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RESPONDING TO SUSTAINABILITY: A MODEL EXPLORING THE IMPACTS OF BOARDS OF DIRECTORS AND ORGANISATIONAL STRATEGIC FLEXIBILITY

by

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ABSTRACT: As the strategic apex of decision making, boards of directors have ultimate responsibility in ensuring that firms address economic, environmental and social sustainability. We contend that board information-processing activities act as the mediational pathway by which board composition affects sustainability. Further, because of the complexity of the sustainability paradigm, strategic flexibility is posited to moderate relationships between information-processing activities and sustainable outcomes. The model proposed in this paper offers original insight into the drivers of sustainability in organisations and thus, we conclude the discussion with implications for both research and practice.

Keywords: board composition, boards of directors, cognitive processes, corporate governance, information processing, strategic flexibility, sustainability

INTRODUCTION

Sustainability – economic, environmental and social – is one of the most important management paradigms facing today's strategic decision makers (Bansal, 2005; Steurer et al., 2005; Konrad et al., 2006). Pundits suggest that the ability to integrate the sustainability agenda into a firm's business mission and its relationships with stakeholders will be a requirement for success in the 21st century (e.g., Bacon, 2007; Stranislav, 2007). Perhaps most controversially, Bansal (2001: 48) posits that firms who do not respond to the sustainability challenge will "almost certainly face extinction". In light of these bold assertions, it is clear that understanding how firms respond to sustainability is an important area of enquiry.

Our goal is to consider how organisational processes, specifically corporate governance and strategy processes, impact on sustainability. Waves of corporate scandals over the past 30 years (e.g., the entrepreneur busts of the late 1980s, the dot com collapses of the early 2000s and the current global financial crisis) have placed considerable emphasis and pressure on corporate boards to take more responsibility for the corporations they govern (Nadler et al., 2006). Yet despite more than two decades of effort the general conclusion is that we are yet to find systemic, general relationships between boards of directors and firm economic performance, for example (Dalton et al., 1998; Daily et al., 2003).

Beyond the principal-agent aspect of corporate governance and the need to align management and owners' interests so as to minimize opportunism and maximize profits, demands and pressures on corporate boards have extended responsibilities for economic returns to include those related to environmental and social dimensions as well (Cadbury, 1999; Huse, 2005; Jamali et al., 2008). Research has explored boards of directors and firms' social responsibilities. For example, evidence suggests that boards consisting of a higher percentage of outside (independent) directors appear to demonstrate more of a positive response to particular environmental and social issues than those boards comprised of a majority of inside (non-independent) directors (Ibrahim and Angelidis, 1995; Johnson and Greening, 1999). However, as with the research into firm economic performance, results are inconclusive and often contradictory as to the influence of board of director composition on broader sustainability dimensions (e.g., Wang and Coffey, 1992; Coffey and Wang, 1998).

One reason posited for these inconclusive and contradictory findings is a lack of focus on intervening variables involved in the decision processes of the board (e.g., Huse, 2005). In particular, a directors' cognitive (Pettigrew, 1992; Forbes and Milliken, 1999) and social influence (Westphal and Zajac, 1997; Westphal, 1999) processes are thought to inhibit or enhance boards of directors' impact on organisational outcomes. Board cognition processes might be particularly important factors impacting on a firm's ability to demonstrate sustainability due its inherent complexity. However, we also argue that

addressing sustainability requires seeing a business as a part of a much larger system involving a wide variety of stakeholders – more like the complex interactions in a natural ecosystem than the traditional mechanistic view of a corporation. Success in this complex and dynamic context requires a firm-wide perspective that incorporates environmental and social dimensions as well as economics, and relies on a flexible, adaptive and inclusive approach.

We propose a model that links boards of directors, information processing and strategic flexibility in order to bridge some of the gaps that currently characterize much theorizing about corporate governance, strategy and sustainability. The analysis employs the traditional measure of board composition; however, we argue that links between board composition and sustainability depends on the cognitive aspects of information processing in the boardroom. How boards conduct information searches, engage in cognitive conflict and information assimilation are, we argue, critical to sustainability outcomes. We also draw upon resource-based and strategy perspectives to suggest that the expanded corporate objective that comprises sustainability requires substantial flexibility. Thus, we propose that strategic flexibility moderates the link between boards' information-processing activities and sustainable outcomes.

