

CORPORATE STRATEGY AND ACCOUNTING FOR SUSTAINABILITY IN INVESTMENT APPRAISAL

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Abstract

This paper reports on an exploratory study that sought to understand how environmental and social factors are included in capital investment appraisal. Views were gathered from CFOs and sustainability managers of large Australian companies. The focus of the study was on the links between sustainability, strategy, employee expertise and influence in accounting system design. Investment appraisal that does not incorporate environmental and social factors could pose potential governance risks for senior management, even legal ramifications for organisations that appear to be ignoring or 'greenwashing' their activities. The potential disconnect between widely applied discounted cash flow methodology and the principles underlying accounting for sustainability is discussed in light of investing scarce resources to support corporate strategy. Early findings suggest the emphasis on traditional DCF and NPV and how it is used alongside the harder-to-quantify sustainability issues, still needs further investigation. We need to better understand the extent to which the complex qualitative sustainability factors are being modelled and included in cash flows and to what extent the qualitative narrative takes precedence in decisions.

Keywords: Capital Investment Appraisal, Sustainability, Management Accounting

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1. Introduction

Investment decisions are made for a variety of obligatory, operational, strategic, even philanthropic reasons. While the accounting literature highlights the traditional financial role accounting plays we have been reminded, for several decades now, that accounting should not neglect the important qualitative aspects associated with corporate investment appraisal. When it comes to long-term sustainability investment, Middleton pointed out more than three decades ago that: "... the decision-makers in the private sector of the economy have a social responsibility; ... they have an obligation to consider the social and environmental effects of investment proposals" (1977:3). Given Middleton's views are not new, it is interesting that accounting control systems have not yet adequately addressed concerns that accounting should play a better role in embedding sustainability practices into both operational and strategic activities and investment decisions (Hopwood et al. 2010). It could be argued that the absence of consideration of sustainability factors in the appraisal process could lead to potential governance risks for senior management, even legal ramifications for

organisations that appear to be ignoring or 'greenwashing' their activities. To better understand senior management concerns around these issues and the role of sustainability in contemporary accounting practices, the following research question informs this study - how are organisations embedding social and environmental governance issues in management accounting designs?

The extent to which control mechanisms influence capital investment appraisal is arguably a function of strategy and the level of risk a company decides to take (Simons 2000). When the strategic uncertainty relates to social or environmental impacts, it is argued that accounting models should act as proactive control mechanisms or red flags to alleviate decision-maker concerns (internal and external) of the ramifications of corporate externalities (Gouldson and Bebbington 2007). Thus when sustainability impacts present as a stakeholder concern, it is likely that sustainability factors will impact all investment types regardless of their strategic, operational or regulatory, direct or indirect nature. If sustainability is an essential component for contemporary management controls further questions relate to how organisations are embedding social and environmental governance issues in their accounting designs? In particular how

are management accounting systems being developed to aid sustainable investment decisions? A *business case* viewpoint is offered which claims sustainability-related decisions should only be considered when the payback to the business and shareholders are readily demonstrable (Schaltegger et al. 2012). In this scenario only the readily measured and directly observable impacts of organisation-controlled practice are included in accounting system designs. Extensions of this theoretical position suggest sustainability-related decisions and accounting designs should be considered more broadly, and take a *stakeholder-accountability* perspective (Brown and Fraser, 2006; Adams, 2004; Adams and Larrinaga-González, 2007). With this broader viewpoint sustainable organisations promote themselves as democratic institutions, focused on openness, transparency and actions based on meeting wider institutional pressures. The extent to which a business case or a broader stakeholder approach is taken is one that is based on the elevation of strategy and risk in decision making, which is somewhat unique to individual organisational and industry settings. For example, organisations from the mining industry are familiar with the 'licence to operate' debate, and would be relatively advanced in sustainability-related strategies and associated appraisal techniques that take into account the wider stakeholder concerns.

When considering strategic, operational or regulatory investment decision alternatives sustainability can be viewed as having either a direct or indirect impact on investment decisions. For example, decisions can be made to deliberately invest in sustainable investments, such as green-star rated buildings, community housing programs, wind farms, solar technology, clean coal technology etc. These investments might provide operational or competitive advantage. Similarly they may comply with government regulation. However, with any capital investment, sustainability-related impacts (costs and benefits) might be indirect to investment decisions and can be unintentionally ignored if not prioritised in accounting modelling. There is no one approach adopted on how best to embed sustainability in investment decisions, and the extent to which sustainability should be accounted for continues to be debated in the literature (Bruntland, 1987; Stern 2006; Garnaut 2008; TEEB 2008; Hopwood et al. 2010). Taking a traditional accounting viewpoint some argue that limiting analysis to financial cash flows can result in myopic investment decisions (Irani and Love 2001) whereas others concerned about the subjectivity of qualitative data suggest that objectivity can be strengthened with financial modelling (Small and Chen 1995; Alshawi, Irani and Baldwin 2003). A balanced viewpoint is proposed with full cost accounting techniques and other similar alternatives to the traditionally accepted NPV model being offered to the accounting academy (Heyde 1995; Milne 1996; Schaltegger and Burritt 2000; Bardouille and

