

2011

‘JUST A NOT-FOR-PROFIT’: SUPPORTING SUSTAINABILITY WITH BUSINESS INTELLIGENCE IN THE NOT-FOR-PROFIT SECTOR

Dale Mackrell

Griffith University, d.mackrell@griffith.edu.au

Luke Houghton

Griffith Business School Griffith University Nathan, Australia, l.houghton@griffith.edu.au

John Campbell

john.campbell@anu.edu.au

Follow this and additional works at: <http://aisel.aisnet.org/mcis2011>

Recommended Citation

Mackrell, Dale; Houghton, Luke; and Campbell, John, "‘JUST A NOT-FOR-PROFIT’: SUPPORTING SUSTAINABILITY WITH BUSINESS INTELLIGENCE IN THE NOT-FOR-PROFIT SECTOR" (2011). *MCIS 2011 Proceedings*. 52.

<http://aisel.aisnet.org/mcis2011/52>

This material is brought to you by the Mediterranean Conference on Information Systems (MCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MCIS 2011 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

‘JUST A NOT-FOR-PROFIT’: SUPPORTING SUSTAINABILITY WITH BUSINESS INTELLIGENCE IN THE NOT-FOR-PROFIT SECTOR

MacKrell, Dale, University of Canberra, Bruce, Canberra, ACT, Australia,
dale.mackrell@canberra.edu.au

Houghton, Luke, Griffith University, Nathan, Brisbane, Queensland, Australia,
l.houghton@griffith.edu.au

Campbell, John, University of Canberra, Bruce, Canberra, ACT, Australia,
john.campbell@canberra.edu.au

Abstract

This paper describes an ongoing qualitative single case study exploring business intelligence initiatives within the context of sustainability using the balanced scorecard for sustainability (SBSC) framework, which was developed for the corporate sector. For our study, the concepts incorporated in the SBSC framework are applied as a business intelligence model in the not-for-profit sector with illustrations from the case, the Royal Flying Doctor Service (RFDS) Queensland section. The findings suggest that the SBSC framework is helpful for identifying challenges for a not-for-profit although the pervading organisational culture in a not-for-profit seems to be overlooked. The researchers argue that the use of this framework in a qualitative empirical study with an Australian perspective is relevant and innovative. It is planned to extend the study nationally at a later time. It is believed that this model may have applicability beyond the local context and be useful for other organisations in the not-for-profit sector.

Keywords: Business intelligence, sustainability, balanced scorecard, not-for-profit, qualitative, organisational culture.

1 INTRODUCTION

This paper reports on a qualitative ‘pilot’ study, the aim of which is to evaluate the acceptance of sustainability principles through business intelligence (BI) tools in the not-for-profit (NFP) sector in Australia. More specifically, the study seeks to understand whether the BI initiatives in place support the strategic planning objectives of responsible business practices of the Royal Flying Doctor Service (RFDS) Queensland section. In our study, ‘responsible business practices’ relate to best practices in the sustainability agenda of organisations. Data analysis of the interview data will be framed by the balanced scorecard for sustainability (SBSC) model by Petrini and Pozzebon (2009). Our study is believed to be novel since there is a scarcity of empirical research in these fields, particularly in the sustainability dimension of the not-for-profit sector. As this is an ongoing study based in a single Australian state, it is hoped to extend the study nationally at a later time. This study will also be a useful frame of reference for those also interested in not-for-profits in other countries.

The scholarly literature contains numerous definitions of BI as a product, process, and/or set of technologies. Watson (2009, p.491) defines the concept of BI as “... a broad category of applications, technologies and processes for gathering, storing, accessing, and analysing data to help business users make better decisions”. To expand on the notion of decision making, we agree with Shollo and Kautz (2010) whereby BI involves data, information, and knowledge as well as the supporting products, processes and technologies for making decisions based on intelligence.

While the term BI is recent, the concept is much older, having its roots in the decision support systems literature (DSS) of the 1970s. BI/DSS are changing with many new applications such as performance dashboards and scorecards being data visualisation tools allowing organisational performance to be closely monitored, managed and presented (Watson, 2009). The performance scorecard transitioned into the balanced scorecard (BSC) when brought to prominence by Kaplan and Norton (1992) and the growing popularity of the approach saw its wide-spread adoption. In both industry and academia, the balanced scorecard is well recognised as a strategic performance management mechanism (Cobbold and Lawrie, 2002), but few authors, Petrini and Pozzebon (2009) are exceptions, have acknowledged the nexus between BI and the BSC. Petrini and Pozzebon (2009) lament the lack of clear conceptual frameworks in the BI literature, citing that most models and methodologies originate from vendors and consulting firms. In their 2009 paper, Petrini and Pozzebon took the multi-dimensional concepts of BI and sustainability management a step further by proposing a conceptual framework for the for-profit sector, drawn from the sustainability balanced scorecard (SBSC) framework.

In our study, we are intent on extending the SBSC framework by Petrini and Pozzebon (2009) into the non-profit sector. To support this objective, the research questions guiding our paper are:

- 1) How can the concepts of the sustainable balanced scorecard (SBSC) model by Petrini and Pozzebon (2009) for the corporate sector be useful as a BI framework for the not-for profit sector?
- 2) How do the BI systems in place in the RFDS support and report the strategic planning objectives of responsible business practices?

To that end, the topics to be discussed in our paper are: a) a review of industry and academic literature on business intelligence, the balanced scorecard, sustainability, and the not-for-profit sector; b) background for the sustainable balanced scorecard conceptual framework; c) research methodology of the study including the research site, the Royal Flying Doctor Service; d) data analysis of the interview data from the study; e) discussions of the preliminary findings with reference to the literature and the guiding research questions; and f) contributions and limitations of the study along with future directions such as BI readiness, diffusion and adoption, BI governance, business/information and communication technology (ICT) alignment, and sense-making literature.

2 REVIEW OF LITERATURE

In this section, we review the literature pertaining to the key aspects of our study, namely, business intelligence, the balanced scorecard, sustainability, and the not-for-profit sector, and we discuss how the notions drawn from the literature are embedded into the study.