BACKGROUND ON SUSTAINABILITY

There is no universally accepted definition of sustainability (Montiel, 2008). Gladwin and colleagues (1995: 876) suggest that sustainability has “multiple objectives” and “ingredients” thus making it a hazy concept. Despite these ambiguities, multiple scholarly treatments suggest that sustainability moves beyond the natural environment to include social sufficiency and economic prosperity. That is, sustainability moves beyond “The Natural Step”, to include social and economic steps (Robert, 1994). In short, “advocates of the sustainability paradigm demand a complete notion of the external environment, an acknowledgement of the full range of material exchanges with the physiosphere, ecological exchanges with the biosphere, and nonmarket exchanges with the broader sociosphere” (Gladwin et al., 1995: 897). Thus, sustainability is a multifaceted challenge for businesses (Steurer et al., 2005; Konrad et al., 2006).

First, firms have a responsibility to ensure economic viability in perpetuity (Dyllick and Hockerts, 2002). When firms successfully create and capture value through economic activities, they benefit through returns, consumers benefit through better products and services supplied at reduced cost, shareholders benefit through dividends and equity, employees benefit through salaries and society benefits through higher living standards (Holliday et al., 2002). However, the benefits of economic activity and the process of value creation are not easily captured. Market forces, competition, regulatory frameworks and scarce resources place significant pressure on firms to survive and contribute to societal welfare in the form of economic sustainability. Complications further arise in the process of value

creation by firms, as natural resource depletion, environmental degradation, disruption of communities, worker displacement and problems with health and safety can be negative by-products. While some of these complications are dealt with through the pricing/allocation mechanism of the market (e.g., carbon emissions) and others through regulation (e.g., worker health and safety), many are unpriced externalities or ‘exploitations of the commons’ (e.g., loss of natural habitat, disruption of communities, worker displacement) (Boehlje, 1993; Tirole, 2001).

Dimension of sustainability	Representative stakeholders	Core aspect of sustainability	Examples
Economic sustainability	Shareholders, investors	Creating value in a way that enables a company to remain economically viable for an indefinite time	Sufficient cash-flow to ensure liquidity; persistent returns to capital providers; an asset base that the market predicts has future value-creation potential
Environmental sustainability	The natural environment, customers, communities, suppliers, nations	Limiting impact of firm activities on the natural environment while minimising the use of natural capital	Various emission reduction actions in company and supplier facilities and processes; various resource-saving actions in company and supplier facilities and processes; risk assessment of impacts on natural environment; reduced environmental impact of products/services
Social sustainability	Employees, customers, communities, nations	Continuously contributing to the social well-being of society and individuals	Wage policy, gender mainstreaming, job evaluation systems, fair trade, work-life balance, human rights, employee training, health and safety precautions, product safety, sponsorships and donations, volunteer work

Table 1. Aspects of sustainability

Given the many unpriced externalities in firms' value-creating activities (Tirole, 2001), truly sustainable organisations need to move beyond pure market mechanisms to voluntarily address environmental quality and social responsiveness as these two aspects are tied intrinsically to ongoing, sustainable economic activity (Schmidheiny, 1992; Bansal, 2001, 2005; Steurer et al., 2005). That is, in the sustainability paradigm, economic sustainability is achieved not by externalizing costs onto other legitimate stakeholders, but rather by balancing economic activity with maintaining 'natural'/environmental capital while delivering social improvements (Konrad et al., 2006). Addressing sustainability thus raises a unique set of challenges for firms in that bottom line (i.e., economic) results are not the sole focus of governance and business policy, nor are shareholders the only actors tied to the firm that require managerial attention (Table 1).

A variety of stakeholders are increasingly concerned about sustainability (Steurer et al., 2005). For example, while traditionally important stakeholders such as capital providers continue to view economic outcomes as most important to sustainability, internal stakeholders like employees and managers view social improvements – for example, equity, work-life balance, health and safety and training – as the most important aspects of sustainability (Konrad et al., 2006). Conversely, stakeholders such as local communities view environmentally responsible actions – for example, use of renewable energy and carbon emission reductions – as being among the most important aspects of sustainability (Konrad et al., 2006). The findings of Konrad and colleagues (2006) suggest broad demand for sustainability amongst firm stakeholders; not addressing such stakeholder concerns could threaten firms' legitimacy and their ability to sustain themselves, the natural environment and societal welfare. As Hill (2001: 32) suggests, if firms do not respond adequately to stakeholder demands for sustainability,

society could place increasing costs on unsustainable business practices, and customers may not choose to purchase associated products and services. Ultimately, this process may alienate the company from the rest of society, resulting in reduced reputation, increased costs, and decreasing shareholder value through erosion of its license to operate.