Koubsky 2000; Bebbington and Gray 2001; Burritt et al. 2002; Porter and Kramer 2006; Munasinghe and Cleveland 2007; Bebbington, et al. 2007b; Epstein 2008, 2010; Schaltegger and Lüdeke-Freund 2012).

While financial data continues to dominate investment appraisal with techniques such as discounted cash flow (DCF), using net present value (NPV) calculations are widely adopted by the profession and accepted as good practice (IFAC 2008); the question arises as to how well can traditionally accepted accounting designs capture sustainability-related attributes? This is not to suggest that accounting academy completely ignores all qualitative factors in capital investment appraisal. Academics and practitioners have long recommended that careful consideration is given to strategy and risk in investment decisions (IFAC, 2008; Graham and Campbell 2001; Ryan and Ryan 2002; Alkaraan and Northcott 2006; Jackson 2010). What is evident, however, is the lack of guidance to practicing accountants about how to best incorporate these harder to quantify strategy and risk factors, in particular the more contemporary sustainability issues, in their accounting system designs. As such, our understanding of the gap between theory and practice is of increasing concern, particularly given the normative debate that investments for the future need to include consideration of not only financials but also environmental and social impacts; it is argued that without the latter sustainable development is not possible (Bruntland, 1987).

Given the diversity in viewpoints and minimal empirical data on contemporary capital appraisal practices, this exploratory study is designed to better understand the attention this emerging sustainability phenomenon has been given in management accounting system design. In particular, a consideration of the harder to quantify sustainability-related factors in capital investment appraisal is given, including the factors that impact employees, society and the environment. This enquiry will focus on accounting control techniques, organisational strategies, including the role of accounting and its wider influences on capital investment appraisal. The study will provide practical insights from organisational members likely to influence sustainability strategies and accounting system design. As such this work responds to the calls for sustainability factors to be considered in investment decisions (IFAC, 2013; Hopwood et al. 2010).

The paper is structured as follows. The following section comprises a background literature review on sustainability and capital investment appraisal techniques. A description of the research setting, along with the varying sources of data collected is subsequently provided. This is followed by a discussion of results based on accounting system design and the impact on sustainability strategy and control. The paper concludes with a discussion on overall embedding of sustainability in capital

investment appraisal and highlight areas for further research.

2. Sustainability and capital investment appraisal

It could be argued that capital investment appraisal techniques largely rely on discounted financial inflows and outflows over a defined period of time (Bower, 1970; Simons, 1987; Bierman and Smidt 2007; Burns and Walker 2009; Schall et al. 1978; Chen and Clark 1994; Graham and Campbell 2001; Ryan and Ryan 2002; Alkaraan and Northcott 2006; Jackson 2010). Methods based on discounted cash flows (DCF) are considered superior techniques and recommended by the professional and academic literature (IFAC 2008⁹; Marino and Matusaka 2005; Pike 1996, 2005; Keat and Young 2006; Jackson 2010). Appraisal tools such as net present value (NPV) and internal rate of return (IRR) and accounting rate of return (ARR) dominate while payback is often considered the 'rule of thumb' for companies when evaluating both simple and complicated investment projects (Jackson 2010). Some researchers argue that payback is applied more frequently in practice than the other techniques (Graham and Campbell 2001; Marino and Matusaka 2005).

While there has been increasing calls for qualitative criteria to be included in capital investment designs, in general, the emphasis has been on the factors that can be monetised and included in the "traditional" financial appraisal. It has long been debated that financial appraisal should be posited within a broader strategic control frame and included in overall cost-benefit analysis. However, little is known about this 'softer' aspect of accounting system design and; in particular, how sustainability factors are considered, quantified or otherwise included, in capital appraisal. Varying alternate multi-criteria analysis techniques are proposed as a way to help capture the harder-to-quantify aspects of capital investment appraisal (Epstein and Roy 2001; Schaltegger et al. 2003; Bebbington et al. 2007b). More specifically, it is argued that sustainability-related risks (externalities) and associated medium/long term corporate liabilities should be modelled using techniques such as full social and environmental cost accounting, lifecycle analysis, cost-benefit analysis, sensitivity analysis, decision trees and marginal abatement curves¹⁰ (Heyde 1995; Milne 1996; Schaltegger and Burritt 2000; Bardouille

