

Framing public sector accountability in uncertain contexts: A new institutional explanation.

Abstract

Several studies have broadened the conceptualisation of accountability, but within the public sector, there has been a limited examination of the difficulties associated with the operationalisation of accountability in uncertain contexts. The contemporary notions of public sector accountability based on New Public Management (NPM) principles have created tensions that remain largely unexplained in current literature. These tensions underlie some of the difficulties and cynicism related to the manner in which public sector organisations recognise and discharge their accountability obligations. Using an exploratory case, this study makes a useful contribution to this area by proposing that under conditions of uncertainty and complexity, institutionalized practices flourish as public institutions strive for greater legitimacy within their larger institutional environments to enhance reputation and compete for resources. The findings of the study reveal that in uncertain contexts, a much stronger accountability arises from normative obligations, whereas NPM accountability focus on control and assurance is relatively weak. Framing accountability in terms of normative obligations will help recognise the learning and development dimension of accountability.

Keywords: Accountability, New Public Management, Operationalisation, Uncertain context,

1. Introduction

Numerous conceptualizations of accountability have emerged in literature that has enriched our understanding of its meaning. In the public sector, accountability has become a central theme, but it remains an “untidy construct” with “competing assumptions” and is “ill structured” (Kearns, 1994, p. 7). Sinclair (1995, p. 221) believes that accountability is a complex and chameleon like term and “the more definitive we attempt to render the concept, the more murky it becomes”. For over past two decades, New Public Management¹ (NPM) reform initiatives have been used

¹ New Public Management (NPM) refers to the conception of public accountability characterised by and the adoption of private sector management techniques and competitive attitudes with a greater emphasis on measurable outputs (Hood, 1995)

to improve public sector accountability and performance but empirical studies on the effects of introducing NPM instruments show mixed results (Budding, 2004).

Accountability under NPM initiatives has been largely operationalised in terms of publicly defining the organisation's mission, setting goals and objectives consistent with the mission, establishing strategies to accomplish goals, and measuring and reporting on outcomes. These requirements have placed an excessive focus on the bureaucratic process of formal compliance and control and is largely results-oriented based on efficiency and effectiveness measures (Zapico-Goni, 2007). The NPM accountability relies on standardised accountability measures to satisfy the desires of particular stakeholders, often sources of funding (Oakes & Young, 2008). It assumes a stable environment with conditions of certainty about expected results. However, the realities of many public sector organisations today is characterised by uncertainty, complexity, interdependence, diversity, and instability and under such conditions, NPM accountability seems weak (Zapico-Goni, 2007). There is an urgent need to bring to attention concrete examples of accountability in action to usefully complement the more theoretical and abstract discussion that have appeared in literature (Young & Oakes, 2009). Attention to specific context will also enable rethinking new approaches to accountability in the public sector.

The aim of this paper is to contribute to a more comprehensive understanding of public sector accountability by exploring how it was operationalised in the uncertain context of university research commercialisation. The study is based on an exploratory case study of a New Zealand University engaged in commercialisation of research. Universities undertaking commercialisation of research operate in a complex and uncertain environment. Within this context of uncertainty, policy logic and outcomes remain unclear and uncertain (Zapico-Goni, 2007) and institutional environments flourish under these conditions (Fogarty, Zucca, Meonske, & Kirch, 1997, p. 178). Therefore, the study utilises new institutional theory (NIS) to explain the motivations behind the adoption of a range of strategic responses to influence the accountability purpose. The study does not pretend to offer profound solutions but it highlights issues that will be of interest to policy makers, regulators, funding agencies, and universities themselves as they examine appropriate approaches to recognise and discharge accountability obligations.

The remainder of the paper is organised as follows. The next section briefly reviews the relevant literature that helps understand the complexities and the uncertain context of university research commercialisation. This is then followed by an identification of the theoretical framework for the case study. The subsequent section outlines the research method. There is then a section that analyses the case and provides a description of the findings. The final two sections provide a discussion of the case analysis and draw some conclusions.

2. Literature Review

There is an ever growing public interest in the role public universities occupy in the performance of the national innovation system at both the national policy level across countries as well as among institutional actors associated with academic research commercialisation (Drabenstott, 2008; Gauthier, 2004; Goldfarb & Henrekson, 2003; Gulbrandsen & Smeby, 2005; Jones, McCarney, & Skolnik, 2005; Keeling, 2006; Shattock, 2005). Universities are often viewed as rich reservoirs of unexploited commercialisable intellectual property with huge potential to stimulate innovation and economic growth (Mowery, Nelson, Sampat, & Ziedonis, 2001; Rosenberg & Nelson, 1994). These views combined with pressures from the institutional environment have put universities at the centre stage of creation and diffusion of new knowledge considered essential in driving the national innovation and economic development plans of many nations' (e.g OECD, 2008; Rasmussen, Moen, & Gulbrandsen, 2006). There is a dominant belief that previous policies have failed to achieve desired results in the form of economic growth, knowledge transfer to industry and commercialisation of research results (for e.g. Dahlstrand, 2008; Goldfarb & Henrekson, 2003). These developments provide a number of important accountability challenges to universities. Not only do universities have to cope with a growing accountability agenda, accountability has become a major concern in most parts of the world (Salmi, 2009). A broad range of stakeholders are increasingly asking universities to justify the use of public resources and more thoroughly account for their research results (Dahlstrand, 2008; Fielen, 2007; Gauthier, 2004). Research commercialisation is broadly defined as the process of transforming research outcomes including intellectual property, ideas, and knowledge into marketable products, processes, or services thereby contributing to improved economic and social outcomes (Laperche, 2002). It is a fairly recent phenomenon in many universities

