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Diffusion of a networked innovation: a stakeholder and social network view

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DIFFUSION OF A NETWORKED INNOVATION: A STAKEHOLDER AND SOCIAL NETWORK VIEW

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Abstract

The adoption of XBRL presents new opportunities for considerably enhancing the business information supply chain. However, its diffusion has proved to be very challenging. This paper draws upon stakeholder and social network theories to evaluate issues surrounding the diffusion of XBRL in Australia. Qualitative empirical evidence is used to identify XBRL stakeholders and to assess their salience which we consider to be a key characteristic of stakeholder networks. We find that there is lack of salience among the current XBRL stakeholders in Australia. While all stakeholders were found to have a legitimate basis for adopting XBRL, most lack power or centrality and none possesses urgency claims for XBRL. Taken together these factors are likely to have a significant impact on XBRL diffusion. As a remedy, instrumental measures, such as knowledge building and deployment, subsidy, mobilisation, standard setting, and innovation directive by way of which organisational stakeholders can positively affect XBRL diffusion are critically assessed. The need for normative action is also highlighted.

Keywords: XBRL, innovation diffusion, stakeholder theory, social network theory.

1 INTRODUCTION

Innovation diffusion constitutes the capacity to spread the production and the use of an innovation in practice (Muzzi & Kautz, 2004). Within the IS literature, some attention has been focused on the role of various institutions and social networks in the diffusion of information technology related innovations. For example, King et al. (1994) recognise the importance of institutional intervention in the process of innovation diffusion. Particularly, they highlight the importance of the roles of governmental or quasigovernmental institutions as "the most powerful institutional forces affecting innovation" (p. 162) in the form of deliberate decisions to intervene or refrain from intervening. However, the appropriate and specific nature of the roles of these institutions has yet to be determined (King et al., 1994).

Other research has considered the relevance of knowledge-sharing in institutional networks. For example, the knowledge-sharing role of professional associations and technology suppliers in diffusion of production and inventory control (PIC) systems and computer-aided production management (CAPM) systems was elaborated in (J. A. Swan & Newell, 1995) and (J. Swan et al., 2000). The knowledge building, deployment and standard-setting roles of intermediating institutions including professional, trade and industry associations, in the diffusion of electronic data interchange (EDI) have been examined by (Damsgaard & Lyytinen, 2001). Specifically, institutional measures were analysed in terms of mode of institutional involvement (e.g. influence versus regulation) and the type of diffusion force (e.g. supply push versus demand pull). Similarly, the roles of external parties, such as trade associations, standard-setting bodies and consultancies, in the diffusion of efficient customer response (ECR) systems are examined by (Kurnia & Dare, 2005). The study concludes that external parties can minimise adoption and diffusion barriers by assuming advisory, research, educational, promoting, and facilitating roles. Further studies have examined the diffusion of electronic commerce technologies, and the elimination of the digital divide, using the notion of stakeholders in electronic commerce policy-making by government agencies at a national level (Papazafeiropoulou, 2004; Papazafeiropoulou & Pouloudi, 2002; Papazafeiropoulou et al., 2001; Pouloudi, 1999). Nambisan & Agarwal (1998) combined stakeholder and social network theories to analyse the diffusion of the National Information Infrastructure (NII) in Singapore. However, efforts to introduce stakeholder theory and social network theory in the diffusion of networked information technologies have not been systematic (Papazafeiropoulou, 2004). The aim of this paper is to contribute to this literature by applying stakeholder and social network theory to the analysis of the roles of institutional stakeholders in the diffusion of eXtensible Business Reporting Language (XBRL) in Australia (Donaldson & Preston, 1995; Freeman, 1984; Rowley, 1997).

