and intent to adopt SBR**

Conceptually, if an innovative idea comes with complexity to implement the idea, there would be a resistance among the target group to adopt the innovation. Doolin and Troshani (2007) report that the complexity of XBRL was commonly mentioned in the interviews they conducted. Accordingly, this study hopes to find an inverse relationship between complexity and intent to adopt SBR. The design of questionnaire used in this study asked the respondents to rank SBR on the basis of their perception that ‘SBR is not complex’. Therefore a positive coefficient means inverse relationship. The correlation analysis shows that complexity is significantly negatively correlated with intent to adopt SBR (coefficient = 0.241 and $p = 0.040$). Turning to the regression analysis, complexity fails to show a significant relationship (across all Blocks) with intent to adopt SBR. Therefore H3 is also rejected. Dunne et al. (2009) say that the major obstacle for XBRL adoption appears to be the time and effort needed to learn about and apply XBRL. They further note the availability of software tools to make the process less complex but these developments have not been deemed adequate encouragement to take up of XBRL (Dunne et al., 2009). The absence of a significant relationship of complexity with intent to adopt SBR supports the above comments.

The independent samples T-test using the items in the complexity construct is presented in Table 6.31.

<table>
<thead>
<tr>
<th>Items and their latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not complex to maintain</td>
<td>Unlikely</td>
<td>4.06</td>
<td>-3.494</td>
<td>.001</td>
</tr>
</tbody>
</table>
The table shows that likely adopters of SBR view the facility as less complex compared to the unlikely adopters. However the majority of the respondents (more than 67%) view the facility as complex and that complexity might have contributed to the result on intent to adopt SBR.

In summary, technology perspective in the model could explain some variation in the level of intent to adopt SBR but not a single variable in the perspective is significantly related. This suggests that technological attributes (superiority) of SBR might not be enough to induce adoption of SBR among Australian entities. However variables in the technology perspective were found useful in categorising adopters into those stating to be likely adopters versus unlikely adopters.

6.4.2 Organizational perspective of intent to adopt SBR

This perspective includes organization specific variables that are likely to have an impact on entities’ intent to adopt SBR. It is established in the IT literature that while it is important that the company perceives the benefits of the technology, it is also important that the benefits perceived by the company can be achieved within their organisational resources (Kuan and Chau, 2001). The individual effect of the organizational perspective on the intent to adopt SBR in Australia is measured in block
of the regression analyses (reported earlier), when variables in the organizational perspective are added to block 1 (technology perspective). Block 3 and Block 4 show the full effect of the research model of which organizational perspective is a part. The results clearly indicate that ‘R’ Squared increases by .252 to .385 when the variables in organizational perspective are added to Block 1 (technology perspective). Adjusted ‘R’ Squared also increases to .306 (from only .081 in Block 1) giving the variables in Block 2 a higher predictive power (in comparison to technology variables only in Block 1). Therefore, the combination of both organizational perspective and technology perspective can explain 38.5% of variation in intent to adopt SBR. When the three control variables are included, R square increases by only 1.3% showing that the perspectives perform well even in the absence of the control variables.

The result seems to contradict the finding by Doolin & Troshani (2007) who report that organizational factors did not appear particularly relevant for XBRL adoption in Australia. Some comments from the respondents in this study have relevance to the organizational perspective. Those comments indicate that the size of specific organization(s) has an influence on the companies’ decision to report via SBR. For example one of the respondents stated “Due to the size of our company and efficiencies, we have already built into our processes, there is not enough upside to prioritise this (SBR) project.” But the regression analysis did not show any significant relationship between organization size and intent to adopt SBR. In fact, when organization size is included (as one of the control variables) in the regression equation, the value of ‘R’ squared increases only marginally (across all of the Blocks). Therefore, it is apparent that organizational size does not have a significant impact on the level of organizations’ intent to adopt SBR; rather the test variables used in the organizational perspective of the model explain the change in regression coefficients in Block 2.
Hypothesis 4: Organizational alignment and intent to adopt SBR

Kishore et al. (2007) developed this construct and showed that it had higher predictive ability than organizational compatibility in determining technology usage behaviour. This study uses Kishore’s (2007) concept of Organizational Alignment and hypothesizes that the intent to adopt SBR is positively related to this construct. The bivariate result suggests organizational alignment is significantly positively correlated with intent to adopt SBR (sig. = 0.003). This is preliminary evidence that the SBR facility could align well with the tasks, structure and values of the organizations. But to validate the hypothesis, there must be evidence of a significant relationship between variation in Organizational alignment and variation in intent to adopt SBR when other independent variables are included in the model. The regression coefficients indicate that the relationship is insignificant in Block 2 (p values of 0.486 and 0.364). The relationship remains insignificant in the subsequent blocks (Blocks 3 and 4) when the complete research model is assessed. Therefore H4 is not supported though the construct adds to the explanatory power of the organizational perspective; the individual relationship seems to disappear in the presence of other factors in the model.

The alternative measure of likelihood of SBR adoption offers additional evidence on the effect of organisational alignment, as given in the independent samples T-tests in Table 6.32.

Table 6.32: Organisational Alignment and the Stated Likelihood of First Wave Adoption of SBR

<table>
<thead>
<tr>
<th>Items and their latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std Dev</th>
<th>t-test for difference between means</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability of SBR to readily interface with current organization system</td>
<td>Unlikely</td>
<td>3.03</td>
<td>1.108</td>
<td>-2.193</td>
<td>.033</td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.72</td>
<td>1.074</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would facilitate an</td>
<td>Unlikely</td>
<td>2.47</td>
<td>.910</td>
<td>-3.331</td>
<td>.002</td>
</tr>
</tbody>
</table>

180
Table 6.32 reveals that likely adopters of SBR have a better perception of organizational alignment with SBR than the unlikely adopters. This significant result is consistent for all the six dimensions of organizational alignment. Likely adopters of SBR, therefore, have less concern for problems of organizational alignment than the unlikely adopters of SBR. Such a result is expected as the normative literature on XBRL and SBR suggest that adoption of SBR would not require a major change in the current organizational structure or systems.

**Hypothesis 5: Top management support and intent to adopt SBR**

The inference is that the adoption of SBR requires support from top management. With a correlation coefficient of .603, top management support is significantly correlated with intent to SBR (sig. = .000). The regression results show that the relationship
between top management support and intent to adopt SBR is significant in Block 2 (sig. = .000; sig. = .001 when including control variables). But when the environmental perspective is added to Block 2, the relationship becomes insignificant (see the result for Block 3 and Block 4). Therefore H5 is supported when only two perspectives (technology and organizational) are present in the model but that support is lost when environmental perspective is added to the other two perspectives. This means there are some indications that top management support is needed for SBR adoption in Australia.