across the globe (Ambos, Makela, Birkinshaw, & D'Este, 2008; Colyvas & Powell, 2006) and is fraught with difficulties (Laperche, 2002). Universities are expected to show tangible returns for the public research funding they receive but the process of transferring fresh and new ideas from basic research to industry and to create commercial products is not so evident (Wessner, 2003, p. 51). There remains considerable uncertainty amongst universities about how to leverage the intellectual abilities of their research staff (Laperche, 2002; Pilbeam, 2006). The uncertainty arises from the complex, multi-faceted, and time consuming nature of the commercialisation process including the inherent risk involved in transforming academic research into commercial products and services. Despite receiving widespread attention in literature in recent years (Agrawal, 2001; Djokovic & Souitaris, 2008), the 'who, where, what, how, and why' of university research and technology commercialization are still evolving' (Markman, Siegel, & Wright, 2008, p. 1411). Thus, research aimed at explaining these evolving concepts are extremely important and deserves greater attention.

The much heightened public expectations, contradictory demands and resulting tensions of commercialisation of academic research raise important accountability challenges for universities in terms of setting clear policies and priorities, having adequate structures, resources, and incentives to guide behaviour (Ambos et al., 2008). It is adding a new dimension to universities research management practices which is in conflict and causing tensions with the NPM model of accountability. Research management within universities are largely dictated by a culture of managerialism and performativity originating from the NPM literature (Anderson, 2006; Codd, 2005; Coy & Pratt, 1998; Gray, Guthrie, & Parker, 2002; Lapsley & Miller, 2004; Modell, 2003, 2005; Neumann & Guthrie, 2002; Parker, Guthrie, & Gray, 1998; Willmott, 1995). The NPM model of accountability places high value on what is produced, observed, and measured. For knowledge, experience, and innovation to be valued and recognised, it needs to be reduced to some measurable performance outcomes under NPM (Codd, 2005). Therefore the managerialist accountability largely audit driven (bureaucratic accountability) is at odds with research professional groupings who prefer greater autonomy, flexibility, and a culture of trust to produce successful outcomes (Codd, 2005; O'Neill, 2002). The tension between academic innovation and NPM audit driven accountability has been

recognised in literature (Findlow, 2008) and is counterproductive to research commercialisation. Therefore accountability relationships need careful management as it will shape the universities response to select and use appropriate accountability mechanisms.

3. Theoretical Framework

New institutional theory (NIS) will be used to interpret the findings of the case study. Drawing on from the contributions from the institutional theory, NIS refers to the study of organizational practices through its economic and sociological variants. According to Scott, institutions are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life (Scott, 2001, p. 48). New institutional theory recognises the importance of the organisation-environment linkages. It characterises the institutional environment as the elaboration of institutionalised beliefs, rules, myths, norms, and procedures to which organisations must conform to if they are to receive the support, acquire the needed resources, and gain legitimacy. Organizations which operate in similar environments are subject to institutional pressures of conformity and will have similar structures and processes (DiMaggio & Powell, 1991). Institutional environments have been found to “flourish where there is lack of measureable outcomes that summarize organizational performance”(Fogarty et al., 1997, p. 178). According to Meyer and Rowan (1977, p. 343) the elements of formal organization structure are manifestations of powerful institutional rules which function as highly rationalized myths that are binding on particular organizations. DiMaggio and Powell (1983) argued that organizations strive for greater legitimacy within their larger environments. They identified three types of institutional isomorphism that changes organizations: coercive, mimetic, and normative. *Coercive isomorphism* results from formal and informal pressures exerted on organizations to comply with requirements of other dominant organizations upon which they are dependent. The pressure for organization change may be in the form of force, persuasion, or an invitation to join in collusion. It could also be the result of government mandate, or political and legal pressure to increase legitimacy. *Mimetic isomorphism* occurs “when organizations tend to model themselves after similar organizations that they perceive to be more legitimate or successful” (DiMaggio & Powell, 1983, p. 152). Organizations may model or adopt technologies or innovations

from similar successful organizations to enhance their own legitimacy. *Normative isomorphism* occurs via professionalization mainly arising through the growth of professional networks that helps to channel organization behaviors and procedures in appropriate, expected, and legitimate directions.

In recent times, several new perspectives have emerged in the new institutionalism. Along with understanding the process through which institutions have a profound effect on shaping organization behavior, the research focus has shifted to examining the effects of individual and organizational action on institutions which causes normative fragmentation (Jepperson & Meyer, 1991; Oliver, 1992). Normative fragmentation would arise from changes in the composition of the workforce, changes in portfolio of activities, and changes in specialisations within organisations (Greenwood & Hinings, 1996). Fligstein (1991, p. 313) found that change in organisations occur when it is in the interest of those in power to alter the organization's goals. DiMaggio (1988) referred these individuals as institutional entrepreneur. Institutional entrepreneurs are individuals and groups who have an interest in transforming the normative, cognitive, and regulative aspects of institutions. They organize their activities around a "project" that requires alternative arrangements and strategy within the context of existing institutional constraints. To manage tensions between conflicting objectives, organisations tend to modify their structures. Organisations have been also found to display varying degrees of choice, awareness, pro-activeness, influence, and self-interest in response to institutional pressures for change (Oliver, 1991). Some common methods include employing buffering and bridging mechanisms and making changes in the core technology of organisations (Scott, 2003). Buffering refers to organisations attempts to reduce external pressures by partially detaching or decoupling its activities from external contact (Oliver, 1991; Scott, 2003). Meyer and Rowan (1977) call this sagacious conformity, in which new technologies and techniques appear to be in use, but may not be acted upon. Decoupling sometimes becomes necessary as a means of maintaining faith and legitimacy of the organisation (Meyer & Rowan, 1977). Several studies support the notion of buffering tactics as a means of protecting the organisations interests, especially in terms of maintaining autonomy and maximising efficiency without having to depend on external intervention or open up to public scrutiny (Covaleski & Dirsmith, 1988a, 1988b). Bridging techniques include

bargaining, contracting, forming joint ventures, mergers, associations, and government links to secure legitimacy and support from the institutional environment while at the same time protecting their technical environment.

