



UvA-DARE (Digital Academic Repository)

Contextualizing Senior Executive Advice Seeking: The Role of Decision Process Comprehensiveness and Empowerment Climate

Alexiev, A.; Volberda, H.; Jansen, J.; Van den Bosch, F.

DOI

[10.1177/0170840619830128](https://doi.org/10.1177/0170840619830128)

Publication date

2020

Document Version

Final published version

Published in

Organization Studies

License

CC BY-NC

[Link to publication](#)

Citation for published version (APA):

Alexiev, A., Volberda, H., Jansen, J., & Van den Bosch, F. (2020). Contextualizing Senior Executive Advice Seeking: The Role of Decision Process Comprehensiveness and Empowerment Climate. *Organization Studies*, 41(4), 471-497. <https://doi.org/10.1177/0170840619830128>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)



Article

Contextualizing Senior Executive Advice Seeking: The Role of Decision Process Comprehensiveness and Empowerment Climate

Organization Studies
2020, Vol. 41 (4) 471–497
© The Author(s) 2019



Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0170840619830128
www.egosnet.org/os



Alexander Alexiev 
University of Amsterdam, Netherlands

Henk Volberda
Erasmus University Rotterdam, Netherlands

Justin Jansen
Erasmus University Rotterdam, Netherlands

Frans Van Den Bosch
Erasmus University Rotterdam, Netherlands

Abstract

Senior executives can seek advice both inside and outside the boundaries of the organization and that can affect the choices made and the overall direction of the organization. Perceived environmental dynamism is a primary antecedent of this behaviour as it substantially increases the information-processing demands when solving strategic decision problems. We drew on two ‘fit’ perspectives to theorize about the organizational contingencies of this relationship. First, fit as mediation develops when executive advice seeking takes place after a comprehensive decision process has been used in response to an increase in perceived environmental dynamism. Decision process comprehensiveness fully mediates the relationship between perceived environmental dynamism and internal advice seeking and partially mediates the relationship between perceived environmental dynamism and external advice seeking. Second, fit as moderation develops when empowerment climate weakens this indirect relationship. Decision process comprehensiveness and empowerment climate function as Edgeworth–Pareto substitutes showing that, with regard to senior executive advice seeking, there is negative synergy between decision process comprehensiveness and empowerment climate. The results of our study support the notion that there is a link between information processing at the individual and organizational level, and, more importantly, suggest that power sharing within organizations can reduce the need for senior executive advice seeking when there is decision

Corresponding author:

Alexander Alexiev, University of Amsterdam, Plantage Muidergracht 12, Amsterdam, 1018 TV, The Netherlands.
Email: a.s.alexiev@uva.nl

process comprehensiveness. By elaborating the information-processing perspective on advice seeking and introducing theory on organizational structural power interdependencies, we take the first steps towards a more contextualized and realistic understanding of this phenomenon.

Keywords

decision process comprehensiveness, decision-making, empowerment climate, environmental dynamism, senior executive advice seeking, standard causal analysis, strategic choice, strategy

Introduction

A fundamental question in organizational research is how strategic decisions are made (Hambrick & Mason, 1984; Mintzberg, 1973). Prior work from the upper echelons perspective has emphasized the individual and group characteristics of senior managers (Carpenter, Geletkanycz, & Sanders, 2004), while a recent and growing stream of research has extended this view by drawing attention to behaviours that connect executives with their immediate environment (Bromiley & Rau, 2016; Simsek, Heavey, & Fox, 2018). Advice seeking is one of these behaviours and is defined as the pursuit of recommendations from others either inside or outside the organization on the best course of action to take when faced with important strategic decisions (Alexiev, Jansen, Van den Bosch, & Volberda, 2010; Bonaccio & Dalal, 2006; Heyden, van Doorn, Reimer, Van den Bosch, & Volberda, 2013). Previous research has demonstrated that advice seeking is instrumental in effecting adequate and creative responses to some of the most difficult organizational problems, such as those pertaining to poor financial performance, reputational issues, or difficulties with exploratory innovation (Alexiev et al., 2010; Collins & Clark, 2003; McDonald & Westphal, 2003; Mehra, Dixon, Brass, & Robertson, 2006). Much less is known, however, about the antecedents of advice seeking, and especially in those that occupy key roles in an organization's strategic decision-making.

The existing research on advice seeking is limited and grounded in an information-processing paradigm, for which the ongoing effort to gather, process and act on data from the environment is central (e.g. Daft & Weick, 1984). Perceived environmental dynamism – defined as executives' sensing of rapid changes in their organization's markets or in its competitive, regulatory, or technological environment – makes the ongoing information-processing task problematic as it increases the cognitive demands on the decision-maker (Dess & Beard, 1984; Eisenhardt & Bourgeois, 1988), who will then seek advice to reduce the information-processing load as expertise from advisers can be leveraged to reach a solution (Heyden et al., 2013). Internal or external advisers may be approached, depending on whether there is a need to obtain internal support for a strategic choice, for example, or to get a more objective assessment of changing environmental conditions (Arendt, Priem, & Ndofor, 2005; Menon & Pfeffer, 2003).