The descriptive statistics for top management support and intent to adopt SBR are also quite similar. The logic for top management support is that if the management has a positive attitude towards SBR, the degree of uncertainty involved with SBR diminishes resulting in a less risky adoption of SBR. Probably that is why top management support is significant in the presence of variables of only technology and organization perspectives.

A comparison of means of the items in the construct ‘top management support’ between the groups of likely and unlikely SRB adoption in the first wave of implementation is given in Table 6.33.

Table 6.33: Top Management Support and the Stated Likelihood of First Wave Adoption of SBR

<table>
<thead>
<tr>
<th>Items and their latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std Dev</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has good understanding of the technology</td>
<td>Unlikely</td>
<td>2.42</td>
<td>.906</td>
<td>-3.829</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.56</td>
<td>1.247</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has close interest in SBR</td>
<td>Unlikely</td>
<td>2.22</td>
<td>1.072</td>
<td>-2.027</td>
<td>.048</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>2.83</td>
<td>.985</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the issue of</td>
<td>Unlikely</td>
<td>2.19</td>
<td>.889</td>
<td>-4.606</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>adoption as important</td>
<td>Likely</td>
<td>3.50</td>
<td>1.150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------</td>
<td>------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not consider</td>
<td>Unlikely</td>
<td>2.44</td>
<td>.843</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>difficult to adopt SBR</td>
<td>Likely</td>
<td>3.72</td>
<td>.669</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top management support</td>
<td>Unlikely</td>
<td>2.3194</td>
<td>.62852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.4028</td>
<td>.74330</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As expected, stated likely adopters of SBR have high top management support in comparison to unlikely adopters of SBR. The result confirms that top management who are more receptive to technological innovation (including SBR in this study) would be more willing to take risks associated with adopting a new IT solution (Thong & Yap, 1995). Risk taking is a characteristic of successful organizational adoption of technological innovation according to Howell and Higgins (1990).

**Hypothesis 6: Perceived financial cost and intent to adopt SBR**

Perception of financial cost has three dimensions – set up cost, running cost and training cost. The study hypothesizes a negative relationship between perception of financial cost and intent to adopt SBR. In the first instance, no significant correlation (at 0.05 level) is found between perceived financial cost and intent to adopt SBR. Further, the regression results show no significant relationship between perceived financial cost and intent to adopt SBR. This is true across all the blocks of analysis. Therefore, H6 is not supported, suggesting no relationship between perceived financial cost and intent to adopt SBR.

Absence of the relationship is quite surprising. In a related research Locke and Lowe (2007) report that preparers will face the bulk of the cost associated with XBRL implementation. Similar concerns are voiced by some of the respondents in this study.
One of the respondents has even stated “*(implementation of SBR) will have a massive transaction cost*” which prevents the company adopting SBR. Another respondent said, “*SBR will be hard to sell from a commercial perspective*”. Clearly they have concern for the high costs that comes with SBR implementation which made yet another respondent stating “*this (SBR) will just be a big project that costs and takes time without significant gain*”. Although regression failed to show a relationship, a comparison of means of the items in the ‘financial cost’ construct between the two groups of stated likely and unlikely adopters is given in Table 6.34.

Table 6.34: Perceived Financial Cost and the Stated Likelihood of First Wave Adoption of SBR

<table>
<thead>
<tr>
<th>Items and their latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std Dev</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Set up cost</td>
<td>Unlikely</td>
<td>4.36</td>
<td>1.018</td>
<td>3.153</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.44</td>
<td>.984</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High running cost</td>
<td>Unlikely</td>
<td>3.97</td>
<td>1.108</td>
<td>3.062</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.06</td>
<td>.873</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High training cost</td>
<td>Unlikely</td>
<td>4.50</td>
<td>.775</td>
<td>3.665</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.56</td>
<td>1.097</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived financial cost.</td>
<td>Unlikely</td>
<td>4.2778</td>
<td>.81455</td>
<td>3.904</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.3519</td>
<td>.83605</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results in Table 6.34 are backed up by the open-ended comments received from the respondents in the study. Likely adopters of SBR perceive the cost pressure significantly lower than the unlikely adopters of SBR.

Overall, variables in organizational perspective have been found useful in explaining the variation in intent to adopt SBR. But the variables seem to work as a group better. This is because, except for top management support in block 2, no variable showed a significant relationship with intent to adopt SBR. The variables are useful for categorising likely adopters from less likely adopters.

**6.4.3 Environmental perspective of intent to adopt SBR**

The impact of the environmental perspective can be assessed from Block 3 and Block 4 of the analyses. The addition of the environmental perspective to Block 2 allowed the researcher to evaluate the whole model and the result is discussed previously in this chapter. This section details the result specific to the environmental perspective of the study. The regression results show that the value of ‘R squared’ increases by .193 when the variables of environmental perspective added to Block 2 (Technology + Organizational perspective). Adjusted ‘R squared’ increases to .480 which is even better than what had been obtained in Block 2. Inclusion of control variables leads to an increase of ‘R squared’ value by only 0.029. Therefore the environmental perspective significantly increases the predictive ability of the research model to explain the intent to adopt SBR in Australia. This result is in line with the conclusions drawn by Doolin and Troshani (2007) and Cordery et al. (2011) that environmental factors are more prominent in explanations of the limited adoption of XBRL in Australia and New Zealand.

**Competitive pressure and intent to adopt SBR**

Unlike other studies in the field of technology adoption (e.g, Chewols et al., 2001; Huang et al., 2008 etc), two distinctive factors in competitive pressure are identified in
this study that relate to SBR adoption. These two factors are referred to as (1) Competitiveness and (2) Industry force in this study. The results also indicate that these two factors impact differently on intent to adopt SBR.

**Hypothesis 7(a): Competitiveness and intent to adopt SBR**

As indicated in literature review, a lot of innovation adoption studies have reported that competitiveness of business has a positive effect on the decision to adopt the innovation. The main argument is that when a company is facing keen market competition, there are strong incentives for it to search for new innovations to help maintain or enhance its competitive edge (Cordery et al., 2011; Huang et al., 2008; Chewols et al., 2001). This study however shows that there is no significant relationship between competitiveness and intent to adopt SBR. The result is true for both the bivariate analysis (non-significant correlation) and multivariate analyses (non-significant regression coefficients). Hypothesis 7(a) is not supported; the degree of perceived change in competitiveness of a listed company that SBR could achieve, has no significant effect on intent to adopt SBR.