The use of XBRL, an XML derivative, for business reporting has been heralded as a source of fundamental change in the business information supply chain. XBRL has the potential to affect interorganisational electronic business interactions by considerably enhancing information and communication flows and increasing the creation and sharing of knowledge among organisations. The examination of XBRL diffusion through the lens of stakeholder theory is important because it helps identify those institutional stakeholders that might be in more or less favourable adoption positions with respect to access to technology and expertise, for instance (Papazafeiropoulou et al., 2001). This knowledge can provide valuable input into the design of proactive and sensitive diffusion strategies (Donaldson & Preston, 1995; Freeman, 1984; Papazafeiropoulou & Pouloudi, 2002; Papazafeiropoulou et al., 2001). However, no matter how comprehensively performed, simple examination of individual stakeholders is insufficient. Rowley (1997) argues that organisations "do not simply respond to each stakeholder individually; they respond rather to the interaction of multiple influences from the entire stakeholder set." (p. 890). It follows that the structure of the social networks and the nature of the pre-existing patterns of relationships constitute the basis of multiple and interdependent interactions among the stakeholders (Muzzi & Kautz, 2004; Rowley, 1997).

Understanding these structures and relationships helps anticipate possible collisions among the collaborating stakeholders, which constitute a "definite source" of failures in the implementation of networked systems (Heikkilä et al., 2004).

The rationale of technologies, such as XBRL, is to provide social benefits which can be derived from positive network externalities associated with mass adoption (Katz & Shapiro, 1986; Markus, 1990; Papazafeiropoulou & Pouloudi, 2002). Consequently, such technologies constitute "notably network innovations" (King et al., 1994, p. 160), and therefore, diffuse through social networks linking individuals and/or organisations. The diffusion of network innovations, such as XBRL, in their environmental level, which includes institutional and regulatory entities, is highly complex and has been neglected in the literature (Heikkilä et al., 2004; Kurnia & Johnston, 2000; Papazafeiropoulou, 2004).

This paper seeks to overcome this shortcoming using XBRL diffusion in Australia as an illustrative example. The extent of XBRL diffusion in Australia has been limited, and we explain why this situation has occurred through an analysis of the role that institutional stakeholders and their networks play in the diffusion of networked innovations. The next section briefly describes XBRL and its features. The stakeholder and social network theories used in the analysis are then introduced. A short outline of the method used in the study follows. Subsequent sections discuss descriptive, salience and instrumental and normative aspects of the main XBRL stakeholders in Australia, before some concluding comments are made.

2 AN OVERVIEW OF XBRL

XBRL is an Internet-based, non-proprietary open standard which is used for the preparation, exchange and publishing of financial information among disparate computer platforms, software applications, and accounting standards (Hasegawa et al., 2003; Jones & Willis, 2003). In general, with XBRL, the efficiency of the entire information supply chain is considerably enhanced (Boyd, 2004a). As a derivative of XML, XBRL takes advantage of the 'tag' notion which associates contextual information with data points in financial statements. When formatted with tags, financial statements are called XBRL instance documents. The tags themselves are based on accounting standards and regulatory reporting regimes and are defined in XBRL taxonomies (Pinsker, 2003). These are developed for specific countries, accounting jurisdictions, and even specific organizations (Deshmukh, 2004). Sometimes, multiple instance documents produced using different taxonomies need to be processed by the same software tool. Capabilities of this nature are enabled by the XBRL specification, which constitutes the technology platform determining how XBRL works. This specification is central to the operation of XBRL. With XBRL, there are several different potential innovation adopters. These include individual organizations, accounting firms, investors and analysts, stock exchanges and regulatory authorities (Bergeron, 2003). These adopters are different in the way they deal with financial reports, and therefore, in the way they benefit from XBRL. Generally, some of these adopters produce financial reports, while others consume them. Producers and consumers are, therefore, connected through mutual information flow requirements.