Corporate governance and sustainability

There is a growing body of scholars and board members who believe that the almost axiomatic status of the shareholder perspective of corporate governance is incongruous and out of touch with reality (e.g., Turnbull, 1994; Blair, 1995; Cadbury, 1999; Tirole, 2001; George, 2002; Huse, et al., 2005; Ben and Dunphy, 2007; Jamali et al., 2008). While it is clear that board decisions do impact shareholders, it is also

clear that board decisions exert externalities on other stakeholders associated with the firm. This includes stakeholders who bear firm risk as a result of having invested some form of capital (including but not limited to financial capital) in a firm, and stakeholders who are otherwise influenced or affected by the firm. Thus, stakeholders are not limited to shareholders and investors, but also include employees, customers, suppliers, the natural environment, governments and communities, among others (Freeman, 1984; Clarkson, 1995). Stakeholders have innate relationships with firms and externalities imposed on them may be substantial; for example, on the welfare of employees who have invested their human capital in the employment relationship; on suppliers and customers who also have sunk investments in the relationship and foregone alternative opportunities; on communities who suffer from the closure of a plant; on the natural environment – and by extension society – that is degraded to the point of climate change; and so on. Thus, as Tirole (2001: 24) suggests, firms should “internalize the *externalities* of various stakeholders” (emphasis in original). By addressing economic, environmental and social dimensions, firms place themselves in a position to maximize the sum of the various stakeholders’ surpluses, thereby affecting sustainability.

The view of the firm as more than an extension of shareholders is substantiated by legal authority (e.g. Blair and Stout 1999; Bainbridge, 2002, 2003). Most legal jurisdictions clearly recognise that directors need to act in the interests of the company as a whole (Corporations Act 2001 s181 in Australia; Companies Act 2006 s172 in the United Kingdom; Delaware Code Title 8 s121 in the United States). Since the company is a separate legal entity apart from its members (see, for instance, R v Goodal (1975) 11 SASR 94) the board is able to take the interests of other stakeholders into account when it makes decisions. Thus, boards (and directors and officers) must act in the interests of all stakeholders, a topic that has been recently been the subject of extensive debate by two lengthy Parliamentary reviews in Australia. As a result of these deliberations, the Parliamentary Joint Committee concluded that:

4.31 The committee considers that this interpretation [i.e. shareholders’ interests being paramount], like the shareholders’ restrictive interpretation and the short term interests interpretation, is too constrained. In addition, ... the committee does not agree that acting in the best interests of the corporation and acting in the best interests of the shareholders inevitably amounts to the same thing. Consequently, the committee is not attracted to this interpretation.

In sum, the pure shareholder value approach is too narrow for the task of corporate governance. According to Cadbury (1999), corporate governance must strike a balance between economic and social goals and between individual and communal goals. Further, Tirole (2001: 3) argues that corporate governance is better viewed as “the design of institutions that induce or force management to internalize the welfare of *stakeholders*” (emphasis added). Corporate governance, based on Tirole’s (2001) assessment, must account for the firm’s impact on the utilities of all stakeholders. Thus, the assumption is that sustainability and stakeholders are inextricably linked: as firms understand and respond to their stakeholder bases, they position themselves to deliver economic, environmental and social sustainability. To explore these links, the next section presents theory and propositions.

THEORY AND PROPOSITIONS

Board information-processing and sustainability

As the ultimate decision-making group, board have an influence on strategy that, in turn, affects subsequent performance (Fama and Jensen, 1983). However, it is unlikely that a simple relationship exists between board composition and corporate sustainability. Given (1) the nascent nature research into board composition and sustainability and (2) the lack of consistent findings board composition and firm economic performance in the extensively studied shareholder-wealth arena, we do not believe there will be any straightforward effects. Rather, we agree with board process scholars that any relationship is likely to be indirect and complex (e.g. Forbes and Milliken, 1999; Huse, 2007; Nicholson and Kiel, 2004).

Boards of directors are elite workgroups mainly faced with complex tasks related to information processing and decision making. Therefore, it is logical to consider that the cognitive aspects of boards decision-making particularly important (Forbes and Milliken, 1999). We are particularly interested in the informational processing (Daft and Weick, 1984) abilities of the board. Informational processing is thought to be critical to organisational success (Daft and Weick, 1984), a thesis with empirical support (Thomas et al., 1993). We contend that successful boards may acquire a high degree of capability in acquiring, assimilating, transforming and processing information. This ability may lead to better management of information, thus reducing information costs and achieving favourable organisational outcomes. From the perspective of sustainability as an organisational outcome, cognitive processes of boards are posited to be especially important.