Turning to the comparison of means of the items in the ‘competitiveness’ construct between the two groups of stated likely and unlikely adopters, results are given in Table 6.35.

**Table 6.35: Competitiveness and the Stated Likelihood of First Wave Adoption of SBR**

<table>
<thead>
<tr>
<th>Items and their Latent concept</th>
<th>Likelihood of first wave SBR adoption</th>
<th>Std. Mean</th>
<th>Std. Deviation</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Require fast access and analysis of data to remain competitive</td>
<td>Unlikely</td>
<td>3.89</td>
<td>1.450</td>
<td>-1.388</td>
<td>.171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>4.44</td>
<td>1.247</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

186
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Unlikely</th>
<th>Likely</th>
<th>Unlikely</th>
<th>Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Require more sophisticated system to remain competitive</td>
<td>4.08</td>
<td>4.33</td>
<td>1.339</td>
<td>.970</td>
</tr>
<tr>
<td>Require timely and reliable information to make decision</td>
<td>4.50</td>
<td>4.56</td>
<td>1.159</td>
<td>1.247</td>
</tr>
<tr>
<td>Require free time for staff</td>
<td>4.47</td>
<td>4.22</td>
<td>1.320</td>
<td>1.263</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>4.2361</td>
<td>4.3889</td>
<td>1.04701</td>
<td>1.03690</td>
</tr>
</tbody>
</table>

The results in Table 6.35 reveal no item to be significant. So it might be questioned: whether SBR adds anything extra into the existing infrastructure of the entities to extend or maintain their competitiveness. Perhaps entities in Australia believe they have well established accounting and business reporting systems already. The addition of the XBRL language and SBR requirements into their system might help entities extending their competitiveness in the longer-term, but that does not appear a reason for these entities to induce adoption, at least that is what the result in this study suggests. Perhaps this lack of effect on SBR adoption of perceived competitiveness to the company is due to management’s belief that an innovation to the medium for reporting to government regulatory agencies is a project that is remote from core value-generating strategies for the company.
Hypothesis 7(b): Industry force and intent to adopt SBR

The variable ‘Industry force’ measures whether an entity seeks to be leader or fast follower when it comes to adopting a new technology. With a correlation coefficient of .609, industry force is significantly correlated (sig. 0.000) with intent to adopt SBR on a bivariate basis. That correlation is further confirmed in the multivariate analysis as the regression result reveals that, unlike competitiveness, this factor is significantly associated with entities intent to adopt SBR (t=3.007, sig 0.004). When the model is controlled for respondents’ age, familiarity and company size, the variable ‘industry force’ remains significant at 0.003 level. H7(b) is, therefore, supported and a positive relationship has been found between industry force and intent to adopt SBR.

The comparison of means of the items in the ‘industry force’ variable between likely and unlikely adopters is given in Table 6.36. The results are all significant which complements the regression results.

Table 6.36: Industry Force and the Stated Likelihood of First Wave Adoption of SBR

<table>
<thead>
<tr>
<th>Items and their Latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow important competitors if they adopt</td>
<td>Unlikely</td>
<td>2.25</td>
<td>1.025</td>
<td>-3.642</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.39</td>
<td>1.195</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Become leader in introducing innovation</td>
<td>Unlikely</td>
<td>2.39</td>
<td>1.315</td>
<td>-3.161</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.56</td>
<td>1.199</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry force</td>
<td>Unlikely</td>
<td>2.3194</td>
<td>1.02227</td>
<td>-3.820</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>3.4722</td>
<td>1.09104</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The likely adopter companies are found to be more inclined to either lead or quickly follow others when it comes to adopting a new technology like SBR. Earlier it was found that competitiveness is not a significant predictor of technology adoption. But being recognized as leader or fast follower (of technology adoption) is significantly related to SBR adoption. What rationale can be given for these two findings? SBR is based on XBRL and, as indicated in the normative literature, XBRL promises to make the financial reports more timely, more reliable (less error) and more easily verifiable. When an entity starts to report using that technology, that entity might be viewed by regulators (and possibly by investors) as more reliable. This would be viewed by some CFOs as in their best interests and the interests of the business entity to be recognized favourably by corporate regulators. CFOs with such a view would want their company to become a quick follower, if not a leader, over their important industry competitors in adopting SBR. Therefore, it is not surprising that ‘Industry force’ in this study is significantly associated with Australian entities’ intent to adopt SBR. A delphi investigation by Bonson et al. (2009) found that being a pioneer with information technologies is an important factor for many of the companies participating in voluntary XBRL program in the US. In the same line it can be argued that companies in Australia may join the voluntary SBR program to improve their image with regulators and therefore ‘industry force’ in this study is found to be positively related to intent to adopt SBR.

Some earlier studies on the use of internet reporting offered evidence about this industry effect. Lymer (1999) noticed that the trend to follow the sector suggests that companies are very aware of what their rivals are using the Web for and are likely to respond more to what industry competitors do than to the community as a whole. The study by the FASB (2000) found that almost all of the companies interviewed at least occasionally monitor other organizations’ websites to stay abreast of what others are providing and also to generate ideas for what should be included on their website. However, the regularity and the profoundness of these activities are dependent on the philosophy of the company (Lybaert, 2002). This study suggests that the philosophy is now more towards becoming a pioneer or quick follower of the adoption of the SBR medium for
business-to-government data exchange in order to gain a superior reputation and sound working relationship between top management of the entity and its various government regulators.

**Hypothesis 8: Government pressure and intent to adopt SBR**

Financial and other business information reporting operates in a highly regulated environment and government plays a big hand in that regulation. Several adoption studies (e.g. Zhang et al., 2007; Teo et al., 1995) suggested that Government influence can strongly affect the take up of technology by entities. It is therefore assumed in this study that government pressure is likely to influence Australian entities’ intent to adopt SBR. The bivariate and multivariate results (particularly in Tables 6.24 and 6.25) give findings which indicate that the variable ‘Government Pressure’ is not a significant predictor of SBR adoption. Therefore H8 is not supported. No significant relationship is found between government pressure and intent to adopt SBR. It is an unexpected finding, given that SBR has been initiated by the Australian Government and its major agencies. The inference is that the government decision to date not to mandate the adoption of SBR, even to large listed companies, and the relatively ‘soft’ approach by the participating regulatory bodies means that government pressure is perceived by financial report preparer-managers in companies to be low.