3 THEORETICAL BACKGROUND: STAKEHOLDER AND SOCIAL NETWORK THEORIES

Since Freeman's (1984) introduction of stakeholder theory, several researchers have used this theory to examine the responses of organisations to internal and external influences (Donaldson & Preston, 1995; Mitchell et al., 1997). This has validated the theory further and added greater theoretical rigour

to it. We have adapted Freeman's (1984) original definition[1] of stakeholders to suit our research context. We view a stakeholder as any group or individual who can or is affected by XBRL. A widely accepted classification framework defining the three aspects of the stakeholder theory was proposed by Donaldson & Preston (1995):

i) With the *descriptive* aspect, "the theory is used to describe, and sometimes to explain, specific corporate characteristics and behaviours" (p. 70), such as the nature of the organisation.

ii) With the *instrumental* aspect, the theory "is used to identify the connections, between stakeholder management and the achievement of traditional corporate objectives (e.g., profitability, growth)" (p. 71).

iii) With the *normative* aspect "the theory is used to interpret the function of the corporation, including the identification of moral or philosophical guidelines for the operation and management of corporations" (p. 71).

Social network theorists focus on relationship patterns or network ties among the participants of the organisational stakeholder network. They argue that there are two aspects that determine the behaviour and the propensity of a stakeholder towards adopting technological innovations (Nambisan & Agarwal, 1998; Rowley, 1997). First, network density measures its interconnectedness in terms of "the relative number of ties in the network that link actors together" (Rowley, 1997, p. 896). Second, centrality refers to an organisation's formal power or prominence in the network relative to others. If an organisation is in a central position, it then has the ability to influence the adoption behaviours of other members in the network. Closely associated with centrality is also the notion of an organisational stakeholder's salience in its network relative to others. Mitchell et al. (1997) argue that salience in the network is characterised by three attributes, namely, *power*, *legitimacy* and *urgency*. Power constitutes the ability of those who possess it to bring about the desired outcomes and is similar to the notion of centrality discussed by Rowley (1997). Legitimacy constitutes the perception that the actions of an organisation are appropriate within a socially constructed system of norms, values, and beliefs. Urgency is the degree to which stakeholder claims are critical, and therefore, require immediate attention.

In the paper we focus on stakeholder salience as a key characteristic of the stakeholder network. Organisations that possess one or more or different combinations of the attributes discussed above have different levels of salience which determines their role in innovation diffusion (Mitchell et al., 1997). For example, low salience stakeholders possess only one attribute and are called *latent stakeholders*. *Expectant stakeholders* possess any two attributes, whereas highly salient stakeholders possess the combination of the three attributes and are referred to as *definitive stakeholders*. Definitive stakeholders are most likely to have a stronger influence than stakeholders in the other categories to positively or negatively affect innovation diffusion.

4 METHOD

The research reported in this paper is exploratory and employs qualitative evidence. Given the uncertain and intricate nature of XBRL, which is still at an embryonic stage, we believe that its diffusion can be better understood by examining the interpretations of the relevant members of the XBRL community in Australia (Van de Ven & Rogers, 1988; Wolfe, 1994). Qualitative empirical data were collected via semi-structured interviews which provided rich insights for identifying and understanding viewpoints, attitudes, and influences (Frankfort-Nachmias & Nachmias, 1996). All 27 organizational members[2] of the local XBRL consortium, XBRL Australia Ltd., were approached.

[1] A stakeholder constitutes "any group or individual who can affect or is affected by the achievement of the firm's objectives" (Freeman, 1984, p. 25).

[2] The current members of XBRL Australia Ltd can be found in http://www.xbrl.org.au/members/

Eleven representatives of these organizations agreed to be interviewed. To maintain anonymity, only the categories of these organizations have been identified in Table 1.

Organization Category	No of Key Informants Interviewed
Large Accounting Firms	4
Software Developers and Vendors	3
Regulatory Agencies	1
Local Consortium (XBRL Australia Ltd)	1
Tertiary Accounting Educators[3]	2
Total Interviews	**11**

Table 1: *Categories of organizations and number of interviews*

The interviews were focused on perceptions of the drivers and inhibitors of XBRL adoption in Australia. The contents of the interview transcripts were analyzed thematically. Codes were developed which provided the basis for cross-case analysis and helped identify and analyze emerging patterns of themes (Carson et al., 2001).