2.1 Linking the balanced scorecard with business intelligence

This section focuses on the scorecard, its evolution into the balanced scorecard (BSC), and the literature to support its application as a BI mechanism to measure organisational strategic objectives. In the broad BI environment, dashboards and scorecards are performance management and reporting tools (Watson, 2009). Both these visualisation interfaces provide displays for easy reading, understanding and interpretation. All the same, there are differences between them: dashboards monitor operational performance while scorecards chart progress against strategic objectives (Olve and Sjostrand, 2006). Further, as Turban, Sharda and Delen (2011, p.395) explain in their BI publications, “over the past few years, BSC has become a generic term that is used to represent virtually every type of scorecard application and implementation, regardless of whether it is balanced or strategic”.

The balanced scorecard came to prominence through the work of Kaplan and Norton of the Harvard Business School in the early 1990s. The first generation BSC was developed for the information age with its demands for richer measurement, analysis and reporting, paving the way for the BSC to become the most widely implemented strategic performance management system. The scorecard is balanced because it measures a company’s strategic performance against four dimensions: finance, customers, internal processes, and learning and growth (Kaplan and Norton, 1992; 1996). The links between dimensions of the BSC template indicate how employees need certain knowledge, skills, and systems (learning and growth from the human resources perspective) to innovate and build the right strategic capabilities and process efficiencies (internal business processes perspective) so that an organisation can deliver specific value to the market (customer perspective) which will lead to higher shareholder value (financial perspective).

Financial assets have traditionally used quantitative reporting mechanisms such as financial statements. However, these statements have limitations since financial reports measure past performance revealing little of long-term and future value (Kaplan, 2001). As Bieker (2005, p.2) recognised, the BSC provides enablers that “focus on the achievement of strategic goals in the future (leading indicators) as well as results (lagging indicators) to depict the effectiveness and efficiency of measures in the past”. For instance, from the customer perspective in the RFDS case, the leading indicators could be the value of sponsorship and lagging indicators could be the allocation of funds. Furthermore, the BSC is a sophisticated tool which allows for the reporting of the non-financial, intangible, and often qualitative assets of a company such as customer relationships, partner satisfaction, process quality, intellectual property, information technologies and infrastructures, all of which are becoming more recognised as major sources of competitive advantage (Kaplan, 2001).

While the first generation BSC remains dominant in use today, Kaplan and Norton in 2000 proposed the second generation of the BSC. The second generation BSC includes a strategy map for showing the links between measures, that is, the linear relationships of cause and effect, “by which specific improvements create desired outcomes” (Kaplan and Norton, 2000, p.168). The creation of the third generation of the BSC stemmed from the need to share (cascade) the strategic vision down the management chain by including a “destination” statement to provide a vision of organisational strategic objectives. The third version of the BSC, with both mapping and descriptive capabilities, was designed to bridge organisational operative and strategic levels to enable the translation of strategies into action. It is a mechanism by which strategic and ICT governance-related initiatives can be shaped and stakeholders informed (Cobbold and Lawrie, 2002).

2.2 Sustainability in organisations

Community expectations and stakeholder demands, indicative of a rising moral and ethical imperative towards social and environmental care, ensure that the issues of sustainability are inescapable in today's business setting. Sustainable management is an approach related to integration of the triple bottom line (TBL) referring to economic, social and environmental performances as well as corporate social responsibility (CSR) (Caldelli and Parmigiani, 2004). A widely accepted definition for sustainability emerged from the Brundtland Commission, formally the World Commission on Environment and Development (WCED), convened by the United Nations in 1983 to address growing concern about the accelerating deterioration of natural resources due to economic and social development. This definition, that "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" highlights the importance of balance in economic, social, and environmental demands between short term existing needs and long term strategic needs, and the urgency of responsible business practices (U.N., 1987).

Sustainable business practices are under intense scrutiny with companies rated poorly in improving the social and environmental consequences of their actions (Bonini, Mendonca and Oppenheim, 2006). Porter and Kramer (2007, p.84) argue that companies can no longer "be content to monitor only" a company's impact on society and the environment while in pursuit of profits. However, the criteria to measure and report sustainability are often inconsistent and disparate (Bieker, 2005) even though transparency and accountability are essential to good governance (Suggett and Goodsir, 2002). Bonini et al. (2006) and Porter and Kramer (2007) contend that responsible business practices require good intentions, strong leadership, and organisational adjustments. Buytendijk and O'Rourke (2008), in an Oracle White Paper claim that, to ensure sustainability, companies must consider the needs of all stakeholders, not just customers, but company employees and community members as well. Furthermore, social and environmental standards are not immutable. They evolve over time and depend on location. Moreover, a company should choose the sustainability issues that are both vital and strategic to the business since many problems are intractable and difficult to resolve (Bonini et al., 2006).

Even though the control of sustainability issues has been identified as inadequate, with a failure to align with an organisation's strategy, Bieker (2005, pp. 7-8) argues that there are many sources of benefits for an organisation when responsible business practices are realised, namely, reducing and managing risks, tackling images of credibility and reputation, innovating with regards to products and services, and creating new markets proactively. In other words, "good corporate responsibility performance mitigates risk and brings opportunities that can have positive impacts on a range of key measures of business success ..." (Buytendijk and O'Rourke, 2008, p.16). More specifically, corporations that use sustainability-driven strategic frameworks to guide their financial business choices may find responsible business practices to be "a source of opportunity, innovation, and competitive advantage" rather than a hindrance and a cost (Porter and Kramer, 2007, p.80).

2.3 Not-for-profit organisations

Just as the issue of responsible business practices in the for-profit sector matters, so does it matter in the not-for-profit (NFP) sector. The evidence is the rising number of publications dealing with the topic (Board Matters, 2008). While shareholders of profit-seeking companies are increasingly concerned with monitoring, measuring, and reporting organisational performance, so are stakeholders in the NFP sector. Nevertheless, achieving organisational focus is often more difficult for non-profits where agreement is generally reached harmoniously through consensus rather than by more autocratic managerial decision-making means (Kaplan, 2001).