Maximization of shareholder wealth provides a single metric that, in theory, ‘narrows’ boards’ decision-making attention, cognitive effort and information processing. Alternatively, focusing on more than one stakeholder and a ‘bottom line’ objective requires multitasking and increases information seeking and processing demands (cf. Sweet et al., 2003), thereby potentially impeding the efficient

creation of value for all stakeholders. Thus, an effective board composition is widely considered to be important to organisational outcomes including the ability to address and manage multiple, sometimes conflicting outcomes. Additionally, board-level processes are posited to enhance how well the board addresses multiple stakeholders, and therefore broader firm outcomes (i.e., sustainability). Specifically, the collective cognition of the board and its associated processes are thought to impact communications and group functioning, especially in complex situations where the board faces a “multiplexity” of information or the presence of simultaneous signals that compete for attention (e.g., Milliken and Martins, 1996; Forbes and Milliken, 1999; Huse, 2005). In the case of meeting the complex challenges of sustainability, we contend there are three key information-processing activities: 1) information search; 2) cognitive conflict; and 3) information assimilation (Figure 1).

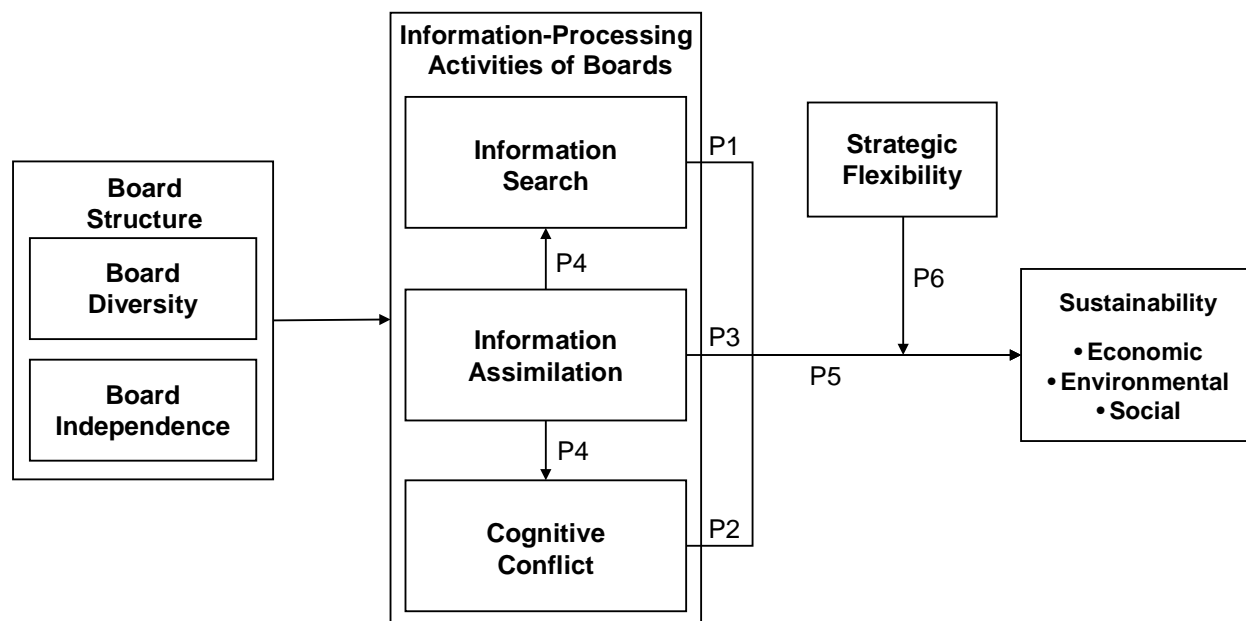


Figure 1. Conceptual model and propositions

Information search. Boards of directors have a legal (e.g., du Plessis et al., 2005) and normative (Charan, 2005) function to preserve and build the enterprise, including establishing a vision and mission, evaluation and control of strategic proposals, appointing CEOs, setting strategies and developing policies (Hendry and Kiel, 2004; Kiel and Nicholson, 2005; Nicholson and Kiel, 2004). Legally, standard company constitutions permit a board to undertake all activities necessary for the management and operations of the firm (s198A of the Corporations Act). Any powers possessed by management are delegations from the board. As such, the board wields substantial power and responsibility in overseeing

the achievements of firms. To successfully engage in and influence the affairs of firms, board members need to be active information searchers (Eisenhardt et al., 1997; Sonnenfeld, 2002).