**Table 6.37: Government pressure and the Stated Likelihood of First Wave Adoption of SBR**

<table>
<thead>
<tr>
<th>Items and their Latent concept</th>
<th>Likelihood of adoption by 2011</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request by government agencies has high priority for the organization</td>
<td>Unlikely</td>
<td>3.94</td>
<td>1.308</td>
<td>-1.908</td>
<td>.062</td>
<td></td>
</tr>
<tr>
<td>Request by government agencies</td>
<td>Likely</td>
<td>4.61</td>
<td>.979</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The non-significant results for the t-tests in Table 6.37 confirm that the extent to which a company gives high priority to requests by government agencies, monitors government initiated changes, or generally feels government pressure does not significantly determine whether that company is likely or unlikely to be a first wave adopter of SBR.

Locke and Lowe (2007) argue that a government push to get widespread voluntary adoption of XBRL by managers-preparers is less likely to succeed unless software tools for XBRL-based data extraction are widely available to all preparers. However, software vendors would push for government to mandate the adoption of XBRL by preparers, rather than try to help government succeed with a voluntary approach, so as to create an assured market for software vendor services. Therefore there is a circular argument according to Locke and Lowe (2007), which would undermine the government’s attempt to get preparers to voluntarily adopt XBRL. This problem about the role of software vendors/service providers in supporting government’s push for voluntary adoption is reflected in the following comments by respondents from the open-ended question in this study:

“A set of tools to support the development of XBRL based facilities is required (from Government) for uptake of SBR”.

“Software vendors have done little (to make XBRL a reality)”
“Getting the government to settle on a single set of definitions will be impossible. XBRL will require an explosion of info points so that every micro piece of information can be provided – just look at how the automated tax return process has gone.”

Hypothesis 9: Communication and intent to adopt SBR

The survey gives some unexpected findings about the level of communication about SBR. It has been found that the general level of communication about SBR is very low in Australia. The mean figure is 2.167 which does not even reach the ‘slightly agree’ scale. However, Table 6.38 reveals that those companies stating they would be likely adopters of SBR had significantly higher communication about XBRL/SBR through industry sources of information, attending seminars and checking websites than companies stating they would be unlikely adopters of SBR.

Table 6.38: Communication in the Industry and the Stated Likelihood of First Wave Adoption of SBR

<table>
<thead>
<tr>
<th>Items and their Latent concept</th>
<th>Likelihood of first wave adoption</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-test for difference between means</th>
<th>t</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our organization has received considerable information</td>
<td>Unlikely</td>
<td>1.94</td>
<td>.860</td>
<td>-3.175</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>2.78</td>
<td>1.003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended information seminars</td>
<td>Unlikely</td>
<td>1.86</td>
<td>1.073</td>
<td>-2.635</td>
<td>.011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>2.67</td>
<td>1.029</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevant staff regularly</td>
<td>Unlikely</td>
<td>1.69</td>
<td>.822</td>
<td>-4.781</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------</td>
<td>----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>visits treasury website</td>
<td>3.06</td>
<td>1.259</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>1.833</td>
<td>.73679</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.833</td>
<td>.96508</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-4.232</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

But the low ‘means’ in Table 6.38, even for the ‘likely’ adopting group, suggest in general that managers-preparers have not received or sought much communication about SBR. The likely adopters managed to go beyond the “slightly disagree” scale when asked whether they regularly visit the government website to gather information about SBR but the majority of the entities (less likely adopters) are less likely to visit the relevant website to gather information. The lack of communication is evident from the respondents’ comments also. These comments are reproduced below.

“Education information/resources (needed) for up skilling.”

“I find it disappointing that there is no active campaign to improve awareness (of SBR).”

“Haven’t seen much information (about SBR).”

“This (SBR) needs to be communicated if it (SBR) is intended for any other than large companies.”

Despite low levels of communication about SBR overall, this variable is found to be a significant determinant of intention to adopt SBR. First it was found that the level of communication is significantly correlated (correlation coefficient 0.537; sig 0.000) with intent to adopt SBR. Second, the regression analysis shows a significant association between the level of communication and intent to adopt SBR (sig. = .019 in the full
TOE model; sig 0.01 when control variables are included). Therefore, Hypothesis 9 is accepted—communication in the industry is positively related with intent to adopt SBR.

This finding is not surprising given the fact that the importance of communication is found in other parts of the world when XBRL is pushed to entities. Dunne et al. (2009) found that there was a significant lack of communication about XBRL with UK entities. The same study also reported that only a handful of organizations have consciously adopted XBRL in UK (Dunne et al., 2009). One of the voluntary adopters of SEC’s XBRL initiative in the US is AGL Resources. When asked his views on XBRL adoption the senior vice president of AGL, Bryan Seas stated that the frustrating part about making the transition to XBRL was the little information provided to users (Compliance Week, 2008). Similar concerns were voiced by other early adopters of XBRL in US (for complete interviews see www.complianceweek.com). The interview based study of Doolin and Troshani (2007) report that the availability of information about XBRL is important for the diffusion of XBRL in Australia.

From the findings in this study, it can be said that the degree of communication of information to managers-preparers about the SBR facility in Australia that is able to revolutionize the financial reporting medium is an important determinant of intention to adopt it. But not enough information about the SBR project is reaching the relevant management in business entities. The reason for this perceived poor communication may stem from respondents’ view regarding SBR to be technically difficult as an innovation (Nilakanta et al., 1990; Dewar and Dutton, 1986) and needing to form a technical group to help gather knowledge from their counterparts in the industry. However, it seems that organizational networks are not sufficiently effective yet to distribute information about SBR. In terms of information sources about SBR, this is currently left mainly to the Australian Government with some help from professional bodies like CPA Australia. The website, www.sbr.gov.au, indicates that the main vehicles used to distribute information are industry consultations, Webinar, and government media reports. The respondent comments from the survey suggest these information sources are not effective enough to raise awareness among manager-preparer. This is evident by the low rating given on the scale for communication about
SBR. SBR is still at the initiation stage of implementation and therefore improved communication strategies are required to induce adoption (Nilakanta et al., 1990).