We believe that construct validity has been adequately addressed. First, multiple sources of information were used (Yin, 1989). While interviews constitute the primary source of information, some of the informants also provided supporting documentation. Second, as shown in Table 1, the informants belong to different categories of the XBRL community, and therefore, would provide different perspectives. This constitutes an important type of triangulation of qualitative information sources (Patton, 1990). Third, two investigators conducted ten of the eleven interviews, and both analyzed all of them (Patton, 1990). This kind of triangulation reduces the potential bias which is commonly cited as a limitation of interviews (Frankfort-Nachmias & Nachmias, 1996). According to Yin (1989), these enhance the construct validity as well as the reliability of the research, thereby boosting its overall quality. Finally, it is clear that this study is based on the Australian context, and therefore, we accept its external validity cannot be ensured. Consequently, our findings may not be readily generalizable beyond this study. To ensure generalizability, further research is required, both in Australia and in other contexts.

5 DESCRIPTIVE ASPECTS: CURRENT XBRL STAKEHOLDERS

XBRL is expected to create benefits to all stakeholders of the business information supply chain. These participants and the nature of their involvement and benefits are discussed below.

Large Accounting and Auditing Firms. XBRL creates a computing infrastructure which enables both accountants and auditors alike carrying out additional consultancy and value-added services for their clients in addition to basic reporting. Besides, XBRL helps these parties to interact more efficiently with other entities on behalf of their clients while increasing accountability and transparency (Pinsker, 2003). Since XBRL eliminates the manual transfer of information, there will be fewer errors of omission and commission.

Accounting Bodies. As indicated earlier, XBRL taxonomies are based on accounting standards. Because accounting bodies[4] are considered to be the "standard-setters" it is logical for them to be at

[3] The interviewed academics had both been involved in teaching XBRL in tertiary institutions in Australia and they were also members of XBRL Australia Ltd.

[4] The accounting bodies in Australia include CPA Australia, the Institute of Chartered Public Accountants (ICPA) and the Australian Accounting Standards Board (AASB).

least partially responsible for the development of the XBRL taxonomy including updates, maintenance, versioning etc. Failure to resolve post-adoption maintenance concerns might have an adverse impact on the diffusion of XBRL in Australia.

Software Developers and Vendors. XBRL is very complex, and producing instance documents manually is a practical impossibility. Consequently, the benefits of XBRL cannot be delivered without automated software tools. These are developed by software developers and distributed by vendors. Software support is crucial if the XBRL technology is to succeed (Pyman, 2004). In this context, software vendors can deliver practical solutions supporting the implementation of XBRL initiatives and allow potential adopters see the benefits that XBRL can deliver.

International and Local Consortia. XBRL was developed under the auspices of the XBRL International, a consortium which oversees the evolution of the XBRL Specification and coordinates the efforts of the local consortia. The latter cover local jurisdictions based on countries, regions or internationally recognized business reporting regimes (Doolin & Troshani, 2004). The aim of the local consortia includes the promotion of XBRL to organizations in their respective jurisdictions and the development of local taxonomies. As noted earlier, the local consortium for Australia is XBRL Australia Ltd.

Government Regulatory Agencies. In Australia, individual organizations are required by law to submit financial reports regularly to regulatory government authorities, such as the Australian Taxation Office (ATO), the Australian Securities and Investment Commission (ASIC), and the Australian Stock Exchange (ASX). Upon collection, these authorities aggregate and repurpose financial and non-financial information from disparate systems in non-interchangeable formats which can be time-consuming, error prone and costly (DiPiazza & Eccles, 2002; Pyman, 2004; Shin, 2004). With XBRL, regulators can facilitate the standardisation and harmonisation of international business reporting standards and incur cost savings associated with their acquiring and absorbing information from businesses (Finkelde, 2004). Many commentators believe that regulatory agencies can play a critical enabling role in XBRL diffusion if they choose to mandate XBRL reporting through legislative requirements (Troshani & Doolin, 2005).