Previous research has theorized about (Arendt et al., 2005) and tested (Heyden et al., 2013) the direct positive link between perceived environmental dynamism and advice seeking, but there have been no studies that examine the contingencies of this relationship. A premise for our research is that one should not expect a high level of perceived environmental dynamism to always account directly for how senior executives engage in advice seeking in organizations and that one should thus not dismiss entirely their social and organizational context. Examining the context is important for both conceptual and practical reasons. Conceptually, researchers can move beyond existing individual-centric understandings of the antecedents to advice seeking grounded in managerial information-processing theory, and shape an organizational contingency view on a behaviour that can spur further positive organizational outcomes. Senior executives align their behaviour to the

characteristics of their organization but are also able to shape some of those characteristics (Cabantous, Gond, & Johnson-Cramer, 2010; Carpenter et al., 2004; Ghoshal & Bartlett, 1994). In practical terms it is useful to know how and when to assign effort to designing organizational structures and systems that are conducive to and appropriate for advice-seeking behaviour by senior executives, and when effort of this kind is best avoided.

This paper examines the role of two contingency factors: decision process comprehensiveness and empowerment climate. We focused on these two variables because both are organizational design features from an 'adaptively rational' model of organizations that takes into account both an organization's task requirements and its power dynamics (Astley & Zajac, 1991). Decision process comprehensiveness refers to an organization's attempts to be exhaustive or inclusive in its decision-making and in integrating its decisions (Fredrickson, 1984; Fredrickson & Mitchell, 1984), while empowerment climate denotes the degree to which senior managers share power with their subordinates (Conger & Kanungo, 1988; Seibert, Silver, & Randolph, 2004). We draw on the concept of 'fit' (Drazin & Van de Ven, 1985; Venkatraman, 1989) to put forward an organizational contingency model for senior executive advice seeking. We specify two forms of fit: fit as mediation and fit as moderation (Venkatraman, 1989). Fit as mediation develops when executive advice seeking takes place after a comprehensive decision process has been used in response to an increase in perceived environmental dynamism. Decision process comprehensiveness therefore mediates between perceived environmental dynamism and advice seeking. Empowerment climate, on the other hand, exists as a pattern of shared perceptions within the organization (Seibert et al., 2004). It moderates the relationship between decision process comprehensiveness and advice seeking, and thus moderates also the indirect relationship between perceived environmental dynamism and advice seeking. In sum, our central research question in this study is how decision process comprehensiveness and empowerment climate affect the relationship between perceived environmental dynamism and senior executive advice seeking.

Further, we tested the conceptual model of 'fit' using a sample of senior managers from a broad range of industries, and this enables us to make several important contributions to the literature. First, we provide a more contextualized understanding of senior executive advice seeking by demonstrating how specific organizational contingencies affect this behaviour. An organization-centric view allows us to analyse in more depth how important decisions are made and highlights specific internal factors that constrain the cognitive activities of top executives (Finkelstein & Peteraf, 2007). Among the interfaces of organizational upper echelons, those with their advisers are also among the least researched in the literature (Bromiley & Rau, 2016; Simsek et al., 2018). Second, we enhance the literature on the antecedents of advice seeking in general by demonstrating the interplay between information processing and structural power. When senior executives intend to seek advice, they consider not only what information is needed for the task, but also their own position within the organization, and whether they may lose or gain power (Lee, 1997; Nebus, 2006). For example, even when executives know that advice could help them deal with a difficult decision situation, they may hold back if they feel that asking for advice might make them appear incompetent; they may also fear becoming dependent on others or giving in to internal rivals (DePaulo & Fisher, 1980; Menon, Thompson, & Choi, 2006). While others have suggested that individuals' need to accrue and maintain power may inhibit advice seeking (Lee, 1997), we show how an organizational empowerment climate moderates the indirect relationship between perceived environmental dynamism and advice seeking via decision process comprehensiveness. Specifically, we put forward Edgeworth–Pareto¹ substitution hypotheses which indicate that, with regard to senior executive advice seeking, there is negative synergy between decision process comprehensiveness and empowerment climate. Our study therefore brings closer together two usually disparate theoretical perspectives in order to understand a widespread behaviour among senior executives.