6.5 Summary of the chapter

The chapter has detailed the results of hypotheses tested in this study. Overall the model (based on the TOE framework) is found to have high explanatory power (R-squared of 57%) of variation of intent to adopt SBR in Australia. This result confirms the suitability of the TOE framework for predicting organization level adoption of a technology. The variables of all the three perspectives (technology, organizational and environmental) need to be considered together to understand the complete picture associated with SBR adoption. The results of the hypotheses tests indicate a significant positive association of “industry force” and “communication” with intent to adopt. The inference is that these two variables, both from the environmental perspective of TOE, are the most important areas to emphasise if voluntary adoption of SBR is going to take momentum in Australia.
7. CONCLUSIONS

7.1 Introduction

This study has sought to contribute to theory development by operationalizing and jointly testing the dimensions of Tornatzky and Fleischer’s (1990) TOE framework in the context of a technical innovation of wide-reaching importance to players in the corporate financial reporting supply chain. The TOE framework has been invoked in this study as a mean of modelling the factors that could affect the intention of corporate manager-preparers to adopt the XBRL-based SBR facility for business-to-government transmission of financial and other compliance data in Australia. As a prelude to this application of the TOE framework, the study reviewed the arguments in the normative literature on the net advantages of the XBRL/SBR protocol to various parties in the financial reporting supply chain. Based on the normative assessment and empirical findings from the two phases of research, this study also seeks to provide insights of a practical nature relating to the adoption of SBR in Australia.

This chapter begins by revisiting the setting and objectives of this study. The chapter then proceeds to summarising the research findings. The implication of this research is then discussed followed by limitations and suggested future research directions.

7.2 Setting and objectives revisited

The rapid development in the field of information technology (IT) and its application to accounting is one of the major areas of challenges and opportunities to be faced by the accounting profession in the 21st century. While IT has introduced complexity to the business environment and increased the speed of business processes, it has also increased expectations among investors and other users for more timely business reports to help with decision making. The existing financial reporting system is challenged to catch up and live up to new expectations. The medium for processing and reporting
corporate financial and business information through the supply chain from the
manager-preparer to government regulators and to external users has been evolving. In
Australia, some major regulatory agencies of federal and state governments recently
went ‘live’ with a coordinated on-line reporting facility called Standard Business
Reporting (SBR), based on XBRL taxonomies, for electronic data exchange. The SBR
project represents a technology innovation offered to businesses that has been led by
government (i.e., the Australian Treasury with the co-operation of major business
regulators, the ASIC, ASX, ATO, ABS and State government Revenue Offices), with
the preceding support of IT consultants, software developers and accounting/auditing
firms. The preceding promotion of XBRL was driven by an association of professionals
called XBRL Australia Inc. formed in 2001.

XBRL, a variant of XML, defines the financial data on the web with explicit semantics
in a machine readable format (Yoon et al., 2011). Each financial item in XBRL
documents is assigned a unique, predefined tag. These tags are established to be
compatible with current financial accounting standards. Using these tags, every data
element is fully described in terms of its definition, format, location, calculation, and
labelling (Li et al., 2006). The tagging structure of XBRL provides interoperability of
the data and the whole objective of using XBRL is to improve the disclosure,
management and analysis of corporate data (Bonson et al., 2009).

The XBRL driven financial reporting platform (e.g. SBR) is said to facilitate the easy
automated production of financial data (Debreceny et al., 2010) and the availability of
software applications makes the analysis of such generated financial data possible
(Silveria et al., 2007). Other research has found that XBRL reduces information
asymmetry which enhances the decision making of different stakeholders in a corporate
reporting supply chain (e.g. Yoon et al., 2011). The Australian Treasury’s SBR project
has substantially drawn on the XBRL taxonomy project designed and implemented by
the government in the Netherlands. On 1 July 2010, the SBR facility went ‘live’, with a
launch that involved strong, albeit brief, promotion from the Australian government, its
regulatory agencies and the three Australian accounting professional bodies. It has not
been made mandatory for businesses to take it up. However it had been reported that voluntary adoption of XBRL by businesses has been poor (Cordery et al., 2011). In the US, under the voluntary XBRL filing program (2005 – 2008) only 137 companies (out of over 10000) had decided to adopt XBRL in the SEC’s program (Bonson et al., 2009). This low level of adoption occurred despite the SEC’s commitment to the voluntary program.

The intention to voluntarily adopt SBR by ASX listed companies is the research focus of this study. This raises the research question (for an Australian context) as to what factors drive or inhibit the voluntary adoption, or intention to voluntarily adopt, this new business reporting technology. By investigating this question, this study seeks to contribute to the research on XBRL by shifting the focus from technological issues to a wider range of organisational and external environment issues facing an entity when considering to adopt XBRL-SBR. The synthesis and critique of normative claims about XBRL in this study helps to assess the prospects for the Australian government’s SBR initiative achieving net benefits for separate major participant groups in the corporate financial reporting supply chain, assuming that widespread adoption of SBR will eventually occur by voluntary or mandatory means. Widespread adoption of SBR will engage corporate financial/tax/audit report preparers (including company financial/accounting officers, professional accounting/tax advisors, and external auditor), users (including investors and lenders) and regulators (particularly ASX, ASIC and ATO). The second phase of the study involves quantitative analysis of primary data from a questionnaire survey of CFOs of ASX listed companies. The analysis involves tests of hypotheses about effects of TOE-derived factors on the voluntary adoption of SBR. There is a gap in the literature on perceptions and behavioural intentions of company management and how this affects the take-up of the benefits that XBRL technology promises. This study addresses this gap by invoking the broadly-based TOE framework developed by Tornatzky and Fleischer (1990) to explain the adoption of technology innovations.
7.3 Major Findings