Educational Institutions. Tertiary education institutions, such as universities, are well-placed to establish awareness of XBRL and its benefits and to disseminate knowledge about how to use it. Informed graduates are more likely to contribute to broadening the extent of XBRL adoption and implementation with their future employers (Pinsker, 2003). Although XBRL-enabled software tools exist, graduates may not necessarily need to know how to program in XBRL. These tools would feature functions facilitating the preparation of XBRL instance documents. However, these graduates need to know what XBRL does "behind the scenes" and how to use and analyse XBRL outputs. Consequently, basic XBRL education is appropriate (Pinsker, 2005).

Individual Organisations. Potentially, the largest group of XBRL users are individual organisations, who are expected to use XBRL to streamline their internal financial and operational reporting systems. Using XBRL, organisations could produce basic financial information once and deliver it in a range of formats for internal management purposes as well as external reporting. The benefits of doing so are likely to include reduced information processing time and errors, potentially leading to more timely reporting and quicker decision making. However, individual organisations have been slow to adopt XBRL, and their ability to do so may hinge on the availability of XBRL-enabled enterprise and accounting software (Doolin & Troshani, 2004).

6 SALIENCE OF XBRL STAKEHOLDERS IN AUSTRALIA

Using the data collected from the interviews we classified each stakeholder in terms of their salience attributes. This acknowledges stakeholder salience as the key feature of the stakeholder network. These attributes have been summarised in Table 2 below:

Stakeholders	Centrality/ Power	Legitimacy	Urgency	Salience Level/ Stakeholder Type
Large Accounting and Auditing firms	✓	✓		Moderate/Expectant
Accounting Bodies	✓	✓		Moderate/Expectant
Software Developers and Vendors		✓		Low/Latent
International and Local Consortia		✓		Low/Latent
Government Regulatory Agencies	✓	✓		Moderate/Expectant
Educational Institutions		✓		Low/Latent
Individual Organisations		✓		Low/Latent

Table 2: Salience attributes for the XBRL stakeholders in Australia

From the previous discussion of the descriptive aspects of XBRL stakeholders in Australia, we can see that all the identified stakeholders have a legitimate basis for adopting or promoting XBRL. However, most of the stakeholders lack the power or centrality to effect change. We can categorise these as latent stakeholders. The three exceptions are the large accounting and auditing firms, the accounting bodies and government regulatory agencies, which are expectant stakeholders. Nationally and internationally, the large professional accounting firms are prominently positioned in their industry. They are actively involved in standard-setting processes, and in the provision of consulting and advice to corporate clients and government. Most have also chosen to take an active role in the development of the international XBRL consortium and in local XBRL consortia. The various accounting bodies are also (at least potentially) influential through their regulation of the accounting profession and the standard-setting process. Finally, as noted earlier, government regulatory agencies have a potentially powerful role to play through legislative mandating of XBRL use. We do not believe that any of the stakeholders listed in Table 2 above held urgent claims for XBRL in Australia at the time the data collection and we identified several reasons explaining this. These are discussed below.

6.1 Alternative Solutions and Non-Standard Forms of XBRL Implementation

There was general agreement among the interviewees that XBRL adoption is not urgent. For example, three of the interviewees indicated that their organisations used alternative software solutions to accomplish the same aims that XBRL purports to fulfil. One interviewee indicated that XBRL is perceived as “a solution in search of a problem”. Consequently, at the time of the interviews, there were no compelling reasons motivating these organisations to adopt XBRL-based solutions. Another concern raised was the emergence of non-standard XBRL implementations and competing XML solutions. These force potential XBRL adopters into a ”wait-and-see” stance, because they need to ensure that XBRL will indeed become a dominant standard before investments in XBRL-based solutions can be made, delaying any plans to implement XBRL.