Not-for-profit companies must compete for scarce donor resources and government funding, all of which need to be effectively and efficiently managed (Kaplan, 2001). All the same, despite the importance of financial considerations in an increasingly competitive environment, rarely are they the primary mission of non-profits whose objectives may be less tangible and more compassionate

(Kaplan, 2001). The flexibility of the balanced scorecard allows the not-for-profit sector to place “customers”, representing the accountability between them and society, at the top of the scorecard with financial perspectives lower down, a distinction from the private sector (Kaplan and Norton, 2000). As well, the BSC allows NFPs to expand the definition of “customer” to encompass those who pay for the service - “donors” - and those who receive the service - “constituents” or “citizens” or “members” (Rohm and Halbach, 2005).

Kaplan (2001), reporting on studies of balanced scorecards and strategy maps in the non-profit sector, found strategy maps to be a suitable tool for visually representing the link between strategic planning objectives and the processes and systems to help implement those strategies. Niven (2008), writing of the relevance of the balance scorecard to the public sector, namely government agencies and NFPs, asserts that the balanced scorecard can help to bridge the gap between vague strategy statements and day-to-day operations. He asserts that cascading is more critical for a non-profit than a for-profit company since it provides an opportunity to every employee to demonstrate a contribution to overall organisational objectives (Niven, 2008).

In summary, a review of academic and industry literature indicates that the balanced scorecard has potential as a BI conceptual lens for informing our study of responsible business practices in the NFP sector. An additional impetus for the study is that there is a scarcity of empirical studies in these research domains, especially in combination.

3 THEORETICAL FRAMEWORK

The nature of ‘theory’ within the information systems (IS) discipline has been comprehensively examined recently by Gregor (2006). She suggests that interpretive case studies use a theory for explaining how and why phenomena occur. In our study, this is an apt role for theory as we explore and explain BI initiatives in the RFDS through the BSC conceptual framework modified for the sustainability context. During the course of our study, Petrini and Pozzebon’s (2009) model of the sustainable balanced scorecard emerged out of the iterative process of data collection and analysis as an appropriate conceptual framework, although we preserved an open mind as to its suitability since it was developed for the corporate sector. For our study, the outcome is expected to be ‘rich insights’ rather than the generation or testing of theory although the generation of theory is the ultimate outcome. Walsham (1995, p.80) explained that rich insights are a category of generalisation for capturing “insights from the reading of reports and results from case studies that are not easily categorised as concepts, theories or specific implications”. In a case study, generalisability is unavoidable since the findings of the case may be generalised to other situations and to what can happen in the future.

Brignall (2002) identified defects in the traditional balanced scorecard (BSC) when integrating the social and environmental aspects of performance management. Several scholars (foremost amongst them: Bieker, Dyllick, Gminder, and Hockerts, 2001; Buytendijk and O’Rourke, 2008; Figge, Hahn, Schaltegger and Wagner, 2002) proposed the sustainable balanced scorecard (SBSC) as a way forward. The SBSC framework allows for the three pillars of sustainability (economic, social, and environmental) to be integrated with the four axes of the traditional balanced scorecard (finance, customers, internal processes, and learning and growth) for managing and tracking sustainability.

Petrini and Pozzebon (2009) conducted an empirical study in the for-profit sector using a grounded theory approach. These authors entered the BI domain to build a conceptual model similar to the traditional SBSC model to support the integration of economic-socio-environmental factors into organisational strategy. The study by Petrini and Pozzebon (2009) was atypical since it explicitly linked BI with their adaptation of the traditional SBSC framework as a means to monitor and support responsible business practices, primarily in the early stages of a BI project. Their model is comprehensive, consisting of two frameworks: one is the **Organizational Context** (not illustrated in this paper) which is valuable for comprehending corporate vision and organisational structures but is not the prime concern of this paper due to word limitations of this paper; the other is **Indicators in Perspective** which integrates several views, namely Structural, Triple Results and Functional. Refer

to the illustration in Figure 1. This is the conceptual framework for our study, which we often term simply as the SBSC framework or model in the paper when there is no prospect of ambiguity.

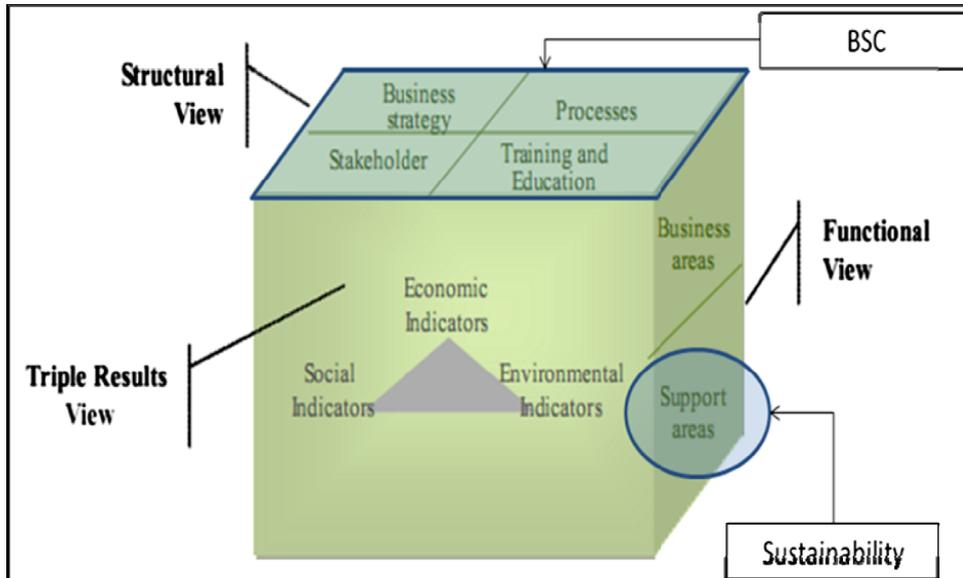


Figure 1. Details of the perspective ‘Indicators in perspective’ (Petrini and Pozzebon, 2009)

The Petrini and Pozzebon (2009) SBSC framework in Figure 1 differs in several respects from the SBSC architectures referred to earlier. The modifications make the Petrini and Pozzebon (2009) model more suitable for the non-profit sector in three main ways. First, the ‘finance’ dimension has been replaced with ‘business strategy’ to broaden the scope of the firm’s strategic goals. This seems apt for a not-for-profit when finance is incorporated in the triple bottom line view and financial considerations are generally less important than strategic goals. Second, ‘customers’ have been replaced with ‘stakeholders’. In the case of the RFDS, stakeholders may be external stakeholders such as patients, donors, volunteers, communities, society and governments as well as internal stakeholders such as staff, managers, and the board of directors. Third, learning and growth have become training and education, representing the reliance on human capital to drive organisational innovation and long-term growth.