Both scholarly literature and practitioner comments on XBRL/SBR are reviewed to make a normative assessment of the claims made about this technology in terms of its potential to benefit (or disadvantage) each of the parties in the reporting supply chain. The conclusion reached from this assessment is that both users (mainly investors/securities analysts) and regulatory bodies have most to gain. Users are expected to benefit by more timely and reliable information from companies at less information gathering and processing cost to users. The regulators are expected to benefit by having better analysis capabilities with more up-to-date data. It would be easier for the regulators to identify problem companies in terms of non-compliance, and to aggregate business data for early indicators use in government fiscal, taxation and monetary policy decisions. In contrast, a synthesis of the literature on XBRL/SBR and its adoption from the preparers’ viewpoint (especially company financial/accounting managers) suggests that prepares have much to weigh up. There is the issue of costs. SBR (or XBRL) would reduce information processing cost in the long run but could cause competitive disadvantage by the more timely public availability of company proprietary data. There will be short-term costs involving the installation the SBR platform, the potential disruption to vital information processing and reporting systems, and management training costs. These short-term costs would involve the issue of reorganization of IT systems even though it is suggested XBRL is compatible with disparate computing platforms. The preparers would have future pressure to meet users’ expectation for continuous, real-time, financial reporting that the SBR facility could make possible. Proprietary information might be made available which has the potential to severely impair competitive advantage. But periodic compliance reporting would become much less burdensome for preparers in listed companies that have multiple government agencies to report to. These various issues mean a clear case in favour or against adoption of SBR cannot be made for manager-preparers. Preparers are left with uncertainty about both immediate and long-term cost-benefits of adopting SBR. Existing volatility in financial markets and higher uncertainty of economic outlook can
also prompt company management to defer the decision to adopt SRB/XBRL. Therefore, a critical aspect of getting wide take-up by manager-preparers of SBR in Australia is the regulators’ ability to gain their trust in the fact that data transmitted to government electronically will remain under the participating businesses’ control. The design of the SBR transmission process in a way that ensures data is routed to relevant regulatory agencies in limited information packages, and more comprehensive information is not centrally stored by government or shared between regulators, is a suitable way of allaying fears of manager-preparers about the loss of control of proprietary information. The transmission design, however, weakens the benefits that regulators and users could gain from the adoption of SBR in Australia. Normative assessment, therefore, does seem to point to advantages to all participants from a controlled adoption of SBR, with doubt remaining about net benefits to manager-preparers.

The survey on Top 500 ASX listed companies provided the strategy for modelling constructs and collecting data used to obtain findings on the intention to adopt SBR and its determinants. The eventual model had ten independent variables (relative advantage, compatibility, complexity, organizational alignment, top management support, perceived financial cost, competitiveness, industry force, government pressure and communication) and these independent variables were hypothesized as having relationships with the dependent variable in the model, intent to adopt SBR. The results show that adoption of SBR is not expected to happen on a large scale as the intention is very low. The inference is that entities, in the perception of their CFO, are not viewing the SBR facility as necessary or urgent even though technological benefits are well established. Troshani and Doolin (2005) consider Australian managers to be more reactive than proactive and have a 'wait-and-see' approach when it comes to adopting a new system.

While the mean for intent to adopt SBR is found to be relatively low, the interest in this study is in the factors that can explain the variation in this construct. The regression
model used in this study provides results on the independent variables that are related to the dependent variable, intention to adopt SBR. Regression results are summarized in Table 7.1.

Table 7.1: Summary of regression results

<table>
<thead>
<tr>
<th>IV</th>
<th>Beta</th>
<th>Sig.</th>
<th>Hypothesis number</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage (RA)</td>
<td>.090</td>
<td>.507</td>
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<tr>
<td>Compatibility (COMP)</td>
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<td>.096</td>
<td>2</td>
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<tr>
<td>Complexity (COMPL)</td>
<td>.001</td>
<td>.994</td>
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<tr>
<td>Organisational alignment (OA)</td>
<td>.154</td>
<td>.335</td>
<td>4</td>
<td>Not supported</td>
</tr>
<tr>
<td>Top management support (TMGT)</td>
<td>.238</td>
<td>.127</td>
<td>5</td>
<td>Not supported</td>
</tr>
<tr>
<td>Perceived financial cost (PFC)</td>
<td>.093</td>
<td>.481</td>
<td>6</td>
<td>Not supported</td>
</tr>
<tr>
<td>Competitiveness (COMPETE)</td>
<td>-.054</td>
<td>.643</td>
<td>7(a)</td>
<td>Not supported</td>
</tr>
<tr>
<td>Industry force (IF)</td>
<td>.425</td>
<td>.004</td>
<td>7(b)</td>
<td>Supported</td>
</tr>
<tr>
<td>Communication (COMM)</td>
<td>.316</td>
<td>.019</td>
<td>8</td>
<td>Supported</td>
</tr>
<tr>
<td>Government influence (GOV)</td>
<td>.081</td>
<td>.457</td>
<td>9</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

R squared: 0.578; Adjusted R square: 0.480; Sig. 0.002. DV: Intent to adopt SBR
The regression analysis reveals that 57.8% of the variation in the level of intent to adopt SBR can be explained by a combination of technological, organizational and environmental related factor. Overall predictive power increases to more than 60% when controlled for respondents’ familiarity, age and company. This study quantitatively confirms that organizational and environmental factors, in addition to technological factors, significantly improve the predictive power of adoption of a XBRL-driven reporting medium, SBR. The study did not find support for impact of technological variables (relative advantage, compatibility and complexity) and organizational variables (organizational alignment, top management support and perceived financial cost) on intent to adopt SBR. Two out of four variables (industry force and communication) in the environmental perspective were significantly related with intent to adopt SBR. This result is in line with the conclusion made by Doolin and Troshani (2007) who reported that environmental factors were more prominent in explanations of the limited adoption of XBRL in Australia. The results show that ‘competitiveness’ is not a significant predictor of technology adoption. But being recognized as a leader or fast follower (of technology adoption), i.e., industry force, is significantly related to SBR adoption. The reason might be attributed to the CFO’s attitude to be recognized as progressive and dependable by the key regulatory agencies that the CFO’s staff are likely to deal with. This study suggests that the strategy is now more towards becoming a pioneer of quick follower of dissemination of information, which has an impact on intent to adopt to adopt SBR. The study also reveals that communication in the industry is positively related with intent to adopt SBR. This finding highlights the importance of the role of communication for the success of a technology led initiative to make change in financial reporting. The study also reveals that Australian entities are not proactive enough when it comes to gathering information about SBR. Interestingly the demographic information on “Familiarity with SBR” (which is low) seems to support the responses on "Communication”. The survey suggests the information sources of SBR are not effective enough to raise awareness
among the entities. This is evident by the low rating given on the scale for communication about SBR.

7.4 Implications

This study contributes to the field of technology adoption research, but with specific relevance to the field of corporate financial reporting research. As identified by Sutton (2010), one aspect that has largely been ignored by financial accounting research is the rapidly increasing impact of IT on financial/accounting managers in organisations (Sutton, 2010). Taking the recent major SBR initiative led by the Australian Treasury as its point of reference, this study has sought to fill this research gap. Both the normative assessment of claims in the professional literature about the implications of XBRL, and the findings from the survey of CFOs in this study, lead to a common conclusion about the effect on SBR adoption of the technological perspective. This conclusion is that no matter what claims are made about benefits that arise from the technological features of the IT innovation (i.e., SBR), the manager-preparer of financial and other compliance reports of listed companies will be inclined to be more influenced by non-technical factors. In particular, it is found that manager-preparers are influenced by factors from an environmental perspective, namely, industry force (i.e., being recognized as an industry leader or fast follower of technology adoption by the key regulators and possibly by shareholders and securities analysts) and communication (i.e., receiving knowledge and advice about SBR and its consequences for the company’s control over its own proprietary data).