6.2 Lack of Dominant Design of Accounting Standards: The IAS Priority

Currently, XBRL diffusion in Australia has been adversely affected by other pressing priorities that potential adopters face. The local accounting industry is under pressure from the Australian Financial Reporting Council (AFRC) to adopt the International Accounting Standards (IAS) by 2005. In XBRL, accounting standards constitute the basis for taxonomy development. Consequently, XBRL adoption has been pushed back. In addition, when IAS is eventually in place, existing XBRL taxonomies are likely to become irrelevant and obsolete. Clearly, this hinders current XBRL development efforts and slows down diffusion.

6.3 Perceived Instability of the XBRL Specification

The XBRL Specification has undergone significant changes before arriving at its current version. The earlier versions of this specification had serious deficiencies. While the progression through the various versions was considered by some interviewees as a normal iterative evolution, others perceived it as a major inhibitor to XBRL adoption. In addition, XBRL-enabled software tools are based upon the XBRL Specification. The software vendor interviewees, in particular, argued that even small changes in the newer versions of the specification raise serious compatibility problems between software tools that rely on previous specification versions and those that rely on newer ones. Costly redevelopments and the likelihood of wasted effort may force developers to wait for the Specification to stabilize. All these combined, adversely affect XBRL adoption as suggested.

6.4 Local Business Culture

Interviewees were consistent in indicating that the general business culture in Australia tends to be of a "wait-and-see" nature which does not contribute to XBRL diffusion as shown in the statement:

> "I think it would be fair to say Australia is very keen on take up of technology but not keen to be the first to do it. Always keen to be fast follower. You know, show me where it's been done well elsewhere and I'll be really keen to pick it up and do it as quickly as possible, but not super keen to be the guinea pig… That's a general comment about the business environment here and the way business sees technology here." (Large Accounting Firm interviewee)

Based on the four reasons discussed above, we consider that there is lack of urgency for all XBRL stakeholders in Australia, implying a lack of definitive XBRL stakeholders. This, we consider, has been the major barrier to the diffusion of XBRL in Australia. Next we address the question of how this situation might change. We suggest that a sense of urgency may be added to XBRL stakeholder claims through a range of instrumental institutional actions by some or all of these stakeholders, and we consider the extent to which this has occurred.

7 INSTRUMENTAL ACTIONS

King et al. (1994) outline six forms of institutional intervention in IT innovation: knowledge building, knowledge deployment, subsidy, mobilisation, standard setting and innovation directive. These represent instrumental actions through which institutional stakeholders can influence XBRL diffusion in Australia.

Knowledge Building. The creation of technical and business knowledge underlying XBRL is an essential part of its diffusion as an innovation. No specific stakeholder in Australia has taken responsibility for developing this knowledge, most being happy to leave that function to the supply side or the XBRL International consortium. Funding research that builds the knowledge necessary for innovative activity is one option open to XBRL stakeholders; assembling and coordinating taskforces that learn about XBRL is another (Damsgaard & Lyytinen, 2001; King et al., 1994). As Damagaard & Lyytinen (2001) note, joint knowledge-building is necessary for the development of a common solution in netwoked technologies. XBRL Austalia has been involved coordinating the creation of XBRL taxonomies suitable for the Australian setting.

Knowledge Deployment. The distribution of knowledge is important in building awareness concerning XBRL and its benefits among potential adopters. Knowledge deployment measures include the provision of education and training about XBRL that may also create a pool of skilled potential users (King et al., 1994). Currently, XBRL Australia and some educational institutions provide XBRL education services, although not in a coordinated and extensive manner. XBRL awareness-building exercises among members of the Australian accounting bodies have occurred, but mostly in response to consumer demand rather than supply push. More proactive promotion of XBRL has occurred