Board members' information search refers to data gathering before meetings. Data gathering includes the willingness and ability to participate in board meetings with a thorough knowledge of the topics to be discussed in order to actively contribute to information processing (Sonnenfeld, 2002). Information search is related to the degree to which board members take initiatives to scan and collect further information, particularly beyond that provided by management (Forbes and Milliken, 1999). Acquiring new information is essential so that tasks are performed under a reduced level of uncertainty (Daft and Lengel, 1986). Preparation through information search is arguably important in developing a firm that can demonstrate sustainability.

Since sustainability involves balancing multiple stakeholders, we contend that it involves more complexity and greater information search demands than a shareholder-focused model. Economic, environmental and social sustainability requires consideration of stakeholders including investors and shareholders, customers, employees, governments, suppliers, the natural environment and communities (Steurer et al., 2005; Konrad et al., 2006). When multiple stakeholders require attention, the expectation is that information-processing demands increase. Further, the ability to identify the multiple issues related to sustainability requires extensive research, including information search, issue prioritization and complex decisions on strategic actions (Galbreath, 2009a). Therefore, boards that are apprised of current issues facing stakeholders by scanning the environment and collecting information beyond that supplied by management would be in a better position to address sustainability.

Evidence suggests that workgroups that engage in information maximising behaviours are more adept at responding to aspects of sustainability. Specifically, groups that search out and collect information until no additional value is obtained from that new information are adept at responding to aspects of sustainability such as ensuring corporate activities address care for the natural environment (Sweet et al., 2003; see also Eisenhardt et al., 1997). As the company's most highly influential workgroup we contend that the complexity and multiple issues inherent in the sustainability paradigm, board members need to actively seek out and leverage a breadth of information in meetings for effective decision making. Thus we would contend that:

Proposition 1: Information search by board members is positively associated with sustainability.

Cognitive conflict. Brodbeck et al. (2007) argue that biases occur when a work group is dominated by shared information only. In these situations, the unique information possessed by individual members is not recognized to produce new insights and knowledge. Shared information is more often

assessed first before unique information during discussion, it is more often repeated and is more favourably judged in light of social validation and importance. These multiple bias mechanisms (sampling, repetition bias and evaluation biases), with each thought to feed into the other (Brodbeck et al., 2007), and are a particular cause for concern in boards of directors who often possess quite disparate backgrounds and meet infrequently (Kiel and Nicholson, 2003).

Cognitive conflict in board meetings may reduce these information biases. Cognitive conflict can be defined as “disagreements about the content of the tasks being performed, including differences in viewpoints, ideas and opinions” (Jehn, 1995: 258). Since effective information processing must bridge the gap between information activities of isolated individuals and the broader organisation (Daft and Lengel, 1986), board dynamics that encourage discussion of gaps are important. Thus, effective processing of information relies on the board’s ability to engage in conflict. For instance, Eisenhardt et al. (1997), suggest that boards that challenge one another in board meetings have greater strategic insight than those that do not. Specifically, these boards possess expanded viewpoints and insights into strategic issues that the company faces and so are able to make more effective decisions.

We contend that cognitive conflict is even more important for boards engaging with sustainability. Boards who do not engage in constructive debate are more likely to discuss a strategic option facing the firm based solely on a single dimension such as the economic merits of the option. Quite simply, they lack Eisenhardt et al.’s (1997) multiple viewpoints and insights. In contrast, where conflict is present, the expectation is that boards would engage in debate from multiple stakeholder perspectives. Consider a major strategic decision facing a company that involves harvesting forests for new product development. While there may be clear economic gain for shareholders the decision potentially forces externalities on the natural environment; such externalities would have impacts on actors well beyond shareholders. Boards demonstrating cognitive conflict would, we contend, be expected to debate such a direction beyond impacts on shareholders, and so be more actively engaged in sustainability discussions. Thus we would propose that:

Proposition 2: Cognitive conflict in board meetings is positively associated with sustainability.

Information assimilation. While information search and cognitive conflict can have positive affects on organisation outcomes (Sweet et al., 2003; Charan, 2005; Huse et al., 2005; Leblanc and Gillies, 2005; Huse, 2007), they are not always sufficient to maximise information processing (e.g., van Knippenberg et al., 2004). Information search can improve informed decision making through the richness in task knowledge and cognitive conflict can stimulate debate and disagreement around the matters before a board. However, boards could conceivably opt for a quick compromise to avoid such

conflicts or rely mainly on shared information. Therefore, means or mechanisms to ensure that rich information processing is achieved are important. The absorptive capacity perspective (Cohen and Levinthal, 1990; Zahra and George, 2002) suggests that effective information processing requires that workgroups, such as boards of directors, to interpret, comprehend and effectively learn from individually-derived perspectives. This allows the group to mobilize a diversity of ideas, opinions and viewpoints (cf. Williams and O'Reilly, 1998). *Information assimilation*, therefore, is posited to enhance the benefits of information search and cognitive conflict as well as directly impact on corporate outcomes such as sustainability.