and Koubsky 2000; Bebbington and Gray 2001; Burritt et al. 2002; Heinzerling 2002; Abramowicz 2002; Sinden 2004; Porter and Kramer 2006; Munasinghe and Cleveland 2007; Bebbington, et al. 2007b; Epstein 2008, 2010; Schaltegger and Lüdeke-Freund 2012). Little is known of the use of these alternative tools by practicing accountants which is of particular interest, given these methods also bring into question the sole reliance on traditionally accepted discounted cash flow techniques, measured investment periods and decisions based solely on net present value performance (Bardouille and Koubsky, 2000; Bebbington and Gray 2001; Porter and Kramer 2006; Epstein 2010).

Recent arguments for sustainability impacts to be included in decision-making have added to the already recognised complexity associated with capital investment appraisal. It has pointed out that given the subjective nature of capital investment appraisal, decisions could be built on somewhat myopic assumptions without the hindsight provided by improved financial modelling (Small and Chen 1995; Irani and Love, 2001; Alshawi, Irani and Baldwin 2003). Nevertheless, long term cost estimates are based on factors that are sometimes unobservable and outcomes that are potentially unverifiable (Shelanski and Klein 1995). As a result of the overall complexity and uncertainty associated with sustainability, managers may refuse to invest in strategically beneficial projects (Verbeeten 2006). Likewise, investment appraisal may be based on "emotional" or "act of faith" decisions or apply questionable accounting methodologies where costs and benefits are assigned in ways that the project "passes" the budgetary appraisal (Small and Chen 1995). In terms of sustainability impacts, capital investment appraisal is more recently confounded by the difficulties in quantifying many social and environmental impacts, particularly where there is uncertainty behind the nature and timing of the risks and benefits (USEPA 1995; TEEB 2008).

Nowadays, if appraisal techniques do not include strategic or risk measures that extend beyond organisational boundaries, then decisions might be considered short sighted and detrimental to the long-run viability of the organisation (Hopwood et al. 2010). It is likewise pointed out that incomplete appraisal offer potential governance risks for senior management, even legal ramifications for organisations that appear to be ignoring or 'greenwashing' their activities.¹¹ Even adapting traditional appraisal models does not necessarily

⁹ IFACs (2008) best practice guidelines on capital investment appraisal are viewed more than any of their other practice guidance statements (personal correspondence). Given they did not provide advice on how to include sustainability impacts, this statement is currently being revised (IFAC, 2012)

¹⁰ Marginal cost/loss in profits from reducing pollution (i.e. marginal cost is assumed to increase as pollution decreases).

¹¹ A non-profit law group, ClientEarth, successfully challenged Rio Tinto's 2008 annual report claims. ClientEarth asked the regulator, UK Financial Reporting Review Panel (FRRP), to review the annual reports claiming they do "not reflect the reality of its environmental and social impacts and practices and are not compliant with UK law." (source: <http://www.clientearth.org/media-briefing-rio-tintos-greenwash-challenged-in-first-big-test-of-uks-company-reporting-regulator>, accessed December, 2010).

provide a sustainability-focused solution. For example, where cash flows are uncertain, recommended best practice is to raise the discount rate, above the company's weighted average cost of capital or corporate hurdle rate, to compensate for the level of inherent risk (IFAC 2008). However, this de-emphasizes future cash flows, which are potentially important from a sustainability viewpoint. Stern (2006) argues that applying a rate much more than zero, when natural resources will be diminished by corporate activities, is ethically inappropriate in social policy choice. It is implied that where sustainability impacts result from investment decisions, the unadjusted corporate discount rate is effectively discounting the future ecosystem, and society will not be able to derive the same environmental benefits, or value, we have today (Brennan 1995; Arrow 2007; Nordhaus 2007; Roemer, et al. 2009; Garnaut 2008). This obviously runs counter to the current core of sustainability, hence the calls for further investigation of a range of discounting choices connected to different ethical standpoints (TEEB, 2008).