Our study is expected to fill a theoretical and practical gap by applying and extending the Petrini and Pozzebon (2009) corporate SBSC model to the not-for-profit sector. Bieker (2001, p.1) recognised that the SBSC is a “tool to focus on the more qualitative aspects (such as social and environmental ones)” of sustainability management. As this is an ongoing study, we hope to concentrate on the challenges being faced by the RFDS as it moves towards business intelligence particularly in the area of responsible business practices.

4 RESEARCH APPROACH

The research approach of the study was qualitative. A single interpretive case study of the RFDS Queensland section was used with the intention of exploring the issues of: business intelligence, sustainability and the poorly researched area of not-for-profit information systems. The RFDS was selected as a case study for pragmatic reasons due to the first researcher’s existing association with the organisation. In addition, the appeal of the RFDS’s public striving to implement a new strategic plan as a response to the competitive environment in which it operates (Dorrstein, 2008) was hard to resist. The RFDS Strategic Plan 2011-2015 is in draft form but key pillars are expected to include: 1) maintaining the position of the RFDS as a main player in aero-medical and health care services; 2) providing efficient and effective service delivery to regional and remote Australia; and 3) creating an organisational model that is responsive to change. Also under construction is the ICT Strategic Plan is

being designed to reflect the aims of the RFDS Strategic Plan and to improve decision-making capabilities by the alignment of ICT and corporate strategic objectives.

Davison (2010) and Tsui (2006) claim that there is theoretical justification for using a real-world case study from a non-Western context. These authors point out that the identification of issues in a non-Western country may lead to the development of new theories or adaptations of existing theories, or, at the very least, reflection by researchers outside the immediate context. Admittedly, Davison (2010) and Tsui (2006) were referring to China and India, nevertheless, Australasia is distinct from Europe and America in many ways. Thus both practically and theoretically, the RFDS is an ideal exploratory case study. We also believe that it would provide a useful frame of reference for researchers in other countries who are faced with similar quandaries.

4.1 Research site

The Royal Flying Doctor Service (RFDS) is a legend in Australia. Its mission is to provide excellence in aero-medical and primary health care to regional and remote communities across Australia. In 2009, in recognition of exceptional achievements in providing aero-medical and health care, the RFDS was voted Queensland's number one icon (Wardill and Odgers, 2009). Alongside a reputation for corporate responsibility and a strong commitment to excellence, the RFDS has shown a willingness to pursue the latest in technology as demonstrated by the constant upgrading of the aircraft fleet.

The history of the RFDS is well documented. The RFDS began as the dream of the Reverend John Flynn, a minister with the Presbyterian Church of Australia. He witnessed the suffering of settlers living in isolated areas where medical aid was too distant. Flynn's vision was to provide a 'mantle of safety' (Idriess, 1965, p. 243) to overcome the 'tyranny of distance' in the outback. On 15 May 1928, his dream became a reality with the opening in Cloncurry Queensland of the Australian Inland Mission Aerial Medical Service, later to be renamed the Royal Flying Doctor Service (Bilton, 1961, p.13). Today, the RFDS owns a fleet of 53 fully instrumented aircraft with the very latest in navigation technology, operating from 21 bases across Australia and the flight doctors and nurses are responsible for the care of over 270,000 patients (RFDS, 2010). The RFDS is a not-for-profit organisation, supported by Commonwealth, State and Territory government grants, community and corporation donations, and legions of loyal volunteers. Organisationally, the RFDS consists of seven legal entities, of which the Queensland section is but one (RFDS, 2010).

4.2 Design and methodology

The empirical qualitative case study was conducted by the first researcher. The rationale for a qualitative rather than a quantitative study was the desire to engage in "exploratory research where the relevant variables had not been identified" (Marshall and Rossman, 1999, p.14) and to discover, through inductive reasoning, the possibility of a contribution to theory through the case study method (Eisenhardt and Graebner, 2007). Case study research is recognised as an empirical inquiry investigating a contemporary phenomenon within a real-life context when the boundaries are imprecise (Yin, 1994). These facts hold true for our study in that very little prior research (if any) had taken place. As an example, the first researcher initially had no knowledge of the information systems deployed in the RFDS. Gradually over the course of interviews, the situation emerged. Refer to Appendix A for the list of disparate information systems described by interviewees.

A comprehensive research log was compiled as interview data was gathered. This action allowed for inherent biases of the research team to be documented for purposes of authenticity and plausibility (Pozzebbon, 2004). Authenticity addresses the conduct of field work and is associated with the Klein and Myers (1999) principle of suspicion which requires the researcher to assume a critical perspective by not taking the comments of participants at face value. Plausibility addresses the writing-up phase and is associated with the Klein and Myers (1999) principle of dialogical reasoning which encourages the researcher to look for possible biases in interpretation.

Early investigative work began in late 2009 with an informal interview with the chair of the Queensland RFDS board since approval of both the board and the CEO of the RFDS Queensland

section was essential before seeking ethics approval to conduct the study. Ethics approval was granted in April 2010 and extended to December 2011. As it turned out, the chair was a primary key informant. In truth, all interviewees were keen to recommend other knowledgeable potential interviewees. This is referred to as “snowball” sampling (Patton, 2002). For the study, intended as a ‘pilot’ study to be followed by a main study, five study participants were interviewed in June and July 2010. An interview guide to steer the interviews had been prepared in advance with topics drawn from the literature. The interviews were semi-structured, conducted face-to-face, in-depth, and were of 30 to 75 minutes duration at a location chosen by each interviewee. This was generally in the office board room although one interview took place at a nearby (very noisy) coffee shop. With the permission of the interviewees, interviews were audio recorded for the purpose of accuracy. The interviews were transcribed from audio tape to Microsoft Word by a competent third person and moderated by the first researcher.