As mentioned, while information search and debate can give rise to such diversity, boards could avoid conflict or unique information in order to come to a quick – and potentially misinformed or biased – decision. To negate such an outcome, there are several ways boards can ensure information assimilation. First, feedback can be used so that each individual perspective or viewpoint that is expressed is fully clarified and understood by the group. Feedback enhances information elaboration, which aids in the absorptive capacity of the group, encouraging common insight or understanding of individual diversity (van Knippenberg et al., 2004; Homan et al., 2007). Second, deep-level assessment of information is necessary to maximize decision making (Homan et al., 2007). One way that boards can engage in deep-level assessment of information is to look at issues through a wide lens, consider multiple approaches and examine multiple courses of action.

Based on the work of scholars such as Miller and colleagues (1998), board members may propose different approaches to a strategic issue, for example a pure economic-based approach versus an approach that also considers environmental impacts, but never effectively compare those approaches or weigh them against each other. Engaging in information assimilation ensures that the pros and cons of alternative approaches are thoroughly examined. Thus, lastly, information assimilation ensures that the implications of a given approach are fully integrated into decision making (van Knippenberg et al., 2004; Homan et al., 2007). Here, information sharing, member viewpoints and perspectives and feedback are combined to assess the implications of a decision and its impact on organisational outcomes such as sustainability. Therefore, the ability of boards to engage in deep-level and comprehensive assessment of information as well as of viewpoints and opinions of individual directors is posited to further enhance capacity for effective information processing related to sustainability. Therefore we would propose that:

Proposition 3: Information assimilation in board meetings is positively associated with sustainability.

Proposition 4: Information assimilation increases the positive relationships between information search, cognitive conflict and sustainability.

Board of director composition and sustainability: The mediating role of board information-processing activities

After decades of empirical research, consistent links between board composition and organisational outcomes, namely firm economic performance, remain elusive (Finegold et al., 2007). However, in the context of this paper, we cannot avoid the fact that some evidence suggests a positive link between board composition and sustainability. For example, Ibrahim and Angelidis (1995) identified that outside (independent) board members more readily address social responsibilities than inside, or non-independent, board members. Findings also suggest that boards with higher proportions of gender diversity address sustainability more effectively than those with less gender diversity (Galbreath, 2009b). Lastly, Galbreath (2009c) found that firms who have an independent chairperson address climate change (an aspect of environmental sustainability) more effectively than boards with a CEO who also serves as chairperson. Thus, factoring in the evidence, a partially mediated role of board information-processing activities is posited on the relationship between board composition and sustainability.

P5: Board of director composition is positively associated with sustainability, and information search, cognitive conflict and information assimilation at least partially mediate this relationship. Specifically:

P5a: Boards with greater demographic diversity are positively associated sustainability.

P5b: Boards with a greater proportion of independent directors are positively associated with sustainability.

P5c: Boards with a separate CEO and Chairperson positions are positively associated with sustainability.

P5d: Information processing capabilities at least partially mediate the relationships between board composition and sustainability.

The moderating role of strategic flexibility in the mediated relationship

While we have argued that boards of directors are critical to influencing outcomes such as sustainability, we also recognise the importance of the broader organisation and the resources at its disposal to meet sustainable outcomes. Specifically, addressing a corporate objective that integrates three central dimensions (economic, environmental, social) requires that the organisation move flexibly, adapting to changing stakeholder conditions and competitive dynamics. *Strategic flexibility* is a well developed concept from the strategy literature that encompasses a firm's ability to advantageously alter strategies in response to either internal or external changes in the business and competitive environment (Sanchez,

1993, 1997). We argue that sustainability is one such influence on change and requires strategic flexibility to be addressed effectively.

Evidence suggests that demands and pressures to adapt to the sustainability paradigm are imposing substantial changes on business firms (AMA, 2007; Kolk, 2008). However, according to economic and resource-based theories (e.g., Penrose, 1959; Richardson, 1972; Teece, 1980; Barney, 1991), firms operate with a scarce resource base. Thus, a firm's ability to effectively adapt to changing environments is predicated on the flexibility of its resource base. While the narrow perspective of strategic flexibility largely focuses on the manufacturing resource base and product modularity (Sanchez, 1995; Worren et al., 2002), a broader perspective looks at resource flexibility in a more general sense (e.g., Aaker and Mascarenhas, 1984; Hitt et al., 1998; Nadkarni and Narayanan, 2007).