among the clients of some of the large accounting firms, although again often reliant on their international connections as opposed to local initiatives. Partly this is the result of a relatively small number of individuals within these firms maintaining an active involvement with XBRL. XBRL Australia hosted the 3rd XBRL International Conference in Sydney in 2001, considered to be an influential way to promote XBRL within the local jurisdiction. The representative of XBRL Australia emphasised the generally low level of understanding of XBRL in Australia, and in many cases, misunderstandings. However, while knowledge deployment awareness building is a necessary pre-condition for the diffusion of XBRL, by itself, except for potentially influencing the adopters' evaluations of XBRL as an innovation, it is insufficient to drive its diffusion (Abrahamson & Rosenkopf, 1997; Rogers, 1995;Damsgaard & Lyytinen, 2001).

Exemplar adoptions of an innovation are conducive to the emergence of a social learning phenomenon based on the "law of imitation" (Hamblin et al., 1979). "Everyone makes his own decisions, not just on the basis of his own individual experiences, but to a large extent on the basis of the observed or talked about experiences of others. Thus, the collective [diffusion] process involves some direct learning but mostly observational and symbolic learning." (Hamblin, Miller, and Saxton, 1979, p. 809). This has the potential to cause potential adopters learn and adjust innovation-related evaluated profits upwards, therefore, resulting in bandwagon pressures of adoption (Abrahamson & Rosenkopf, 1997). XBRL success stories of large and reputable organisations such as banks, major accounting and auditing firms, and government regulatory agencies were considered by all informants to be conducive for the adoption and diffusion of XBRL in Australia, because they have the potential to set an example of how XBRL can be used and its benefits experienced (Papazafeiropoulou et al., 2001). However, there have been few success stories of XBRL adoption in Australia.

Subsidy. The activities of early adopters that are involved in the diffusion process can be subsidised with direct financial support or other incentive schemes (Damsgaard & Lyytinen, 2001). This is important because at the beginning of the diffusion process network externalities are very limited. As a result, the commitment of significant resources is required and the adoption barriers, costs and risks are likely to be high for early adopters. Besides, expertise is likely to be less accessible due to limited funds (Muzzi & Kautz, 2004). Together, these factors constitute a serious obstacle to the attractiveness and implementation of the innovation in the adopter's setting. Subsidies are targetted activities designed to reduce the costs or risks associated with innovation adoption by another party. These may include the funding of prototype development, acting as the procurer of products or services incorporating an innovation, the provision of benefits associated with using an innovation (King et al., 1994). Often governments or powerful industry organisations may be able to act in this way. However, the local XBRL Australia consortium lacks the financial resources to undertake this role, relying on a limited membership base and the voluntray and part-time input of a small number of interested individuals. While various Australian government institutions have the potential to act as procurers of XBRL products and services, few have done so, and there seems to be no coordinated approach to supporting XBRL diffusion across government. As noted most XBRL stakeholders in Australia are content to adopt a "wait-and-see" approach, with neither software vendors or potential institutional consumers of XBRL ready to make the first move in a subsidy-like intervention. Our informants consistently commented on the limited availability of XBRL-enabled software solutions, with which potential adopters could learn about the XBRL innovation and the way it functions, and assess its characteristics and suitability for their needs (Rogers, 1995; Van de Ven & Rogers, 1988).

Mobilisation. The mobilisation of bias involves articulating a particular perspective of an innovation, encouraging potential adopters to think in a usually favourable way about that innovation. This is often achieved through the propogation of optimistic intrepretations of a technology and grand visions of its use in society (Damsgaard & Lyytinen, 2001; King et al., 1994). Internationally, XBRL is typically portrayed as a "digital information revolution" (Higgins & Harrell, 2003), and certainly XBRL Australia and a number of accounting bodies and large accounting firms have consistently promoted a positive interpretation of XBRL and its outlook (Huxtable, 2002; Pyman, 2004).