The study was positioned within the interpretive paradigm and, as such, certain themes emerged from the interview data (Patton, 2002). For instance, while interview questions were concentrated on the concepts of business intelligence in a sustainability context, inevitably the dialogue shifted towards other topics, most particularly the themes of corporate and ICT/BI strategy and governance, risk management, and organisational culture. At that time, the acquisition of documents such as the RFDS vision statement and strategic plan became important since it was necessary to have an appreciation of them, not only for background but to support the analysis. Data analysis was manual rather than computer-assisted since the number of interviews was small and there was a commitment to stay strongly connected with the data. Codes used in the analysis were provisional and descriptive, being a short phrase or word related to concepts or themes drawn from the literature and/or theoretical framework to filter the interview data (Saldana, 2009). This was a cyclical task with several iterations however preliminary findings revealed the need to consider additional themes (as described above) and this was when the second researcher began work. In brief, case study research was selected for this study, enabling an interpretive investigation into a unique case using ideographic methods for a first-hand investigation.

5 DATA ANALYSIS

This section presents the analysis of the interview data informed by the Petrini and Pozzebon (2009) SBSC conceptual framework (see Figure 1) at a macro level to illustrate BI support of strategic objectives in the RFDS Queensland section. An interview script guided most of the interviews, with exceptions. The two interview sessions with the chair of the Queensland board, were informal, unscripted and not recorded: one was a request for permission to enter the RFDS research site while the other was a review of the study’s progress less than 12 months later. Other interviews were shaped by the role and expertise of the interviewee as well as the time available. For example, David’s role as Manager of Quality and Risk meant the subject matter in the interview questions shifted in the direction of his expertise. The interview with Victoria was unscheduled and heavily constrained by time so questions focussed on her responsibilities as Senior Manager in Health Information. Appendix A contains a summary of all the interviews.

Excerpts from the interviews are given below to illustrate recurring themes related to the SBSC model in Figure 1. While the concepts in Figure 1 are presented independently, in reality, many of the issues are interwoven since the structure is multi-dimensional. For example, it is sometimes difficult to categorise human resources into one dimension or another. In the illustrations below, it can be seen that human resources may fit within either the stakeholder or business processes or training and education facet or even as a support activity. Similarly it is difficult to separate out sustainability practices and ICT support functions. Our analysis commences with the Structural View which is related to the four conceptual dimensions of the SBSC (finance, customers, internal processes, and learning and growth) and the notion of stakeholders.

Stakeholder: external (patients, donors, volunteers, communities, society and governments) and internal (staff, managers, and board of directors)

Kaplan and Norton (2000) recognised the importance of customers to not-for-profits while Petrini and Pozzebon (2009), in their findings, replaced customers with stakeholders. This suits our purpose since it is essential to consider patients, donors, volunteers, communities, governments, company employees and others in relation to a non-profit like the RFDS, an organisation which takes its corporate social responsibilities with utmost seriousness. The importance of stakeholders to the RFDS resonated strongly with study interviewees. External stakeholders were not interviewed during the study, thus we are unable to report their views of BI in the RFDS however the views of internal stakeholders are represented. In the following interview extracts, we learnt that government is an important stakeholder and compliance reporting is an imperative. Being able to expedite reporting as well as ad hoc requests was considered a critical BI feature by the interviewees.

Neil: *That is basically what is going back [compliance reporting] because we get three sources of funding – Federal, State and from donors. Donors we don't usually report on.*

From a health informatics perspective, Victoria evaluated the potential of a BI system: “... we can use the data in the system to give a snapshot of our service provision as well as satisfying the needs of our funding bodies”. Victoria explained that there is also mandatory reporting associated with patients at drug and alcohol centres at remote communities at Cape York in North Queensland:

We do have a service called the Wellbeing Centres. They are the drug and alcohol centres up in the Cape. There are four of them. With the Wellbeing Centres, there is very strict reporting around the national minimum data set for drug and alcohol clients ... eventually those centres will be handed over to the community.

Donors and patients are recognised as valued stakeholders although reporting is not so critical.

Business Strategy: mission statement and strategic objectives (including KPIs)

Petrini and Pozzebon (2009) in Figure 1 replaced the financial aspect of the organisation with business strategy. Again, we found this to be appropriate for the RFDS whose future strategic plans are contingent on operating successfully in an increasingly competitive environment. Internal stakeholders were reported by the interviewees to be directly involved with developing strategic objectives. The role of BI in achieving strategic objectives seemed well understood, clearly articulated, and closely associated with ICT/BI governance, especially by Joanne, Support Services General Manager and Neil, ICT Manager.

Joanne: *We had a strategic planning day about three months ago so that is the new vision for 2020. At this stage, it has been both top-down and bottom-up [approaches to setting strategic objectives] because of the strategic planning day ... One of the new programs that came out strongly is the need to improve our business intelligence and information management.*

Neil: *... business intelligence from my point of view is a subset of IT governance. There are areas within IT governance that will impact on how you manage your business intelligence, information management in particular.*

Business Processes: human resources (HR), risk management, workplace health and safety (WH&S), service improvement

Internal business processes were recognised by study participants as central to a well-functioning organisation, and instrumental in generating social and economic sustainability. Roslyn, the Human Resources Manager was aware that mature BI systems sustained by reliable information had the potential to provide the metrics to measure HR performance targets.

Researcher: *How do you know if you are achieving your strategic objectives?*

Roslyn: *Using KPIs. From an HR perspective, as an example, we have KPIs on absenteeism, turnover, injury rate, compliance with performance development reviews, a whole range of KPIs ...*

Researcher: *Do the IT systems allow you to measure these KPIs?*

Roslyn: *No ... manually driven ... we're only really now starting to put a lot of time and effort into our business intelligence and IT systems.*

David, Quality and Risk Manager, was alert to the fact that all companies even if not-for-profit must stay financially sustainable to survive. He also recognised that the IT systems in place as yet were unable to report on WH&S.

Well we are not talking just a not-for-profit ... because if you are planning for future sustainability, you've got to have more money coming in than going out on a continuous basis, otherwise you don't have the confidence that the job is going to be there in the future It may be a difference in the culture of the organisation [from a for-profit] that we don't do that [workplace health and safety reporting] here.