Empirical research in areas involving contemporary modes of strategy and control (for example, lean accounting and waste minimisation), suggest that traditional management control and techniques are generally downplayed when there are competing philosophies, strategies and beliefs (see Kennedy and Widener 2008; Fullerton, Kennedy and Widener 2011). In these environments, the strategically focused initiatives call for greater employee engagement so activities do not conflict with the intended strategy and associated accounting designs (Kennedy and Widener 2008; Fullerton Kennedy and Widener, 2010). Following on, if organisational strategies and beliefs indicate that sustainability considerations must be included in decision-making, the nature of the investment decision frequently becomes increasingly complex and calls for greater engagement. Such strategies often require the expert knowledge of engineers, sustainability managers and others outside the accounting domain (Carr, Kolehmainen and Mitchell 2010). By including a diverse body of expertise in accounting system design this is argued to improve relations and transfer knowledge within the broader accounting control environment (Dekker 2004; Mouritsen and Thrane 2006; Dekker and Van den Abbeele 2010; Balakrishnan, et al. 2010). Furthermore, it has been pointed out that strategic commitment to sustainability is evidenced in the extent to which companies invest in employee training and adopt alternate accounting system designs to improve the transparency of sustainability in the accounts (Wilmshurst and Frost 2001). It is argued that greater organisational knowledge will give rise to social controls (or individuals and groups operating together for a common organisational goal) as a way to "enhance the 'supervisory gaze' by

allowing a higher degree of visibility and transparency" (Hopwood and Chapman 2009: 1372).

This literature reinforces the notion that the social is something that cannot be separated easily from the technical aspects of accounting. As such, management accounting is inextricably part of the wider organizational and social context (Hopwood, 1983). Accounting techniques built on multidisciplinary expertise and an underlying sustainability philosophy contributes to the belief that: "By transforming the physical flows of organisations into financial flows, accounting creates a particular realm of economic calculation of which judgements can be made, actions taken or justified, policies devised, and disputed generated and adjudicated. attention is drawn to the reciprocal relations between the technical practices of accounting and the social relations they form and seek to manage" (Miller, 2004: 4). How much this wider social context can be captured in financial models, still needs to be better understood.

In conclusion, given the unique nature of complex strategically motivated investment decisions, the availability of a diverse range of expertise and somewhat normative accounting practices there is no single definitive framework to guide organisations. As such, accounting practitioners and other decision makers are potentially disadvantaged without good practice guidance. It appears that if concern for society and the environment is an essential part of corporate philosophy then accounting systems must also adapt to meet such strategies. Concerns remain when transforming sustainability impacts into accounting measures. Nevertheless, in the process of accounting for sustainability certain activities are made visible for judgement and control by concerned individuals within, and outside, the organisation. Alternatively, if accounting systems do not embrace corporate externalities concerned individuals can impose their own measurement and judgement criteria. Thus, advantage potentially rests with corporate strategy, related management decisions and social controls imposed by other concerned employees; rather than delayed, reactive and potential costly demands from external parties, governments, society or even the planet.

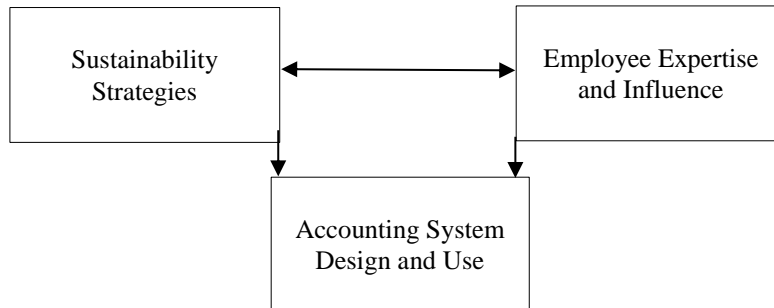
3. Broad research enquiry

From this body of largely normative literature, it can be argued that there are minimal empirical reviews on management accounting practice and the role sustainability plays in accounting system designs. The overall aim of this exploratory study is to better understand how organisations have responded to the need to adapt management control systems to embed sustainability factors in the capital investment appraisal process. From the literature review a conceptual model was developed to guide the research

process (refer Figure 1). The key concepts to be investigated include:

- a) The role of sustainability strategy in investment appraisal
- b) The role of employee expertise and influence
- c) The accounting system design and use

Figure 1. Research focus



In addressing this gap, with evidence from practice, the following broad research question frames the exploratory study undertaken:

RQ: How are organisations embedding social and environmental governance issues in management accounting designs?

The conceptualised approach will help to better understand the incorporation of the harder to quantify sustainability-related factors and the influence of organisational participants such as sustainability and risk managers, when embedding sustainability in investment appraisals. This research will address further questions relating to how well traditionally accepted accounting designs capture sustainability-related attributes and whether or not management accounting systems are being developed, by leaders in the field, to aid sustainable investment decisions.