The practical implication of these conclusions is that a focused strategy to improving the success rate of voluntary SBR adoption by listed companies should be considered by the Australian Treasury’s SBR Group and the participating regulatory agencies. This focused strategy, suggested by the findings, is that the business case for organisations to adopt SBR needs to be communicated more effectively, perhaps through industry networks and software developers/consultants and accounting/auditing firms providing
more expert advice to their corporate clients. This business case need to include strong assurances that the data transmitted to government regulators and beyond them, will not cause the company to lose control of its raw financial and other business data, or be adversely affected by the way this data is re-interpretation by other players in the financial reporting supply chain. This communication strategy should be targeted at high profile/lead companies in different industries by the regulatory agencies to secure their adoption of SBR. If successful, the ‘industry force’ factor suggests that others in the industry would quick follow.

7.5 Limitations and future directions

This study is subject to limitations. The first limitation is the low response rate (11.25%) to the survey of CFOs, which has resulted in a relatively small data set for multivariate statistical analysis. However, the data satisfied the tests of non-response bias and sampling adequacy. Second, the generalizability of results from the data analysis may be questioned because of the relatively small data set from the survey. However, in terms of the representativeness of the respondent CFOs and their companies to the population of CFOs from the top 500 listed companies, the following supporting points arise from the sampling method and demographic data in section 6.1: (a) census sampling of the top 500 was undertaken, so lack of randomness of sampling is not an issue; (b) the respondents have an age and gender profile typical of top corporate management; (c) the companies of the respondents are well spread in size across the top 500; and (d) the familiarity of respondents with XBRL or SBR does not appear to be upwardly biased since only 25% have reported ‘somewhat familiar’ or better. Third, the study focuses only on “intent to adopt SBR” (and likelihood of adoption) but not on post-adoption “implementation”. A future longitudinal study is required to determine implementation issues associated with SBR adoption. Fourth, this is a cross sectional study. Therefore, the findings are true at the point of data collection. Similar studies in future might show how the intention has changed (from the point of this study) to get a fresh perspective on SBR adoption in Australia. Fourth, the scope of
companies included in the sample is limited to the top 500 listed companies in Australia. Other listed companies and private entities are omitted from the sample. The perceptions of these companies may well differ from the perceptions of the companies used in the sample. Any future research might target these other companies to complement the findings in this study. A future research might also consider replication of this study in a setting which includes public sector entities to understand their views on SBR. A cross-country study (e.g. with the Netherlands) can also be carried out in future. This sort of cross-country study might point to differences that Australia is experiencing when compared to a place where a similar initiative is being taken.

Finally, the survey instrument used in this study was self-administered and based largely on questions that required perceptions and opinions of the respondents. This can cause bias in the data due to respondent fatigue, acquiescence error or the halo effect. The ‘soft’ nature of survey data due to such limitations means that replication studies are desirable before the conclusions are firmly established. Another limitation lies with the model used for this research. As figure 4.6 suggests, the model does not assume the interaction effect of variables on intention to adopt SBR. The results of this study, therefore, should be interpreted assuming no interaction effect.

In terms of possible future directions for research, this study can be extended into the literature on real time reporting. The use of XBRL facilitates real time reporting over the internet. Yoon et al. (2011) found that XBRL reduces information asymmetry and increases transparency of businesses. The same can be true for SBR. Therefore this study can provide a basis for extension of research into the potential for increased real time financial disclosure in Australia and impacts on capital markets arising from the introduction of SBR by listed companies.

Another future research direction would be to obtain evidence from respondents other than CFOs or their senior management nominee. The views of professionals in the financial reporting and auditing chain, including SRB/XBRL software professionals,
external auditors and tax advisors concerning their role and incentives in the voluntary SBR adoption process could be investigated. This may offer insights into the identification of underlying factors that have resulted in the finding in this study that ‘communication’ about SRB is a significant matter influencing manager-preparer’s intention to adopt SBR.
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SBR website, [www.sbr.gov.au](http://www.sbr.gov.au)

XBRL international website, www.XBRL.org
Appendix 1

Information letter

<<Date>>

<<Type Address Line 1 here>>

<<Type Address Line 2 here>>

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<<Type Address Line 5 here>>  <<Type Address Line 6 here>>

Dear Chief Financial Officer/Head of Finance,

“Implementing Standard Business Reporting (SBR) – adoption of a computer language mark up protocol (Extensible business reporting language – XBRL) for financial and business reporting”

You are invited to participate in a research project being conducted by RMIT University. The research project titled “Implementing Standard Business Reporting (SBR) – adoption of a computer language mark up protocol (Extensible business reporting language – XBRL) for financial and business reporting” is being conducted by Mr. Saiful Azam (Lecturer in Accounting, RMIT University) as part of his PhD study in Accounting and is being supervised by Professor Dennis Taylor (Professor in Accounting, RMIT University). We are seeking your assistance in conducting this research.

The Australian Federal Treasury has begun to roll out a program called Standard Business Reporting (SBR) that will simplify business-to-government reporting. Businesses will be able to submit forms and interact on-line with ASIC, the ATO, State government Revenue Offices and the Australian Bureau of Statistics. This SBR facility is based on a computer language protocol called, Extensible business reporting language (XBRL). To take it up, your organisation will need to adopt a version of XBRL as an interface with it’s accounting and financial reporting systems. This project investigates Australian listed companies’ intention to adopt XBRL for the implementation of SBR.
This questionnaire is sent to the listed companies in Australia to investigate this intention.

Your response will be highly valued as the study will provide new understanding about the potential impact of current information technology developments on financial reporting practices in Australia. It will also identify the drivers and inhibitors of real time reporting in corporate Australia ahead of the forthcoming implementation of the Australian government’s standard business reporting (SBR) project. This survey will take about 15 minutes to complete. The responses will not require you or your organization to be identified, unless you would like to give your contact details at the end of the questionnaire so we can send you a summary report of our findings. Nevertheless, full confidentiality is assured.

We would highly appreciate you ensuring that this questionnaire is completed by a senior person in your company who is involved in making strategic decisions. Your response by 20 December 2009, if possible, would be highly appreciated.