4. Research Method

This paper uses an exploratory case study to examine how accountability is operationalised in an uncertain context of university research commercialisation. The use of a case study method is justified on the basis of the exploratory nature of the *how* research question posed and the desire to understand the contemporary phenomenon within a real-life context (Yin, 2003). Premier University (not the real name)² has one of the largest concentrations of research activity in New Zealand and has been involved in the commercialisation of research for over twenty years. It has a separate commercial company that manages all research commercialisation activities. Premier has a mission to be a research-led international university.

The case was purposefully selected using a strategy of theoretical sampling to provide information rich sources of data (Chua, 1995; Patton, 1990). There were two primary sources of data – archival and information gathered from semi-structured interviews of individuals from within and outside the university. The archival data comprised of university charter, profiles, strategic plans, annual reports, newsletters and website information gathered by the researcher covering a time span of six years. In New Zealand, as a result of the 2003 Performance Based Research Fund (PBRF) assessment, research has been emphasised as a measure of the universities activities as well as investing in them. During this period, commercialisation of research became widely accepted as an important objective for many universities and therefore using archival documents originating from this time is justified. It enables the study of ex-ante accountability mechanisms, instead of just relying on ex-post interviews that leave room for legitimating existing facts. Answering the research question calls for an in-depth investigation of factors influencing the use of accountability mechanisms. Hence there is merit in an in-depth analysis (Ahrens & Dent, 1998).

² The name of the university has been changed to maintain the anonymity of the interviewees.

In order to gain rich data related to commercialisation of research, the study targeted senior staff, researchers, CEO and directors of commercial company, including those with finance and reporting responsibilities. Given the exploratory nature of the research, it became important to ensure that perceptions of accountability mechanisms were gathered from a variety of individuals who were posited differently within the research and commercialisation activities of the universities. In total 8 interviews were conducted. The interviews were conducted in an open-ended and semi-structured manner to allow interviewees to focus on particular areas of experience and expertise (Silverman, 2006). A preliminary schedule of interview questions was prepared (see Appendix A) and adapted depending on the position and experience of the interviewee. Each interview lasted for between an hour and one and a half hours, and were recorded, transcribed and coded. These accounts were supplemented with information from the web sites, annual reports, and other public documents including the researchers' in-situ observations of the work environments and attendance at presentations. This information was then analysed in order to develop case descriptions (Yin, 2003). Data analysis was conducted in a way to allow the common patterns and themes to emerge (Miles & Huberman, 1994; Patton, 1990). The findings from this analysis are presented in the following sections.

5. Results

The following sections briefly describe the research commercialisation context of the case university, followed by a discussion of how accountability was operationalised in terms of defining the mission and strategy, developing structures, building research capability, and utilising positive communicative strategies to demonstrate performance.

Premier is a long established research-intensive university with an international focus domiciled in New Zealand. It has one of the highest concentrations of top-ranked researchers in the country. Being considered as one of the largest research-led institutions in NZ, Premier is actively engaged in pioneering research across the spectrum of disciplines comprising Arts, Business and Economics, Creative Arts and Industries, Education, Engineering, Law, Medical and Health Sciences, and Science. This primary aim is to expand and enrich the country's knowledge base and directly

contribute to its social, economic and policy development. Premier is a major provider of postgraduate education and is committed to a special role in the discovery and transmission of knowledge, and the development and commercialisation of its research and intellectual property. It hosts several research centres and institutes and is a recipient of a sizeable portion of government research grants as well as non-government funding. It trains a significant proportion of the country's emerging researchers and some of its top researchers have been accredited with ground-breaking research across a wide spectrum of disciplines. Premier is one of the earliest universities in New Zealand to engage in commercialisation of research. A separate commercial company undertakes all commercialisation activities at Premier.

Defining mission and strategy

Premier has publicly defined its mission to be a research-led international university, recognised for excellence in teaching, learning, and research. It recognises research commercialisation as a legitimate function of the university encouraged by government through its national strategy for innovation, development and wealth creation. Premier made a strategic commitment to actively engage in commercialisation of research alongside teaching and research to fulfil its mission and role in society. This is reflected in statements made in the institutes Charter, Profiles, and Strategic Plans. The 2003 Charter specifically states Premier's commitment to the following institutional values:

“The development and commercialisation of enterprise based on its research and creative works. [Premier] plays a special role in the discovery and transmission of knowledge, and in technology transfer, both fundamental elements of wealth and well-being in the current world.”

The Charter is a statutory document³ that guides governance and management of the institute. It defines broad strategies and sets out the institution's mission and role. The Charter was developed after a range of consultations with key stakeholders including staff and students and was approved by the institutes governing body (Council) and the Minister of Tertiary Education. Therefore, Premier's engagement in research commercialisation has the support of senior management, key stakeholders, and

³ Under amendments to the Education Act 1989 that came into effect on 1 January 2008, the Charter will cease to be a statutory document. Premier's has decided to retain its Charter which remains effective until December 2011.

government. Premier recognises that its commitment to engage in commercialisation secures legitimacy from government as it relates directly to the national innovation strategy. Legitimacy in the eyes of other key stakeholders (industry, staff, students, international partners) is also important to establish research collaborations and build reputation.