4. Research setting

In Australia, like many parts of the world, sustainability-related accounting empirics are confounded by debates, politics, and uncertainty about the extent to which externalities are, or should be, recognised in company accounts (Garnaut 2008; Hopwood et al. 2010). With continual legislative indecision and an ad hoc global approach to emissions reductions, environmental and social accounting governance is at varying stages of refinement, both legislatively, in Australia, and in practice throughout the world. Given this uncertainty, Australia provides a unique setting in which to explore sustainability accounting practices. There are several reasons for this comment. Firstly, emerging from a dominant resource sector the potential for financial forecast uncertainty is due to varying factors including fluctuating international demand, environmental uncertainty due to mining impacts on our ecosystem, as well as emergent social and occupational health and safety costs associated with employees being located in remote mining locations without family and community infrastructure (see Whitbourn 2012). In

this setting, companies are also faced with the social and environmental impacts on indigenous communities and their long-standing cultural beliefs. Increasing demands for energy and water; particularly when resources are scarce, has resulted in developments in water standards (Chalmers, Godfrey and Lynch 2012), and an increasing focus on greenhouse gas emissions which is impacting a large number of Australian organisations.

The changing landscape and potential accounting position creates an opportunity to critique emerging practice in capital investment accounting, not only for the inclusion of carbon but for all other harder to quantify social and environmental factors that meet Bruntland's (1987) broader sustainability definition. It is understandable that some accounting practices would be linked to legislative (rather than strategic) change requirements and be tentative and exploratory in nature. It is anticipated that other Australian organisations, familiar with the 'licence to operate' debate, would potentially be more advanced in sustainability-related appraisal techniques (see Clarkson et al. (2008; 2011) for discussion on the propensity for high-level polluters to widely disclose their sustainability performance largely relying on verifiable GRI reported measures). However, with research in contemporary capital investment appraisal methodologies still lacking depth and detailed understanding, at this stage, an initial exploratory study is considered appropriate. In the following section, details on this investigative pilot survey and associated fieldwork are provided. In conjunction with the survey, the individual and focus group interviews are used as a means to provide data for further, larger and more generalizable, empirical research.

5. Data collection

This research was directed at understanding the overall embedding of sustainability in capital investment appraisal by exploring the interplay

between *sustainability strategies, employee sustainability expertise and influence and investment appraisal design and use*. Through survey and interviews about practices, the aim was to gather deeper knowledge about these factors that influenced capital investment appraisal. This approach provided an overall appreciation of technical appraisal techniques as well as an enriched understanding of factors that influence accounting choice. In particular, inter-organisational relations and the broader social controls that emerged helped to highlight areas for subsequent research. The exploratory survey targeted CFOs of Australia's Group of 100 (G100) organisations¹². The G100 represents Australia's senior finance executives with members representing the nation's major private and public business enterprises. According to their charter: "A primary goal of our organisation is to ensure that Australia's commercial environment is one which advances the interests of Australian businesses engaged in today's highly competitive and global environment"¹³. Sustainability accounting issues are highlighted as a significant part of the G100 agenda. Given their role in identifying and guiding accounting best practice on sustainability and triple bottom line reporting, their views were considered to be most suitable.

Using the G100 reinforced the view that small-scale quality pilot data was more suitable in an emerging environment than initial quantity for statistical generalisation where uncertainty in practice exists. Given this research was largely exploratory in nature, it was considered more important to gather the views of a few CFOs and sustainability managers from leading organisations. This was based on the assumption that they would be leaders in the field. The survey was developed and initially pilot tested with academic peers, practicing accountants and sustainability managers in focus group settings. When the exploratory survey was sent to the G100 a total of 15 responses were received representing a 15% response rate. While this was small it was considered an initial pilot, providing a valuable data set of CFO responses from Australia's top banking, retail, mining, manufacturing, transportation, energy, and communications industry leaders. In addition the respondents represent the highest level of CFOs in Australia and therefore their comments provide rich data for gaining insight into current practice. Responses were evaluated and results presented at three meetings in different Australian states, with

invitations arranged by the accounting profession. The first group meeting comprised top-tier corporate CFOs (and potential respondents to the survey). The second group comprised second-tier CFOs and practicing accountants. The third meeting comprised both local and international accounting practitioners and members of a professional body interested in discussing results and developing the survey further to disseminate globally. At all three meetings participants were provided the opportunity to refute or confirm overall findings and engage in robust discussion.