Standard Setting. Standard setting involves the development of agreed standards or local practices among potential innovators, enabling the use of an innovation as a standard and/or limiting the use of other options. Standard setting is considered essential in the widespread diffusion of networked technologies given the systems and organisations that form the community of use (Damsgaard & Lyytinen, 2001; King et al., 1994). While standard setting in relation to XBRL is occurring under the auspices of XBRL Australia, and with the involvement of the accounting bodies and large accounting firms, as noted earlier, the necessary prior development and deployment of International Accounting Standards has hindered the development of agreed local XBRL standards.

Innovation Directive. Innovation directives are normative commands prescribing the production or use of an innovation (Damsgaard & Lyytinen, 2001; King et al., 1994). In the XBRL context, such regulation setting can be implemented by organizations with legislative powers, such as regulatory government bodies. These bodies could mandate XBRL reporting by enforcing it as law. This action would start mass adoption and diffusion of XBRL and boost it significantly. However, if XBRL is imposed as a standard, some implications warrant attention. First, if regulatory bodies and other adopters were to move their entire operation to XBRL, many of their employees would suddenly become redundant. Second, regulatory bodies can force adoption for their specific needs, which is likely to narrow down the focus of XBRL, and therefore, be a limiting factor to its widespread adoption. Third, making XBRL mandatory may be a labor-intensive and complex undertaking as it requires specific procedures to be followed. This includes ensuring that XBRL will not cause problems to adopters. It also requires amending the relevant legislation accordingly. All this, combined with a democratic-styled economy and the Australian character which is "very suspicious of authority" would make mandating XBRL adoption time consuming and a highly intricate endeavor.

8 CONCLUSION: A NEED FOR NORMATIVE ACTION?

In this paper we have examined the diffusion of XBRL using the stakeholder and social network theories which provide a concise picture of rich empirical diffusion evidence to understand communities of stakeholders, their motivations, roles and instrumental capabilities. After discussing the descriptive aspects of the current Australian XBRL stakeholders, we found that there is lack of salience among them. We attribute this to the fact that most of the current stakeholders lack centrality or power and none hold urgent claims for XBRL. A number of contributing factors were discussed including alternative solutions to XBRL and non-standard forms of adoption, lack of dominant design of accounting standards, and perceived instability of the XBRL Specification. We also assessed a number of instrumental forms taken by these stakeholders, such as knowledge building and deployment, subsidy, mobilisation, standards setting and innovation directive,. While successfully undertaken in other contexts (Damsgaard & Lyytinen, 2001), we found that instrumental action taken by local XBRL stakeholders was largely ineffective. Nevertheless, we believe that our analysis can help in designing proactive innovation adoption and diffusion strategies for XBRL in Australia.

Scholars who have applied the stakeholder theory in the diffusion of technology innovations maintain that the application of the stakeholder notion in information systems is predominantly instrumental or descriptive with very little reference to the normative aspect (Donaldson & Preston, 1995; Pouloudi, 1999). Therefore, in addition to a more effective application of instrumental measures, a stronger normative action may also be required by the Australian XBRL stakeholders and their networks, if the diffusion of XBRL is to be successful. As indicated earlier, the normative aspects of stakeholder theory focus on the moral and philosophical guidelines for the operation and management of stakeholders. Evidence suggests not all stakeholders in Australia have normative orientations towards XBRL. For example, some interviewees suggested that XBRL was considered to be "a dollar building business" as opposed to others who supported XBRL in order to "be part of a community". In Australia, potential XBRL stakeholders should also take into account the interests of the community as

a whole as opposed to exclusively taking into account the interests of an organisation's managers, stockholders and customers. This approach makes businesses sense as the long-term interests of all stakeholders and stockholders are compatible (Papazafeiropoulou et al., 2001; Pouloudi, 1999). For this reason each organisational stakeholder of XBRL should consider how their adoption efforts affect all other stakeholders in the community. In the long-term, because of network externalities all stakeholders are likely to gain from the widespread diffusion of XBRL (Katz & Shapiro, 1986).

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