Premier also prepares a Strategic Plan that is approved by its Council and provides the strategic direction for engagement in commercialisation of research. It is driven by goals that it sets for itself and those set by government as the nation's tertiary education strategy and national innovation strategy. Premier's Strategic Plan 2005-2012 emphasises the need to substantially increase performance in research, demonstrating its commitment to innovation, discovery and wealth creation to support the institution's mission and values. Premier has also made a strategic commitment to carry out research of a consistently high international standard thus contributing to the global advancement of knowledge and to the national goals of innovation including economic and social development goals. Additionally, it remains committed to develop its resources and infrastructure in ways which fully support its research including making specialised expertise in the commercialisation of intellectual property easily accessible by its staff and postgraduate students. The Strategic Plan is an important accountability document that forms a basis of institute-wide planning. Each Faculty and Research Institute has developed a robust research plan aligned to Premier's Strategic Plan with the key focus on facilitating the best possible research outcomes.

Developing structures to manage accountability obligations

Premier has a complex structural configuration mainly arising from the size and complexity of its academic research operations. It has a central research office to facilitate the overall management of the academic research activities of the university. The research office manages the accountability expectations of the university community by providing support and assistance in gaining research grants and in research grant management for both university-sponsored as well as external government and international grants. In addition to providing a 'one-stop shop' for research administration services, it facilitates development and implementation of the university's strategy to grow research revenues and enabling an environment across

the university that encourages and supports excellence in research. Premier, in its strategic plan (2005-2012), had undertaken to develop large-scale research institutes of excellence that will provide them with an appropriate operating environment and accountabilities. Currently the university has two large-scale research institutes and eight smaller, multi-disciplinary units, some of which are world renowned and focussed on pioneering research. It also has more than 30 smaller research centres created to promote, support and conduct multi-disciplinary and collaborative research. Premier will invest in selected institutes to ensure that they can achieve sustainability at the required scale in the shortest time possible. A key performance criterion is that research institutes which fail to grow and perform to the required level will be closed so as to release funding for other ventures. Therefore, structure is largely dependent on funding to provide legitimacy. The emphasis on research institutes and faculties to attract external research income is a key measure of the success of operations under these structural configurations. Some examples of successes reported in Premier's 2007 Annual report are as follows:

"The first of these successes has been the winning of a major FRST contract (\$3.9m) The second success has been the winning of a Strategic Relocation grant (\$8.8m)"

"Researchers in the faculty had a very successful year in winning new research grants; the total of new awards was \$16.3 million."

While structural configurations of research institutes and centres provide legitimacy to help secure funding, funding success demonstrated by these structural arrangements is not the only measure of success. Structure provides professional researchers with academic autonomy, enables pooling of the required resources to build research capacity and capability, and promotes a strong research culture. A large scale research institute configuration enables Premier to maximise mutual benefit and encourage co-operation between research institutes and faculties so as to minimise internal competition and assist in the development of staff and student research capability. Among some of the major achievements associated with creating large scale research institutes at Premier reported in its 2007 Annual Report include *".. new major research funding, new prestigious international collaborations, .. and increased public promotion of science and research outputs."*

Utilising buffering mechanisms to deal with uncertainty and conflicting objectives

In addition to its academic research structures, Premier has also established a wholly-owned commercial company structure to fulfil its commercialisation mission. The commercial company structure has been decoupled from the university structure to ensure that the academic mission does not conflict with the commercialisation mission. The commercialisation company helps to facilitate research of a commercial nature, manage intellectual property, and provide consulting and technology transfer. As stated in the university Strategic Plan 2005-2012, it aims to:

“Make specialised expertise for commercialisation of intellectual property easily accessible by university staff and students and not unnecessarily duplicated within the organisation”

The commercial company structure has been created so that it provides a strong business focus with appropriate autonomy to identify intellectual property, seek commercial outcomes, negotiate contracts, manage risk, make investments, find markets, and bring value back to the university; something not possible under the university structure.

“..they (the university) set us up as a separate business unit so we could act as a commercial entity, and I mentioned earlier – de-politicise decisions. I can’t emphasise that enough. It is very convenient sometimes to constrain behaviour according to other prerogatives that exist in the university. Definitely, we can move faster. That’s absolutely true” (Interview with CEO, Commercial Company)

The commercial company structure also serves as a bridging mechanism to support an increasing number of commercially-focused specialist research and service centres at Premier. Through the commercial company, Premier also engages in research collaborations with a wide range of local and global business organisations both in the private and public sector.

Placing greater emphasis on building research culture and capability

Premier aspires to be a forward looking research university with an enterprising culture. It is placing much greater emphasis on building its research culture and capability to ensure that its long term commercialization goals are realized. Participation by staff is seen as integral to the success of the commercialization process and Premier recognizes that it has an obligation to staff to ensure that the commercialization potential of their research projects are fully realized. Premier aspires to create a research culture that encourages staff reaching their full potential

and the institutions Charter and Strategic Plan recognizes staff as an important stakeholder group where individuals are valued and respected, academic freedom is exercised with intellectual rigor, and critical enquiry is encouraged. Premier is committed to attracting and retaining staff of the highest quality which it claims will have a key influence on the direction and quality of its research. Some of Premier's top ranked researchers have been engaged in ground-breaking research, a result of many years of dedicated research across a spectrum of disciplines, with the primary aim of expanding and enriching the country's knowledge base and directly contributing to social, economic and policy development. These are primarily the researchers who produce research that has potential to be commercialized and are keen to get involved with commercialization endeavors. So accountability arises from their normative obligations.