At the same time the survey was being developed, pilot tested and distributed, interviews were also conducted at ten large companies (all G100 members) to better understand the conditions that influence the overall embedding of sustainability in capital investment appraisal. Interviews were with sustainability, risk and human resource managers from outside the accounting domain, who were willing to explain their roles and influence on accounting practices. The fieldwork participants included members from the mining industry (sustainability managers from three large mining organisations); industrial sector (sustainability and risk managers from three industrial organisations, in which two are food and beverage producers); sustainability, risk and human resources managers from the service industry (banking and hospitality). Interviews were conducted with managers (accounting and sustainability-related roles) from two water boards on their capital investment practices. Additional interviews were held with a Chairman of the Board of a large manufacturing organisation and a Chief Executive officer (CEO) of a large service sector company. In total, the research involved 20 hours of interviews and a further 10 hours at case sites.

6. Findings and discussion

In this section the responses to the survey questions and insights provided from interviews are discussed. The discussion that follows highlights the interplay between the strategy, expertise and accounting system design and use. A summary of the findings is provided at the end of the discussion section.

6.1 Corporate Strategy & Sustainability

Given discussion in the literature, it would be expected that for sustainability to be embedded in corporate decision making via control system design it would be an important aspect of organisational philosophy. To explore this expectation, respondents were asked about their organisation's strategy and policy. Only a minority of respondents (16.7%) indicated that sustainability did not form part of their strategy and mission statement with the majority of respondents (75%) suggesting that the consideration of social and environmental impacts was necessary

¹² In order to maintain anonymity of the G100 respondents, the survey was administered by CPA Australia on our behalf.

¹³ In conjunction with CPA Australia, the survey was directly sent to G100 members by the G100 secretariat. As a way to maintain confidentiality we were not provided with the list of respondents. G100 members comprise Australia's largest public and private sector organisations (www.group100.com.au/charter.htm.) To further maintain confidentiality, we have not provided specific details about survey respondents and fieldwork participants who kindly volunteered their time.

for the organisation's competitive advantage. The importance of a sustainability strategy is reinforced with the majority of respondents (66.6%) indicating the Boards concerns that their company has a capital budgeting policy that integrates issues of sustainability in investment decisions. Furthermore, with increasing emphasis on key officer liability, the inclusion of sustainability factors for risk management strategies was seen as important by 84.4% of respondents. The following comment from a service sector CEO reinforces the importance of taking a sustainability focus:

"In our view it is better to be proactive and always ahead, even working with governments on legislative changes. Our aim is to be leading global best practice in sustainability operations and we do this through commitment to initiatives such as the Dow Jones Sustainability Index (DJSI). We are a recognised super sector industry leader and one of the performance goals set for our company is to increase our global ranking. To do this we must be seen to be a responsible service provider strengthened by employee commitment at all levels".

In general, interviewees continually emphasised that for a company to remain successful, management cannot be seen to be paying lip service to social and environmental impacts. One CFO commented on the importance of being ahead of legislation and that for optimal strategic control, they will not wait for legislation to drive their decisions. Another CFO suggested being proactive in this way provides them with their "licence to operate".

Companies also recognised the importance of employee engagement with the strategy, in particular with its approach to sustainability. In with a meeting with a CFO of a large beverage industry, he explained how important sustainability was for their organisation:

"Every year we conduct employee surveys to understand how all employees view us, as an employer. This survey has consistently highlighted to us over the last few years that our employees rate two factors above any others. The first is the extent to which this organisation embraces occupational health and safety and the second relates to sustainability initiatives. We pay a lot of attention to our employee satisfaction survey and recognise that what we put in our mission statement must be enacted within the organisation. Thus we will always invest in occupational health and safety, regardless of cost. Likewise, we invest in sustainability initiatives that are perceived to enhance our reputation in the eyes of our employees. Yes, we will accept a lower, even zero NPV for these goals to be realised".

6.2 Capital Appraisal and Sustainability

In discussions with CFOs it was suggested that they relied on extensive sustainability appraisals, largely conducted by their sustainability/risk management

team. Further joint discussions with CFOs and sustainability managers, suggested that it was the sustainability or risk managers who conducted life cycle analysis and carbon footprint accounting. The output from this analysis would then be used alongside the accounting model (DCF/NPV) and in conjunction with other required project data. As explained by one sustainability manager:

"I conduct the life cycle analysis and may use techniques like "marginal abatement cost curves" (the CFO present in the meeting indicated he was not really familiar with these techniques and left them to his sustainability experts)... [The sustainability manager continued].... My reports are then attached together with the accountant's analysis and any other requisite supporting documentation, which is then evaluated in unison by the capital investment committee."