Training and Education: learning, growth, innovation and development

Training and education, learning and growth, innovation and development all imply the need to leverage human capital to survive in an increasingly competitive environment. As the interview excerpt below indicates, there was recognition that training and education had far-reaching effects across many areas of the RFDS, from policies for creating a sustainable future to human resource information systems (HRIS) with constructive impacts on BI reporting.

Roslyn: *We just put in a new HRIS system. We ran our first pay in February 2010 and we are now implementing additional modules around people selection, learning and development, occupational health and safety and a whole range of other things. From an HR perspective, that will help us to gain the BI in an electronic way to inform and measure our practices. Learning and development is a really good example of how it [HRIS] would improve BI. With the learning and development module, there will be one report that everything will be put into.*

In summary, the SBSC template from Petrini and Pozzebon (2009) was helpful as a conceptual lens to analyse the multiple dimensions which comprise the SBSC Structural View. The dimensions within this structure were embedded with the sustainability principles of the Triple Results View. It was useful to verify that social, economic and environmental sustainability dialogue, principles, values, strategies, policies and practices were beginning to infiltrate the organisation, whatever the incentive.

Roslyn: *In terms of sustainability from our perspective, what we are looking at is environmentally friendly policies and processes ... it's about people's everyday work ... for RFDS it's much larger than this because of aviation [and fuel consumption etc].*

Joanne: *At some point surely, government is going to then start saying in their government contract, how are you demonstrating your environmental sustainability, corporate sustainability, and especially responsibility.*

The **Functional View** from the Petrini and Pozzebon (2009) model comprises Business Areas and Support Areas both of which underpin the SBSC Structural View. Importantly, the Business Areas have responsibility for the main products and services of the organisation but we have chosen not to focus on those aspects in this paper. It is crucial however that we examine the Support Areas since ICT and BI specifically fall within its scope. The evidence suggests that the maturity of the BI systems in place in the RFDS is relatively low.

Roslyn: *Essentially, we're not a very well developed organisation in terms of our BI and IT systems. We're a long way behind many other organisations, which isn't unusual for a not-for-profit organisation and it's not unusual for an organisation where the focus is patients. It's not a corporate focus.*

Neil explained that the ICT systems were functioning at the basic support level rather than at the more mature business transformation and innovation level where ICT performance management could be better aligned with strategic direction:

Let's start looking at integration ... we do it with a high level enterprise architecture ... we are actually commencing a business intelligence project that will sit over HAL [Health

Aviation Logistics] which will be a pilot. So we have already determined a product which is Microsoft Reporting Service [SQL Server] ... it is a very good BI tool.

Yet, developing in-house BI capability to support the various organisational structures was substantiated by staff as an RFDS strategic priority.

Neil: *... business intelligence from my point of view is a subset of IT governance. There are areas within IT governance that will impact on how you manage your business intelligence, information management in particular. Our systems are very disparate. We don't have much integration. ICT capability is still back down at support. It (information management systems) is the core IT critical system.*

Researcher: *I was going to ask you about ICT staff and skills.*

Neil: *Have none. I rely on OneData [for outsourcing]. We are reviewing OneData's role at the moment.*

Certainly, the interviews revealed a determination to move from an over-reliance on outsourcing with OneData to build in-house capability. This was confirmed by Joanne in her role as General Manager of Support Services. She observed, “... especially regards not-for-profits, you do need to build that capability within your organisation, because you can't afford to be buying in resources all the time”.

6 DISCUSSION OF FINDINGS

This paper describes an interpretive ‘pilot’ case study which seeks to understand whether the BI initiatives in place support the strategic planning objectives of responsible business practices of the RFDS Queensland section. As such, the study aims to contribute to key ideas in the BI, sustainability, and the NFP academic literature by extending the SBSC template proposed by Petrini and Pozzebon (2009).

In the introductory section of our paper, we offered two research questions to guide our study. They are repeated below with rejoinders, drawn from the analysis of the interview data and the literature. The first question was:

1) How can the concepts of the sustainable balanced scorecard (SBSC) model by Petrini and Pozzebon (2009) for the corporate sector be useful as a BI framework for the not-for profit sector?

The SBSC model proposed by Petrini and Pozzebon (2009) is a multi-faceted, high-level conceptual lens which proved to be hugely valuable when trying to make sense of the complex situation presented in the case study. We found that the study was predominantly ontological with evidence from the study presented as rich insights. In this study, we found the concepts of SBSC useful as a conceptual lens to analyse the data and it helped us to see how the main actors in the study were framing key issues such as strategic objectives and existing organisational processes.

A finding of the study is that certain recurring central themes, namely, organisational culture, change, and performance, are absent from the Petrini and Pozzebon (2009) SBSC model. The researchers identified that one of the challenges for the RFDS are the constraints imposed by its distinct organisational culture. This was exemplified several times when interviewees used the phrase ‘just a not-for-profit’ to excuse the lack of resources of various descriptions. Yet, as Roslyn recognised, the RFDS had undergone extensive transformations in order to compete successfully in a more aggressive business environment, one that offered few concessions and protections despite the RFDS's iconic status:

... while we are not-for-profit, we are working in a very competitive environment and we need to be competitive ... looking at the business strategically and looking at it as a competitive environment has really helped to change the philosophy around - we really are a not-for-profit but we are in a competitive for-profit environment.

Researcher: *... and the culture within the organisation is changing?*

Roslyn: *Yes. It's becoming much more business-focussed, much more like a for-profit organisation.*

The link between organisational culture and performance is well documented (Wilkins, 1983; Prajogo and McDermott, 2011) but warrants investigation for a non-profit such as the RFDS when self-denigration is persistent. Several new senior managers had entered the RFDS recently from the business sector and were aware of the need to implement sweeping organisational change in order to compete successfully for tenders. Hence, the RFDS has grown radically over the past few years. Organisational change is a manifestation of the rapid organisational adjustments occurring. Further socio-tech studies may choose to look more closely at organisational change since advanced technology such as BI initiatives inevitably generate organisational disruptions. In summary, undoubtedly confidence within the organisation remains high although in the presence of outsiders (read 'researchers'), the discourse, particularly regarding resources, was faintly apologetic although remarkably realistically.