Different types of resources possess unique characteristics that can influence the flexibility with which they are deployed. One characteristic of resource flexibility or 'slack' that is particularly important in this regard is the degree of discretion associated with the resource. Resource discretion refers to the ability to convert slack to other uses should the need or opportunity arise (Sharfman et al., 1988). The more specific a resource is to a particular use, the less discretion management has in deploying excess amounts to alternative uses (Montgomery and Wernerfelt, 1988; Wernerfelt and Montgomery, 1988). Thus, resource slack is expected to create strategic options, which permits a buffer or cushion of potential resources that may be rapidly deployed as needed (Bourgeois, 1981). Resource slack gives flexibility to firms in managing responses to competitive pressures and changing environments (Sanchez, 1993, 1997), such as those imposed by the sustainability paradigm. This permits the firm to experiment with innovation, to execute a greater number of competitive moves, to deploy resources to alternative uses and to improve the speed and degree to which it can adapt to changing environments (Cyert and March, 1963; Sanchez, 1993, 1997; Cheng and Kesner, 1997). Alternatively, low levels of slack inhibit a firm's ability to mobilize necessary resources, constrain strategic options and limit competitive actions and strategic change and aggressiveness (Fombrun and Ginsberg, 1990; Young et al., 1996).

In the case of the focal subject, we posit that firms demonstrate the ability to adapt and adjust to sustainability requirements through strategic flexibility. For example, a firm that desires to bring a new product to market in the sustainability scenario needs to consider not only economic impact, but impact on the environment and society-at-large. Here, product life-cycle assessments would be required to ensure that manufacturing processes do not harm the natural environment and changes made where necessary, in addition to general research and development activity that would be required. Product safety would also need to be addressed to ensure that members of the public are not at risk in any way. Firms might also consider practices and processes of their input providers, ensuring that suppliers meet strict

environmental and human resource policy standards, and investing resources to help them to meet standards where necessary. Further, firms might keep manufacturing local – even if higher wages reduce profits to a level than what might otherwise be expected – to maintain job security and continuity in the community. Thus, we infer flexibility in areas such as financial and human and capital assets, among others, would be necessary to strategically support a broad array of stakeholder initiatives to deliver sustainability (cf. Aaker and Mascarenhas, 1984; Hitt et al., 1998; Nadkarni and Narayanan, 2007). Hence:

P6: Strategic flexibility at least partially moderates the mediated relationship among board information-processing activities and sustainability.

DISCUSSION

The tendency of management scholars and practitioners to ignore the cognitive aspects of boards of directors and organisational constructs such as strategic flexibility have, we contend, led to an empirical base of research that has failed to explain, on a consistent basis, relationships between board composition and outcomes such as sustainability. Rather than a direct link, board composition is indirectly linked to sustainability through the mediational pathway of information-processing activities. Further, strategic flexibility is a vital link facilitating a firm's ability to shift and change strategies and resources so as to address multiple stakeholder demands across economic, environmental and social dimensions. Following these arguments, there are implications for both research and practice.

Implications for research

In a series of thought-provoking articles, MacAvoy and Millstein (1999) and Hermalin and Weisbach (2003) point out that if decades of studies suggest that boards of directors fail to unequivocally improve firm economic performance, for example, then why do they exist at all? More poignantly, why has the market failed to cause boards of directors to improve, or replace them with a better alternative? Such views reveal a paradox facing corporate governance research: if evidence suggests that the most commonly researched corporate governance variable, namely board composition, has failed to consistently demonstrate a positive and direct link with firm economic performance (or environmental quality and social responsiveness for that matter), then why does this line of inquiry continue to attract considerable research effort (Finegold et al., 2007)? This gap in the research agenda has called for studies to move beyond researching input variables such as board composition, and their direct links to output variables such as firm performance, to explore variables that might moderate or mediate such relationships (Pettigrew, 1992; Forbes and Milliken, 1999; Kiel and Nicholson, 2005; Finegold et al., 2007). The model proposed in this paper attempts to untangle driving forces behind a firm's ability to not

only demonstrate economic sustainability, but environmental and social sustainability as well. In terms of research, the model reveals three major research implications.