At another organisation a sustainability manager explained her role:

"I generally get called on by managers wanting to better measure the sustainability impacts in their investment proposals. If the manager making an investment proposal does not flag sustainability impacts as an issue, the capital investment committee will step in and ask me to provide sustainability-related details on projects they might be concerned about. In this particular carbon neutral investment, it was important that all revenues and costs (including overheads) were completely isolated to this project. It required a lot of effort to manage this process, which would be carefully audited".

Similar stories were told at other meetings. Most large companies employed sustainability managers and some considered the sustainability function fitting under the umbrella of risk management. One company explained how their sustainability manager was part of 'corporate' risk management and required to control all measurement and sustainability reporting functions. As measurement and reporting of sustainability impacts became more widely accepted and understood by the divisional managers and employees, this function was subsequently devolved to lower-levels of the organisation and the risk manager focused more on sustainability strategies.

Interestingly sustainability/risk managers had varying degrees of authority within their organisations. The majority of interviewees had high-level roles and close contact with senior management, including the CFO. One sustainability manager from the banking sector said it would be impossible to review all their corporate investment proposals, instead only gets involved with the readily identifiable sustainability-relevant proposals. It appeared that the organisations with the greatest social or environmental sustainability-related risk (such as the mining sector and banks) employed sustainability experts in very senior management roles. However, there were exceptions where some sustainability management roles were about data

collecting and record keeping. They did not appear to have the same level of responsibility as sustainability management teams at other organisations. This ambiguity in role importance was reinforced in survey findings where only 8.3% of all organisations included the sustainability manager in all investment appraisals. It was only where sustainability issues were identified that they were called upon (16.6% of respondents).

6.3 Accounting system design for sustainability in capital appraisal

All respondent organisations used NPV, IRR and Payback with the majority (87%) of CFOs suggesting they considered DCF techniques the best decision aid for all capital investments. While quantitative analysis was preferred, decisions were also based on qualitative data, as respondents suggested they still challenged the completeness of the quantified data and made sure decisions included qualitative attributes. More than half the respondents said qualitative analysis would outweigh a positive NPV in decision making and 40 percent of the survey respondents agreed that quantitative analysis alone was not always suitable for certain capital investment appraisals. For example, CFOs suggested they would reject projects where qualitative factors identified significant sustainability impacts. Some suggested they would use traditional models to make decisions, but decide to accept projects with lower NPVs when sustainability benefits were identified. All respondents suggested they did not adjust the discount factor to allow for sustainability impacts. These findings reinforce the awareness by CFOs of the need to consider sustainability factors in decision making.

In further fieldwork discussion information was gained which elaborates on different approaches being adopted by organisations and the issues they were grappling with. At one interview, a CFO explained their practices. In conjunction with discounted cash flows (and calculated NPV) they would ask their managers to rank the riskiness of the project. The “harder to account for” sustainability criteria is evaluated in potential of their low/medium/high sustainability-related risk. Respondent comments suggested this was crucial to all their investment decisions. It was apparent that multi-disciplinary teams were involved in the appraisal process. At one company, a risk manager explained his sustainability-related investment role:

“Our investment appraisal process requires that we have a sustainability assessment of all proposed investments. This is seen as important as our parent company requires us to reduce our carbon footprint and water consumption by 5%. Protocol suggests I should receive all investment proposals to evaluate. I think sometimes this is a tick-boxing exercise, but on the whole we do take our sustainability impacts seriously. For example, we will invest in projects, even if they do not offer the required payback. Recently our parent company invested in solar panels to cover their entire factory roof and this investment certainly would not meet our traditional investment hurdle requirements. However, we try to calculate the reputational benefits from our sustainability investments (we have estimated a rough dollar value for this) and this makes these projects appear more favourable. Another way we make sustainability projects a reality is to work with governments to secure financial support or subsidies for our sustainability-related innovation initiatives, ones that we would otherwise not undertake.”

6.4 Embedding sustainability into Capital Appraisal

Although discussions with CFO’s showed that the awareness of sustainability is evident in corporate strategy, control and subsequent decisions, the practical implementation appears to only be in the early stages as evidenced by only 27 percent of companies routinely including sustainability impacts in appraisal models. When sustainability impacts were incorporated environmental criteria was more readily quantified than corporate social externalities, which were largely left as qualitative narrative. More than half the survey respondents routinely adopted time frames less than five years (or less than five years and a guess for the future) for their capital investment appraisals. This result could highlight the difficulty in estimating long-run cash flows. While there appears to be no firm practice yet, it is apparent that organisations are still trying to decide how best to include these factors in their accounting system design. The majority of survey respondents strongly agreed that the recognition of broader sustainability impacts were necessary for risk management purposes.

The following Table 1 provides an overview of the key findings from the survey and fieldwork.