The second question was:

2) How do the BI systems in place in the RFDS support and report the strategic planning objectives of responsible business practices?

Several important points are synonymous with this question. Firstly, the senior managers and board members of the RFDS have been instrumental in devising the RFDS Strategic Plan 2011-2015. Neil, as ICT Manager with a strong appreciation of the ICT/BI systems in the RFDS, had also been participating in the ICT Strategic Plan 2010-2013. He recognised that existing ICT systems were inadequate in monitoring, managing, and reporting strategic direction.

On another point, even though Neil classified information management as a core system upon which BI was highly dependent, devising a data warehousing strategy as a foundation for information management was not discussed in the interviews. This could also be the basis of a future study. In the context of sustainability management, it goes without saying that the ability to monitor, manage and report triple bottom line issues was also at an immature level although all interviewees were cognisant of the benefits of responsible business practices.

In summary, the extant diverse information systems in the RFDS could not be classified as BI systems, being unhelpful for organisational decision making. As well, the level of maturity is inadequate for supporting and reporting strategic objectives including those associated with sustainability. This leads to the possibility for future studies as discussed in the concluding section.

7 CONCLUSION

In the concluding section, we examine the contributions of our study and discuss limitations and directions for further research. The contributions to knowledge from the study are believed to be theoretical and practical, being useful for the not-for-profit sector beyond the local context. As explained in the introductory section of the paper, there is a dearth of definitive conceptual frameworks in the scholarly BI literature (Petrini and Pozzebon, 2009) especially in the sustainability context of the not-for-profit sector. This paper, in applying the SBSC model in a case study, is believed to contribute to the conceptual design of a balanced scorecard for sustainability (SBSC) model in the not-for-profit sector, by identifying missing concepts, such as organisational culture, with the findings revealing a tendency in a NFP to dismiss considerable achievements claiming the organisation is 'just a not-for-profit'.

The study has practical benefits. One such benefit for both researchers and researched is recognising the potential of BI in a not-for-profit through in-depth analysis, and identifying future challenges of establishing BI systems to align with strategic objectives, especially those in the sustainability domain.

The study had several limitations, the main one being its small sample size. As a 'pilot' study, only a small number of interviewees employed in senior managerial positions in the Queensland section of the RFDS were requested to participate. From the interviews with key managers, the researchers were

able to enter the research site and gain some knowledge of the diverse information systems deployed, typical for many NFPs with often limited resources. Our small study has the potential to be broadened nationally at a later time to determine the information requirements to build relevant and appropriate conceptual frameworks to form the foundations for the design and development of BI systems in the NFP sector to enable a successful and sustainable approach to competition in a business-critical environment. This is planned by interviewing an additional 20 to 30 study participants as soon as practicable. The interviewees will be drawn from four (4) groups of stakeholders, as follows:

1. The first group will be a selection of board members, state managers and regional base managers of the RFDS whose insights will contribute to an understanding of strategic and governance principles particularly where business intelligence, responsible business practices and environmental policy are implicated
2. The second group will be ICT managers and those with knowledge of and experience with BI/ICT systems
3. The third group will be operational base staff, volunteers, and those who donate to the RFDS as a NFP organisation with their perspectives contributing to an understanding of the need for effective business processes and sustainable practices
4. The fourth group will be patients and members of regional and rural communities who lives benefit from the work of the RFDS and whose viewpoints offer validity.

The matter of an appropriate conceptual framework with which to analyse the preparedness of not-for-profit organisations such as the RFDS to develop, implement and adopt BI systems needs to be under the microscope, as is a suitable conceptual framework with which to evaluate an organisation's BI maturity as it moves from operational to strategic levels of use. Some additional disparate topics for future papers are proposed: BI/ICT governance by applying Petrini and Pozzebon (2009) Organizational Context framework; the alignment of organisational strategy and BI/ICT systems; sense making in terms of BI in organisations; and a conceptual road-map for database and data warehouse e-health design using a design science methodology.

References

- Bieker, T. (2005). Sustainability Management with the Balanced Scorecard. International Summer Academy on Technology Studies – Corporate Sustainability, St Gallen Switzerland.
- Bieker, T., Dyllick, T., Gminder, C., and Hockerts, K. (2001). Towards a Sustainability Balanced Scorecard Linking Environmental and Social Sustainability to Business Strategy. Proceedings of Business Strategy and the Environment Conference, Leed UK.
- Bilton, J. (1961). The Royal Flying Doctor Service of Australia. Halstead Press, Sydney.
- Board Matters, (2008). Doing the Right Thing – Ethics and the Nonprofit Board. Governance and Management Pty Ltd. 5(3) November 2008.
- Bonini, S., Mendonca, L. and Oppenheim, J. (2006). When social issues become strategic. McKinsey Quarterly, 2, 20-32.
- Brignall, S. (2002). The Unbalanced Scorecard: A Social and Environmental Critique. Proceedings of the 3rd International Conference on Performance Measurement and Management. Boston MA.
- Buytendijk, F. and O'Rourke, J. (2008). Sustainability Matters. Oracle White Paper. Oracle Corporation, Redwood Shores CA.
- Caldelli, A. and Parmigiani, M. (2004). Management Information Systems – A Tool for Corporate Sustainability. Journal of Business Ethics. 55, 159-171.
- Cobbold, I. and Lawrie, G. (2002). The development of the balanced scorecard as a strategic management tool, Proceedings of the PMA Conference, The Performance Measurement Association, Boston MA.
- Davison, R. (2010). Retrospect and Prospect: information systems in the last and next 25 years: response and extension. Journal of Information Technology. 25, 352-354.
- Dorrstein, F. (2008). Chairman's Message. Flying Doctor Queensland, Royal Flying Doctor Service, Retrieved December 5 2010 from the RFDS Web site <http://www.flyingdoctor.org.au> .
- Dyllick, T. and Hockerts, K. (2002). Beyond the Business Case for Corporate Sustainability. Business Strategy and the Environment. 11, 130-141.
- Eisenhardt L. and Graebner, M. (2007) "Theory Building from Case Study Research: Opportunities and Challenges", Academy of Management Journal, 50(1), pp. 25-32.
- Figge, F., Hahn, T., Schaltegger, S. and Wagner, M. (2002). The Sustainability Balanced Scorecard: Theory and Application of a Tool for Value-Based Sustainability Management, Proceedings of the Greening of Industry Network Conference, Gothenburg Sweden.
- Gregor, S. (2006). The Nature of Theory in Information Systems. MIS Quarterly, 30(3), 611-642.
- Idriess, I. (1965). Flynn of the Inland. Angus & Robertson, Sydney.
- Kaplan, R. (2001). Strategic Performance Measurement and Management in Nonprofit Organizations. Nonprofit Management & Leadership. 11(3), 353-370.
- Kaplan, R. and Norton, D. (1992). The Balanced Scorecard: Measures that Drive Performance. Harvard Business Review, January-February, 71-79.
- Kaplan, R. and Norton, D. (1996). The Balanced Scorecard: Translating Strategy into Action. Harvard Business School Press. Boston MA.
- Kaplan, R. and Norton, D. (2000). Having Trouble with Your Strategy? Then Map It. Harvard Business Review. September-October, 167-176.
- Klein, H. K., and Myers, M. D. (1999). A Set of Principles for Conducting and Evaluating Interpretative Field Studies in Information Systems. MIS Quarterly. 23(1), 67-93.
- Marshall, C. and Rossman, G. (1999). Designing Qualitative Research. 3rd Edition. Sage Publications, Thousand Oaks CA.
- Niven, P. (2008). Balanced Scorecard: Step-by-Step: For Government and Nonprofit Agencies. 2nd Edition. John Wiley & Sons, New York.
- Olve, N. and Sjostrand, A. (2006). Balanced Scorecard. John Wiley & Sons, Chichester West Sussex.
- Patton, M. (2002). Qualitative research and evaluation methods. Sage Publications, Thousand Oaks, CA.
- Petrini, M. and Pozzebon, M. (2009). Managing sustainability with the support of business intelligence: Integrating socio-environmental indicators and organisational context. The Journal of Strategic Information Systems. 18(4), 178-191.