First, following the resource-based view of the firm (RBV), boards of directors represent human capital (Barney, 1991). However, possession of human capital does not automatically generate or guarantee successful organisational outcomes (Teece et al., 1997; Eisenhardt and Martin, 2000). Under the dynamic capability approach, process variables such as routines systematically leverage, integrate and release human capital for firm advantage (Teece et al., 1997; Eisenhardt and Martin, 2000). Similarly, the absorptive capacity perspective suggests that individuals are limited in their ability to interpret the environment around them and therefore effective cognitive processes are necessary to maximize understanding (Zahra and George, 2002). An implication of the model proposed in this paper suggests that while important, boards of directors as human capital represent a latent dimension related to the knowledge and skills (capital) they possess, while cognitive processes such as information-processing activities represent the dynamic dimension that effectively releases board capital. Future research, therefore, should specifically examine static and dynamic perspectives of boards of directors to determine relationships with a range of outcomes.

Second, according to Daft and Weick (1984), a firm's main task is to process information. If boards of directors represent the highest level of decision making in an organisation, then logic follows that their information-processing effectiveness is critical to organisational functioning and success. Specifically, in the sustainability paradigm, not only do three core dimensions represent a firm's overall objective, but a multitude of stakeholder considerations must be weighed and evaluated to determine how best to meet such an objective. Thus, sustainability expands the corporate objective and the information-processing demands of boards. Following, the model presented here posits that information search, cognitive conflict and information assimilation are critical cognitive processes boards need to engage in to effectively address sustainability. Future studies could operationalise these constructs and empirically study their mediating effects on the board composition-sustainability relationship.

Lastly, firms are under relentless pressure to adapt to business conditions that are unstable and rapidly changing. As the world is more interconnected and trade transnational, competition from non-traditional or unknown market players is a continuous threat (Hitt and He, 2008). Consumer product choice is diversified through the expansive reach of the Internet and global competitors, placing strain on firms to regularly rethink breadth and type of product offerings, while developing faster response and implementation times (Johnson et al., 2003; Karin, 2004; Zang, 2005; Murphy et al., 2007). Further, economic conditions seem to change from boom to bust in relatively short time spans, placing strain on firms to survive, let alone thrive (Grewai and Tansuhaj, 2001; Bryan and Farrell, 2008; Rumelt, 2009).

Add to this the fact that stakeholders increasingly look to the business sector to engage in a balanced corporate objective that includes environmental and social, as well as economic sustainability, then firms face considerably complex challenges. This paper suggests that strategic flexibility is a key mechanism for adapting to such challenges but expands the dynamic under which the construct might be studied. Thus, this paper stimulates future research opportunities for broadening the study of strategic flexibility and its impact on organisational outcomes.

Implications for practice

An obvious implication for practice relates directly to ‘good’ corporate governance. Reform efforts around the world concentrate on issues of board power and universally call for substantial board independence. However, there is little empirical support to suggest that board independence correlates with good governance practices (see Daily et al., 2003). Instead, we contend that it is more important that boards of directors pay attention to their information-processing activities. Effective cognitive processes lead to better management of information, reduced information costs, better decisions and more favourable organisational outcomes. Given the current economic climate and ongoing competitive conditions, firms are likely to face ever-increasing institutional pressures, unstable capricious markets and new and complex technologies, in which innovation and competitive action are constantly required. Add to this the particularly complex information processing required by community expectations about a firm’s social responsibilities of firms (Waddock et al., 2002), then the imperative for enhanced information processing is clear to address sustainability.

Practitioners and their advisors (e.g. board consultants, lawyers and auditors) need to better understand how boards operate and make decisions. In so doing, they will be able to provide information in a form that enhances decision making. Similarly, chairpersons and individual directors need to understand how their behaviours (in and out of the boardroom) contribute to effective decision-making and corporate success.

Similarly, regulators need to acknowledge the importance of the information processing capabilities of the board and move beyond a compliance approach. Current regulations emphasize the importance of director and board attributes (e.g. The ASX Corporate Governance Council’s Principles of Good Governance; the Australian Prudential Regulatory Authority’s Governance requirements). While we would not deny the importance of independence in good governance, these structural requirements need to be balanced with the formation and maintenance of an effective decision-making group.

Conclusion

The purpose of this article was to set out a framework for understanding how firms respond to the growing challenges posed by balancing the economic, environmental and societal interests touched by the

modern firm. While there are many avenues to pursue a sustainability agenda, we contend that board processes and flexible organisational response are important components of any successful sustainability program. By setting out how boards engage in effective information processing and through assessing the need to exhibit flexibility in response to changing environments, we hope that this paper opens up exciting opportunities for the study of boards of directors and strategy mechanisms in responding to sustainability.

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