“They do it voluntarily so they have to buy in; it is not something we can actually determine for them.” (Interview: Research Scientist)

However, there are funding incentives as well as other professional obligations influencing their involvement. At Premier, some of the top ranked research scientists have been founders of their research centres, so there is lot of pride and reputation involved. Based on their pioneering research some have developed it into larger scale research institutes through engagement with cross disciplinary teams and international research networks. These researchers are largely motivated by the history and culture of their departments and professional peer influence. Some of their work is a result of up to 40 years of dedicated research indicating a very strong professional obligation to create value from research. Commercialization not only enhances their reputation but also provides valuable funding opportunities which help them to engage in further research.

Some of the top contributors are people who have got enough confidence, or have achieved their academic objectives and so don't feel quite as threatened in a way (Interview: Research Scientist)

On the question relating to type of staff most likely to undertake commercialisation challenges and what prompts their involvement, the CEO of the commercial company responded by stating that:

“Well, they are people who like to see an outcome, so they’re motivated and what we are trying to do is to engage more people with that sense of accomplishment by seeing a commercial outcome. They’re discovering that the Deans are, in fact, inclined to reward, at least in the promotional context, that kind of behaviour, despite maybe some prejudice or misconceptions that all the drive for promotional criteria is how many papers you’ve published. It is very clear to the VC down at least to the Deans level, that that is not how people are judged.”

Students are the primary stakeholders and Premier's Strategic plan signals the institution's commitment to enhancing its overall research environment to ensure a high quality experience for research students working alongside excellent researchers. One of Premier's largest research institutes has 70 postgraduate research students working on various projects and a bulk of new research emerges out of student projects. Some of the discoveries emerging from student projects have led to successful commercialisation. Premier has a deliberate strategy to attract the brightest research students locally and internationally. It is obligated to retain and manage students for the duration of their projects and inspire them by providing opportunities to do projects working with the best researchers utilising the latest cutting edge technology, tools, techniques, systems and processes. It recognises that providing opportunities for students to have access to and be involved with major companies engaged with leading edge research will help build critical research capabilities, achieve the nation's goals, and enhance Premier's reputation as a world-class university.

“Eventually, students will go and build the industry, institutions and society, and that is real commercialisation” (Interview: Research Scientist).

Many major corporations are looking more and more to universities' as research partners as in-house R&D is abandoned in favour of innovation using external expertise. Premier has recognised this trend and has already started to capture some of the benefits of its research capability in health innovation, information technology, medical research and electronics by working with some of the most well known companies in the world such as Daifuku, Procter & Gamble, Roche, Samsung, Toyota, Siemens and United States Cancer Institute.

“The accelerating trend of outsourcing of research and innovation by many of the world's largest companies has created an opportunity for [Premier] to position itself as a provider of a set of world-class capabilities.” (Strategic Plan 2005-2012)

For Premier, fostering industry relationships has created opportunities for sponsorship and industry participation in research consortia. The government and industry funding support has helped create Research Institutes in health informatics, plastic, and timber innovation that operates at the forefront of the NZ and global research. With increasing global pressures to access new ideas and skills, Premier is well supported by some leading international companies such as IBM, Oracle, Phonak and Microsoft looking for joint commercial research opportunities drawing on existing projects underway at Premier. Funding from industry is used in various ways to build research capacity at research centres, for example:

“The money that we got ...was partly to fund the Manager, a half-time position and the rest was used for scholarships for students. In 1987 and 1988 we had money made available to support maybe 8 or 10 students so we had a lot of research going on, a lot of interesting stuff, it was a hot topic, students were keen to do it, students were doing masters and some maybe one or two had PhD’s as well and the years later they went into industry and are now very senior people in industry.” (Interview with Research Centre Professor)

Research scientists interviewed at Premier also place a lot of value on industry linkages to help create a high profile for their research teams and are very supportive of industry to be productive and create wealth.

“I like the high profile of the research unit and I am excited by the possibility of building a much larger research centre. And also the aim would be to support the NZ industry so that they are more productive and create wealth.” (Interview: Research Centre Professor)

Premier sees industry linkages not only valuable for the research income and sponsorship; they generate job opportunities for staff and students.

“It provides a real interface for our staff and students between their research and training, and commercial outcomes, and interface with business” (Interview: Research Centre Professor)

Industry recognises this interface and large companies like Fonterra have expanded their relationship with Premier to include support for post-doctorate research fellows and research expenses. To support businesses, Premier has also been successful in helping incubate new business based on its new technologies. Among these are some of the spin-out companies of Premier, and these have various staff members, some part-time in the university and part-time with the company. Premier has been

targeting research funding to investigations in emerging fields of interest to industry and those in which the university already performs strong research. Some of its ground breaking discoveries are a result of years of dedicated research. To enable commercialisation of these discoveries, heavy reliance is placed on connectedness with industry to adopt and further develop the research and technology. Premier has dedicated technology teams within its commercial company to work alongside researchers to promote and protect new technologies and explore commercialisation opportunities with industry. So far, it has been very successful in establishing collaborative partnership with companies through licence and purchase agreements to develop its technology