- Porter, M. and Kramer, M. (2007). Strategy & Society: The Link Between Competitive Advantage and Corporate Social Responsibility. Harvard Business Review. June 2007.
- Pozzebon, M. (2004). Conducting and Evaluating Critical Interpretive Research: Examining Criteria as a Key Component in Building a Research Tradition. Information Systems Research: Relevant Theory and Informed Practice. Ed. Kaplan, B. et al., London: Kluwer Academic Publishers, Chapter 16, 275-292.
- Prajogo, D. And McDermott. C. (2011). The Relationship between Multidimensional Organizational Culture and Performance. International Journal of Operations & Production Management. 31(7), 712-735.
- Rohm, H. and Halbach, L. (2005). Developing and Using Balanced Scorecard Performance Systems. Balanced Scorecard Institute White Paper.
- Royal Flying Doctor Service. (2010). Our History. Retrieved February 5 2010 from the RFDS Web site <http://www.flyingdoctor.org.au/About-Us/Our-History/> .
- Saldana, J. (2009). The Coding Manual for Qualitative Researchers. Sage Publications, Thousand Oaks CA.
- Schultze, U. (2000). A Confessional Account of an Ethnography about Knowledge Work. MIS Quarterly. 25(1), 3-41.
- Shollo, A. and Kautz, K. (2010). Towards an Understanding of Business Intelligence. Proceedings of the 21st Australasian Conference of Information Systems, Brisbane Qld.
- Suggett, D. and Goodsir, B. (2002). Triple Bottom Line Measurement and Reporting in Australia: Making it Tangible. The Allen Consulting Group.
- Tsui. A. (2006). Contextualisation in Chinese Management Research. Management and Organization Review, 2(1), 1-13.
- Turban, E., Sharda, R. and Delen, D. (2011). Decision Support and Business Intelligence Systems, 9th Edition, Prentice-Hall, Upper Saddle River New Jersey.
- Walsham, G. (1995). Interpretative Case Studies in IS Research: nature and method, Operational Research Society, 4, 74-81.
- Wardill, S. and Odgers, R.. (2009). Queensland icons: the list of 700 nominations. Retrieved 5 February 2010 from the Courier-Mail Web site <http://www.news.com.au/couriermail/story/0,23739,25050291-3102,00.html> .
- Watson, H. (2009). Business Intelligence - Past, Present, and Future, Communications of the Association for Information Systems. 25, article 39, 487-510.
- United Nations. (1987). Report of the World Commission on Environment and Development, General Assembly Resolution 42/187, <http://www.un-documents.net/a42r187.htm> , Retrieved July 15 2010.
- Yin, R. (1994). Case Study Research: Design and Methods. Sage Productions, Thousand Oaks CA.

Appendix A: Interview Summaries

Interview Date	Interviewee (Pseudonym)	Position	Place of Interview	Information System Described by Interviewee
17 th June 2010	Roslyn	HR Manager	Coffee Shop, Bowen Hills Brisbane	Chris21
17 th June 2010	Joanne	General Manager Support Services	Board Room, Bowen Hills Brisbane	Health Aviation Logistics (HAL) Rostering System Risk Management Information System Prince2 Methodology Payroll System Microsoft Office Microsoft SharePoint Electronic Medical Records (EMR) Electronic Document Management System (EDMS) Process Mapping (BPMN?)
9 th July 2010	Neil	ICT Manager	Board Room, Airport Offices Brisbane	HAL Crystal Reports Combined HRIS (Chris21) Finance1 Microsoft Exchange Microsoft Reporting Service SQL Server Unified Comms (VOIP) Citrix Prince2 Methodology Business Process Modelling Notation (BPMN) Disaster Recovery Site
9 th July 2010	David	Quality and Risk Manager	Board Room, Airport Offices Brisbane	Risk Management Information Systems
9 th July 2010	Victoria	Senior Health Information Manager	Board Room, Airport Offices Brisbane	HAL Crystal Reports Medical Director (MD3) Electronic Medical Records (EMR) QNADA database
16 th December 2009 and 27 th October 2010	Lisa	Chair Queensland Board of Directors	Coffee Shops, Brisbane	Interviews were informal, unstructured, and not recorded. Interview data was not used.