Table 1. Key Findings from fieldwork

Area of interest	
Sustainability strategy	<ul style="list-style-type: none"> • Necessary for competitive advantage • Driven by senior management • Link to risk management • Ahead of legislation • Direct investments in sustainability to align with strategy (calculable returns on investment not performed)
Employee expertise and influence	<ul style="list-style-type: none"> • Sustainability and risk managers conducting life cycle analysis and carbon footprint accounting • Sustainability impacts ‘flagged’ requiring additional expertise • Experts conduct sustainability audits where required • Sustainability expert authority varied among organisations • Sustainability linked to employee engagement and performance metrics • Sustainability substantially linked to occupational health and safety (OH&S)
Accounting system design and use	<ul style="list-style-type: none"> • NPV, IRR and Payback widely used techniques • Sustainability factors not necessarily quantified • Qualitative factors will outweigh a positive NPV • Lower NPVs accepted where sustainability benefits identified • Sustainability risks ranked by operational managers • OH& S investments made regardless of accounting model decision

7. Areas for further research

As this was a small exploratory study, gathering views from significant industry players, the most important goal was to generate a rich collection of platform data that would underpin future research. This study provided the opportunity to identify areas for future research and to more fully understand the integration of sustainability factors into an organisation’s control systems. At this stage the findings of this exploratory study suggest that traditional investment appraisal (discounted cash flows and NPV calculation) while important are only parts of a larger analytic repertoire. It would appear that organisations have begun to respond to the calls for sustainability to be a consideration in investment decisions. Decisions appear to be made on combined sustainability and accounting assessments, but only when considered applicable by the CFO or senior management. It appears, at this stage, they prefer to rely on traditional DCF models with set corporate discount rates and in general, relatively short time frames. Sustainability assessment is largely left to expert sustainability support teams, capable of providing detailed analyses. Early findings suggest the emphasis on traditional DCF and NPV and how it is used alongside the harder-to-quantify sustainability issues, still needs further investigation. We need to better understand the extent to which the complex qualitative sustainability factors are being modelled and included in cash flows and to what extent the qualitative narrative takes precedence in decisions.

The extent to which network collaboration plays a role appears to be important in outcome controls and

the embedding of sustainability in capital investment appraisals. At this stage, sustainability expertise is only partially effective in facilitating sustainable project evaluation as with the plethora of lifecycle costing, multi-criteria and integrated analytical approaches currently available, the uptake by accountants is slow. Rather than altering traditional techniques, sustainability and risk managers are complementing the limited, unadjusted accounting data with their sustainability appraisal efforts. Being recognized as having a social license to operate it is evident that the sustainability manager plays an important role in investment decisions. But in practice this advice is called for only where sustainability issues are identified, not in routine capital investment appraisals, unless flagged. Further research is still required to explore the evidence of social control by lower-level employees and the extent to which a sustainability-focused accounting design impacts employee engagement throughout the organisation.

As noted only 27% of respondents revealed that their organisations routinely included sustainability impacts in appraisal models. Further understanding of the ‘flagging’ mechanisms undertaken by management is required; along with more research into investment appraisal techniques and management perceptions about what constitutes a sustainability impact. Further investigations could explore whether this is a result of the apparent disconnect between the accounting staff, whose domain is largely financial modelling and quantification, and others, such as sustainability managers involved in the qualitative data collection stage of the appraisal process.

The study did not set out to test a theoretical framework through statistical analysis, but to first try to explore and define the environments within which these characteristics emerge. For further testing potential areas of interest, the use of both an extended survey instrument and sample size that will enable statistical generalisation. Further research should explore the role that sustainability and accounting systems play as they operate in conjunction with each other. To what extent does data that is routinely collected by sustainability managers (for use in standalone analyses) become part of CFOs routine cash flow modelling? Wider information is needed on what is classified as “sustainability-related data” and what is being routinely included in accounting models, how is it measured and analysed, including discount rates and time frames? Another important area for further investigation is managerial judgement (i.e. decisions about the requirement for sustainability expertise). What triggers the search for sustainability network expertise within the organisation and will this lead to routine embedded practice in everyday investment decisions. With corporate boundaries becoming increasingly blurred the notion of externality is also confused, complicated by the involvement of multiple parties (connections between managers, owners and diverse stakeholders) over multiple geographical regions and time frames. Further research will help understand whether the current distinction made between the notion of accounting and sustainability is becoming more closely aligned? The intermittent flagging of sustainability-expertise is an area that requires further research, particularly when corporate sustainability-related incidents and mishaps continue to occur with frequent regularity.

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