The government recognises that Premier is uniquely placed to provide R&D, innovation and technology transfer to meet the nation's goals and is very supportive of these efforts. It has been drawn to Premier as a key driver of the knowledge economy based on its research capability and capacity. Both collaborate regularly in order to increase the impact research has on national outcomes. For example, some of the government sponsored national Centres of Research Excellence (CoRE) is housed by Premier. CoRE represents the government's commitment to promoting collaborative research links between industry, government agencies, research organisations and universities. Government has contributed major funding to Premier to establish large scale research institutes to work closely with multiple partners in the industry sector. The aim is to develop innovative ideas and improve outcomes that will enable NZ industry to remain competitive in a rapidly growing world market. The government is also placing increased emphasis on commercial outcomes from research due to increasing competitive global pressures on innovation. It has established various funding initiatives to provide support for the commercialisation of intellectual property developed at universities. Premier has already benefitted from this initiative and as was commented by Director C:

“[Premier] has taken a leadership role among tertiary institutions. It is recognised by some in govt as well that there is more of an active faith and it is obvious that you need to have a good vital research activity in your country if you want to participate in the knowledge economy”.

While the government provides substantial research and development funding, it also expects to see tangible returns on its investment. This clearly demonstrates an

increasing emphasis on accountability for funding in terms of research opportunities it creates.

“We get the biggest pot of research money from NZ government and they are expecting or looking for what the research opportunities are going to be.” (Research Scientist B)

Premier has aspirations to be a world-class research led institution and this requires effective international networks to be established and maintained. Some of Premier’s pioneering researchers are already involved in international collaborations. Premier recognises that it has an obligation to develop this partnership further to realise its vision. Research results produced by some of its larger research institutes have been encouraging and have attracted international recognition, reputation and interest. As reported in its 2008 Annual Report:

“Another trend has been an increasing participation in global efforts to use bioengineering technologies to improve and reduce the costs of healthcare.”

Premier has formal partnerships with renowned international universities across a wide range of disciplines. Some of its top international research partners in health science and bioengineering research include world renowned institutions such as Oxford, MIT, and Harvard. The primary aims of most international collaborations are to contribute to the development of international communities and the knowledge base. In the area of health research, the primary aim is to improve disease prognosis and therapy ultimately leading to the improvement of the health of the local, national and international communities. International networks help attract international students to Premier’s research institutes. Likewise, it assists staff and students from Premier to develop connections with leading international institutions. It also helps create opportunities for the NZ government and businesses to build on the relationships Premier has established including developing connections with some of the world’s fastest growing economies. Premier’s international collaborations also provide attractive funding opportunities.

Utilising positive communicative strategies to demonstrate performance

Premier uses a wide range of communicative mechanisms to keep its stakeholders informed about its research and commercialisation initiatives. The university charter, the strategic plan, profile and investment plan are public documents that clearly lay

out the intent and commitment to research and commercialisation. The university website contains extensive information on the research activities, research centres, and research institutes. The commercial company has a separate website with links to the university web pages. The websites mainly provide details of the research centre objectives, functions, membership, staff and student profiles, achievements, and funding success. Most of the information is largely publicity material but it does provide an extensive narrative of past events, activities, and performance. The university also produces faculty newsletters, research news, and a whole range of publicity and promotional materials to keep in touch with its stakeholders.

Since the annual report is widely regarded as the key accountability mechanism, it became the focus of this study. The contents of the annual reports of the past five years were reviewed to determine the nature and extent of reporting on commercialisation activities. Interestingly, the university annual reports do not contain any specific details on objectives, key performance indicators, and achievements relating to commercialisation activities. The only reporting on commercialisation is in the narrative section of the annual report. Interviewees explained that the university annual reporting is based around the strategic objectives and key performance indicators that the government has negotiated with the university and provided funding for.

“The objectives will flow from the government approved profiles (now replaced by investment plans). It is really just collecting the information up around the particular KPI that we are choosing to report on.” (Director M)

This is set out in the university’s investment plan. The Investment Plan is a rolling statement describing the University’s plans and activities for the next three years. The Investment Plan under the Education Act 1989 is also the base document which the Tertiary Education Commission (TEC) must utilise to release general funding. Commercialisation activities are not funded by TEC and therefore the university is not obliged to set goals and objectives and measure and report on the outcomes. Effectively, these requirements have been decoupled from the technical NPM reporting requirements of the university. However, the total income and expenditure of the commercial company is consolidated in Premier’s annual report. The commercial company of the university receives all funding from commercial activities

and is responsible for reporting the results of its activities and financial performance to the university.

“If it goes through the (commercial company), it is reported through the (commercial company). If it is public good it is reported through the university. The annual report actually separates out ‘university only’ and the ‘group’.” (Director M)

Over the past five years the university has consistently reported on research commercialisation, but only as brief narratives on the activities, events and revenue generated by the commercial company. As commented by Director C of the commercial company:

“We write a report to highlight some of the major activities we have done that year. It is difficult for any particular reader to grasp the full width of our business ..so quite often we just highlight some of the things that are engaging to the reader, most readers have got no interest in what we do...”

On decisions regarding what goes in the annual report and the purpose of reporting, Director M commented:

“Well, we decide on a theme for each year and then we extract stories out of each area that is usually seen as a cross-section of activities across the university. We produce this as a marketing document as well.”

From an analysis of the narratives in the annual reports, major themes emerging were focussed on university efforts aimed at building a research culture; developing research capability; improving research quality; undertaking research collaboration; and securing funding. The university’s effort on building its research culture is based on autonomy, achieving excellence, and creating an innovative and enterprising environment. Building a research capability is dependent on staff, students, programmes, support services including research infrastructure - centres, institutes, and other facilities. The university places high value on research quality through the recruitment of top ranking researchers which then attracts high quality postgraduate students. Research quality influences the ranking and reputation of the university. To be a research led international university, the university engages in collaborative research with international partner universities, industry, research institutes, and business. The university attracts substantial research funding through various external sources and measures its success by the size of its research revenue. Some quotes from the 2006 university annual report captures some of the major themes as follows:

“A strong research and innovation culture is a key requirement for any modern international university”

“The continuing rapid growth in research contracting and commercialisation activities with business and industry and the growing number of companies spun out from academia, clearly attest to the fact that university research capability is one of the key drivers of local and international innovation systems.”