This questionnaire has been approved by RMIT University’s Business College Human Ethics Committee. To discuss any ethical concerns, please feel free to contact Saiful via the details listed below. We would like to thank you for your valuable contribution to the research in advance.

Yours sincerely,

Mr. Saiful Azam
Lecturer & PhD candidate
Phone: (03) 9925 5716
Email: mdsaiulf.azam@rmit.edu.au

Professor Dennis Taylor
Professor in Accounting
Phone: (03) 9925 5765
Email: Dennis.taylor@rmit.edu.au
Appendix 2
Survey instrument

Part 1: BACKGROUND QUESTIONS

1. Familiarity of SBR (or XBRL)
   1. Very familiar
   2. Somewhat familiar
   3. Vaguely familiar
   4. Never heard of it

   If you answer ‘4. Never heard of it’, please do not proceed. We would appreciate you passing this questionnaire to a colleague in your organisation for completion.

2. Respondent’s gender: Male ☐ Female ☐

3. Respondent’s age: Below 30 ☐ 30 – 45 ☐ above 45 ☐

4. Respondent’s position title:
   Chief Financial Officer ☐
   Company Accountant ☐
   Senior or middle manager (finance) ☐
   Head of Information Technology ☐
   Senior or middle manager (IT) ☐
   Other (please specify) _____________________________

5. How long have you been working with the company? _____ years

6. Company size (approximate number of employees):
   Below 100 ☐

236
7. Type of company:
   - Agriculture, Forestry & Fishing
   - Mining
   - Manufacturing
   - Bank/insurance
   - Other Financial Services
   - Trade (Retail, wholesale or others)
   - Electricity, gas & water supply and engineering
   - Construction & transportation
   - Service (other than financial service)
   - Other (specify): _________________________

8. Which of the following describes your organization’s medium of electronic distribution of financial statements to external parties:
   - HTML (internet language)
   - PDF in company website
   - Java
   - Others (Please specify)
Part 2: Main questions- Please respond on a scale of 1- 6 (1 = Strongly disagree; 6 = Strongly agree)

*Relative advantages for the organization arising from SBR*

*Expected advantages to be gained from adoption of a computer language (XBRL) for the purpose of reporting via SBR are:*

01. Statutory reports could be processed substantially more quickly as unnecessary/duplicated information is removed from government forms.

02. Could make reporting a substantially less burdensome process for our organization as reporting can be done to multiple agencies with a single online sign-on

03. Could facilitate more effective decision making in our organization by providing timely, accurate and up to date financial information

04. Could give greater personal control by our managers over their own work

05. Could save processing costs in accounting reporting as SBR provides electronic interface to report to government agencies

06. Could increase productivity by reducing administrative time (e.g. reduce paperwork) as financial statements can be sent securely from accounting software.

*Compatibility*

*Compliance with SBR would be:*

07. Compatible with company’s information technology infrastructure

08. Compatible with our computerised data resources

09. Compatible with the organization’s transaction processing task

10. Compatible with the organization’s existing practices of financial report preparation

*Complexity*

11. We believe computer language (e.g XML) is not complex to use
12. We believe compliance with SBR requirement is not a complex process

**Organizational Alignment**

Reporting via SBR with the help of a computer language (XBRL) is likely to:

13. Provide improved support for the organisation’s current financial accounting and reporting system

14. Facilitate an increase in the accountability of relevant managers for timely and accurate reporting as SBR streamlines the process.

15. Be consistent with the skill base of employees performing transaction processing tasks

16. Be consistent with the current coordination of accounting and IT departments in respect to financial report preparation.

17. Be facilitated by the technical competence of our people in the relevant areas.

18. Provide easy realignment of the roles and responsibilities of the accounting/IT department (if necessary)

**Top management support:**

**Our company’s top executive team:**

19. Is proactive in addressing any needs to change the company’s internal and external reporting approaches

20. Has clear understanding of the advantages to be gained from reporting via SBR.

21. Has taken close interest in any other companies implementing computer language to comply with SBR.

22. Considers compliance with SBR as important to the organization

23. Recognizes the integral role IT (and adoption of IT innovations) in shaping organization’s strategy

24. Thinks it is not difficult to adopt computer language (XBRL) in our organization

**Perceived Financial cost**

**Compliance with SBR requires:**

25. High set-up costs for our organization
26. High running costs for our organization

27. High training costs for our organization

**Competitive factors**

**In general, the following actors are very important to our company’s ability to remain competitive within the industry:**

28. Fast access to and analysis of up-to-date financial information

29. Access to more sophisticated accounting and management systems

30. Timely and reliable financial data for making management decision

31. Freeing up time or staff from administrative burdens, particularly burdens of compliance reporting to government agencies.

32. Acting quickly to take up SBR if an important competitor adopts it

33. Being the leader in the industry in introducing innovations that improve processing efficiencies.

**Government Pressure**

34. Because the use of SBR for business-to-government reporting has been recently recommended (but not mandated) by the Australian Federal Treasury, our organisation feels pressured to take it up.

35. Timely and correct compliance reporting and the meeting of any requests by ASIC, the ATO or other federal and state government bodies is given high priority by our organisation.

36. Our organization, with the help of our business advisers, ensures that business-related legislative and regulatory changes proposed by governments and their agencies are closely monitored.

**Communication in the industry**

37. Our organisation has received considerable information about XBRL and/or SBR from these advocacy organisations.

38. Representatives from our organization have attended information seminars about XBRL or SBR conducted by XBRL Australia or any other party.

39. Staff in accounting or other areas of management in our organisation visit the Australian Treasury’s website to be kept up-to-date on progress with the roll out of SBR over the coming year.
Intent to adopt

I believe, relevant top management in our organisation (e.g the Chief Financial Officer, Chief Information Officer) have:

40. A strong intention to bring about the adoption of XBRL and the take up SBR as an integral part of the organisation’s financial and compliance reporting processes.

41. Asked for the preparation of proposed plans for incorporating the XBRL computer language protocol into financial reporting processes as a step towards taking up SBR.

42. Been well informed about XBRL and SBR and have developed a very positive view about it’s potential value for your organisation.

43. Given the fact that the Australian Treasury has announced that it’s SBR Project will go live as a non-mandated service to business organisations next year (July, 2010), what is the likelihood that your organization will adopt XBRL as a pre-cursor to taking up SBR by July 2011?

Highly Unlikely
Unlikely
Likely
Highly Likely