Apart from constructing positive narratives about commercialisation activities in its annual reports, Premier does not report on specific commercialisation goals and objectives. However, it requires the commercial company to provide more comprehensive reports to the university to avoid any accountability deficits.

“ Connecting that with accountability, we have quite a high level of reporting around where we have spent our money, to allow the university to see that, buying patents or investing in further developments of an idea to take it to a commercial point”. (Director C, Commercial Company)

On reporting by the university commercial company, Director C explained:

“Setting up our strategic plan actually determines where we are actually most interested in reporting back to our stakeholders, which are in the first case, the university and their staff, and then following on from that their customers who are stakeholders, as well as the general public both here nationally in NZ and internationally. So we see the stakeholders’ interests in information are heavily connected to our strategic plan, so we take the drivers for revenue, commercialisation, and inventions and for research, sales or education sales, as all being the critical measures that we look to report.”

He went on further to explain:

“The board makes sure that the strategic plan of our organisation is aligned with the goals of the university. The strategic objective of the company is around increasing the research revenues, the educational training revenues and the commercialisation revenues in the university. We set the objectives for how much activity we are putting into the university, the number of staff we engage, the number of patents and licences that we have for our commercial IP, the number of new invention disclosures that we get through the university every year, so that we can actually measure our activity, and we set goals for those to actually achieve”.

The commercial company also produces an annual report which is circulated widely to its clients. The annual report does not contain any financial information but narratives on events and activities.

“What we have always tried to do is provide a stakeholder report through our annual report, which allows the stakeholders to see what our activities are and what we were doing and how we are going about it, to make sure there is a very good view, and that report we put out 4,500 copies, a lot to the staff but also our customers, to our banks and to our international clients.” (Director B)

The primary motivation behind reporting is largely aimed at projecting a positive image as well as providing a measure of confidence to clients in the research capability of staff.

“That’s a promotional document” (CEO, Commercial Company)

“We have really aimed to try to tell people as much as possible about commercial activities that we have been successful with, continuously lifting the reputation of the organisation, because reputation is important to our success because it build confidence with clients that we can deliver against our projects.” (Director B)

Interviewees were concerned that performance measures are difficult to specify because of the long term nature of the projects, some of which are difficult to quantify and measure.

“Revenue is a simple one, actually I am a not for profit, all the money I produce goes to the university, in one form or another.” (CEO, Commercial Company)

He went on further to explain that *“these are the measures that government funding agencies have put on universities, so you can’t blame the universities for behaving like that, they are behaving the way they’re trained.”*

All eight universities in NZ have formed a group referred as UCONZ (University Commercialisation offices of NZ) and provide regular reports on their commercialisation activities to this forum. These reports are consolidated into a NZ report on commercialisation similar to other overseas bodies such as AUTUM in US.

“NZ sector performance is best undertaken by looking at the macro perspective” (Consultant J)

“We can say that there is a NZ measure of commercialisation and that’s quite often used to illustrate to government that there is quite a lot of return on investment from the research in NZ universities.”(Director C)

6. Discussion

The case description provides useful insights into how Premier identifies and discharges accountability in an uncertain context of research commercialisation. The uncertainty arises from the complex, multi-faceted, and time consuming nature of the commercialisation process including the inherent risk involved in transforming academic research into commercial outcomes. As such policies, priorities, funding, and outcomes remain unclear and uncertain. Premier operationalises accountability

for commercialisation of research in terms of publicly defining its mission and strategy, developing appropriate structures to manage accountability obligations, building its research culture and capability, and utilising positive communicative strategies to demonstrate performance.

Premier operates in an institutional environment and is subject to institutional pressures for conformity and convergence. Within the institutional environment are the regulative, normative and cultural-cognitive factors that determines to whom and for what universities are accountable. The regulatory environment is made of regulatory institutions such as government policy, funding and audit agencies. Premier recognises that its commitment to engage in commercialisation secures legitimacy from government as it relates directly to the government's national innovation strategy. Legitimacy from government helps establish research collaborations with industry and world-class international partners. Even though there is no clear government policy on university research commercialisation, Premier recognises that it has a central role to help achieve the government's objectives set out in the nation's innovation strategy. As such there is a clear accountability obligation arising from the regulatory environment. Premier has clearly signalled its intention to meet its accountability obligations by publicly defining its commercialisation mission and strategy and has developed organisational structures to enable commercialisation of research. However, there is no direct government funding to universities for engaging in research commercialisation projects to which the requirements of the NPM model of accountability strictly applies. In other words, Premier does not have to set goals, objectives, measure performance, and report on commercial outcomes unless it forms part of its contractual obligations set out in the University's Innovation Plan. This seems highly unlikely, especially in the context of lack of clear government policy, funding, and uncertainty of outcomes which makes the requirements of NPM accountability relatively weak.

The uncertainty and risk associated with research commercialisation has encouraged Premier to set up a separate commercial company that enables it to decouple its commercial operations from the requirements of NPM accountability. While decoupling may be a deliberate attempt by Premier to maintain secrecy over its commercial activities, this may have created accountability deficits under NPM

accountability. However, it was interesting to note that the commercial company of Premier had adopted the NPM model of accountability for its internal reporting. This they did as a result of coercive pressure from the university to ensure that the goals of both the commercial company and the goals of the university are well aligned. The commercial company director M explained that *“the management will make sure that our strategic plan is actually parallel with the university’s strategic plan, so we don’t actually run in a different direction”*.

Premier’s engagement in research commercialisation is also subject to *normative isomorphism* arising through the growth of professional researchers and their research networks that legitimate directions. Premier recognizes that it has an accountability obligation to staff, students, industry, and international research partners to develop the commercialization potential of their research projects despite the risks and uncertainty. There is a strong normative pressure to build the research culture, capability and reputation consistently over a longer period of time. Developing research culture and capability requires collaboration with government, industry, and international research partners. Premier is committed to attracting and retaining staff of the highest quality which it claims will have a key influence on the direction and quality of its research. Some of Premier’s top ranked researchers have been engaged in ground-breaking research, a result of many years of dedicated research across a spectrum of disciplines. Therefore, by placing greater emphasis on building the research culture and capability within the context of commercialization uncertainty, Premier has demonstrated that accountability has a strong learning and development perspective. Under these conditions research professional groupings prefer greater autonomy, flexibility, and a culture of trust to produce successful outcomes. This is at odds with bureaucratic accountability under NPM which places high value on what is produced, observed, and measured. Knowledge, experience, and innovation cannot be easily reduced to some measurable performance outcomes and hence the learning and development perspective of accountability has much greater relevance.

At Premier, the number of research centres and institutes that have been created to operate as autonomous units is a testimony to researchers’ professional autonomy. Structure also serves as buffering mechanisms from technical compliance and central control that has the potential to threaten the professional autonomy of the researchers.

The research centre and institute structure provides legitimacy in uncertain contexts that helps secure both internal university and external funding. As government makes funding allocations across certain research priority areas, Premier is coerced into creating structures designed to receive this funding. For example, funding for the CoREs will only go to Premier under conditions that it hosts these research centres. Research centres and institutes also serve as bridging mechanisms in the form of joint ventures and collaborative research especially with international researchers that have helped in building an innovative and enterprising research culture. Larger research centres with its critical mass has assisted in attracting international partners and provided much need funding which has helped Premier to build its reputation and profile. Premier's commercial company also serves as a bridging mechanism for its research centres and institutes. It has formed joint ventures and collaborative arrangements and provides funding for staff and student projects.

The cultural-cognitive factors also have an impact on Premier and accountability is shaped by socially constructed rules derived from the institutional environment. Some of Premier's top ranked researchers have been engaged in ground-breaking research, a result of many years of dedicated research across a spectrum of disciplines. Premier is expected to engage in commercialization of research, be innovative and enterprising, and contribute to the social and economic goals of the nation. Especially in the area of health research, the primary aim is to improve disease prognosis and therapy ultimately leading to the improvement of the health of the local, national and international communities. Since commercialization has become powerfully adapted by the institutional environment, failure to participate will not provide legitimacy and much needed resources. It will also adversely affect Premier's reputation and rankings. The emphasis on ratings and reputation has become an important communicative strategy of Premier. Pressure from the institutional environment has led Premier to construct and utilise positive communicative strategies to demonstrate its commitment to the commercialisation mission. Positive narratives of commercialisation activities appear to be rationally constructed in order to enhance legitimacy and accountability relationships. Positive communicative strategies advancing research units and research projects of scientists help coerce government to continue its funding or provide increased research funding to further build research capability. Government also has coercive power to influence Premier to provide positive reports to

demonstrate its commitment to the national priorities and research agenda and help legitimise its activities.

7. Conclusion

This study has demonstrated that operationalising accountability in an uncertain context poses many challenges. Contemporary public sector accountability requirements under NPM initiatives assumes conditions of certainty about expected results and relies on standardised measures to satisfy the desires of particular stakeholders. This is at odds with the realities of many public sector organisations today that is characterised by uncertainty, complexity, interdependence, diversity, and instability. Therefore, attention to specific context is required in framing new approaches to accountability in the public sector. This study was motivated by calls for an urgent need to bring to attention concrete examples of accountability in action to usefully complement the more theoretical and abstract discussions that have appeared in literature.

An exploratory case study has been used to highlight how accountability has been operationalised in an uncertain context of university research commercialisation. The findings suggest that under conditions of uncertainty, institutionalised environments flourish as public institutions frame accountability in terms of the regulatory, normative and cultural-cognitive factors. Despite the uncertain context of the regulatory environment, the accountability focus remains strong on seeking greater legitimacy within the larger institutional environment to help secure funding and enhance reputation. Premier demonstrated the pressure imposed by the regulatory environment by publicly defining its mission and strategy and developing appropriate structures. Structure also acted as a bridging mechanism and provided a buffer from central control and accountability and reporting requirements of NPM. Accountability arising from normative obligations had a strong learning and development perspective as Premier placed much greater emphasis on building research capability and culture. A significant portion of government research funding goes towards building research culture and capability and this aspect of research is not captured fully by the NPM model of accountability. Framing accountability in terms of normative obligations will help recognise the learning and development dimension of accountability. Premier utilises positive communicative strategies to demonstrate its normative and

cultural-cognitive obligations. Positive communicative strategies help influence powerful stakeholders to provide legitimacy and secure resources. While the study was exploratory based on a single case study, it has enriched our understanding of how public sector accountability was operationalised in an uncertain context. However, it does not pretend to offer profound solutions. An obvious extension to this study will be to conduct a much broader examination based on multiple cases.

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