Literature Review

Senior executive advice seeking

Scholars studying the behaviour of senior executives in organizations have only recently given significant attention to advice seeking (Alexiev et al., 2010; Arendt et al., 2005; Heyden et al., 2013) (appendix, Table 5). A systematic search on this specific phenomenon delivers very few results, although the broader concepts of advice seeking and advice-seeking ties have been studied extensively in the literature on behavioural decision-making (for a review, see Bonaccio & Dalal, 2006) and social networks (e.g. Lomi, Lusher, Pattison, & Robins, 2014; Nebus, 2006). The various contributions focusing specifically on the advice-seeking behaviour of senior executives chiefly relate insights from experimental research on behavioural decision-making to the information-processing view of organizations (Daft & Weick, 1984). In this view, individuals and whole organizations are seen as striving to build interpretations of their environment by processing information derived from it in order to inform and direct their subsequent choices and actions. Individuals will then seek advice if their own information search has not enabled them to reach a solution to a particular problem (Bonaccio & Dalal, 2006; Schrah, Dalal, & Sniezek, 2006).² The underlying assumption is that advice seeking represents a deliberate attempt to find a solution to an information-processing task which requires accurate judgement from another person. Senior managers are responsible for making strategic choices for their organization, and when faced with a complex problem they seek external advice by approaching managers from outside the firm – for example, consultants, customers, suppliers, or even competitors (e.g. Ingram & Roberts, 2000). They also engage in internal advice seeking by tapping into sources within the firm such as middle and front-line managers (e.g. McDonald & Westphal, 2003). The argument in this emerging literature on senior executive advice seeking builds on the underlying notion that advice seeking is essentially rationalistic, goal-oriented and directed towards information processing. In the past studies, advice-seeking behaviour has therefore been shown to support complex organizational decisions such as triggering an organizational turnaround after a decline in performance (McDonald & Westphal, 2003), instigating exploratory innovation (Alexiev et al., 2010), participating in boundary-spanning alliances (Balkundi & Kilduff, 2005) or enhancing the senior team's absorptive capacity in pursuit of entrepreneurial opportunities (van Doorn, Heyden, & Volberda, 2017). Existing studies report a positive association between advice seeking and organizational performance (e.g. Collins & Clark, 2003; McDonald & Westphal, 2003), and though it is difficult to assess objectively the 'accuracy' of very unstructured and complex strategic decisions, such studies claim that a positive effect *can* be observed, given the higher quality of the decisions made.

As far as the antecedents to senior executive advice seeking are concerned, the literature is very scant. McDonald, Khanna and Westphal (2008) have shown that when the board maintains tight control over management, senior executives are more likely to seek advice as it becomes even more important to improve the quality of decisions. Arendt et al. (2005) have proposed the CEO's leadership style and a firm's intended strategy as drivers of advice seeking, again reaffirming the intentionality of problem solving.

On a more fundamental level, the concept of perceived environmental dynamism has emerged as a critical antecedent of senior executive advice seeking (Arendt et al., 2005; Heyden et al., 2013) as it determines what level of information processing strategists may require (Sutcliffe & Huber, 1998). Perceived environmental dynamism makes it more beneficial to seek advice, outweighing the costs associated with accessing specific sources of advice (Harvey & Fischer, 1997; Nebus, 2006), and stimulates senior executives to engage in advice seeking. There is more information available, and this is also perceived as being 'knowable' (Forbes, 2007). Searching for more

information is therefore seen as justifiable, and if the search does not lead to a solution, advice from a knowledgeable person is sought in order to arrive at a sound judgement.

Organizational contingencies of the relationship between perceived environmental dynamism and senior executive advice seeking

While an individual-centric understanding centred around perceived environmental dynamism and concerns about problem solving is useful, our goal with this paper is to show that the advice-seeking behaviour of senior executives is shaped also by the organizational context in which they operate. We focus on decision process comprehensiveness and empowerment climate as the characteristics that can affect the relationship between perceived environmental dynamism and senior executive advice seeking.

Decision process comprehensiveness. Decision process comprehensiveness refers to the extent to which an organization attempts to be exhaustive or inclusive throughout its decision-making process (Forbes, 2007; Fredrickson, 1984; Fredrickson & Mitchell, 1984; Goll & Rasheed, 2005; Miller, 2008). Multiple alternatives are considered, and all the information that is deemed relevant to the decision is analysed extensively. Inclusive means that attempts are made to bring the various decision streams within the organization together into a coherent and integrated overall strategy. Extensive information is collected and analysed, but is then also consolidated into strategic decisions. A comprehensive decision process is deemed to be beneficial to firms as it improves the accuracy of their decisions and improves their understanding of their strategic environment (Eisenhardt & Zbaracki, 1992).

Concerns about accuracy and decision quality can stem therefore not only from individual motivation but also from the organization's overall decision-making process. In fact, the literature in the information-processing paradigm on strategic decision-making is primarily concerned with the question of which decision process enables organizations to make better strategic decisions (Forbes, 2007). Research on senior executive advice seeking has, however, not yet considered the role of decision process comprehensiveness. So far it has emphasized information processing at the individual level and has not addressed it at the organizational level, even though these two processes take place in parallel (Corner, Kinicki, & Keats, 1994). Furthermore, senior executives can have a direct influence on decision process comprehensiveness by adapting the formal processes and structures in the organization (Ghoshal & Bartlett, 1994; Papadakis, Lioukas, & Chambers, 1998). Senior executives approach problem-solving as individual processors of information, but also have the authority to regulate the overall decision-making process in the organization. Organizational policies can in turn support the emergence of advice-seeking behaviour in the organization (Collins & Clark, 2003). For these reasons, we consider decision process comprehensiveness to be a critical missing link in the relationship between perceived environmental dynamism and senior executive advice seeking.

Empowerment climate. To complete our theoretical model of the organizational contingencies of advice-seeking behaviour, we apply what Astley and Zajac (1991) call an 'adaptively rational' model of organizations and complement the task-oriented information-processing paradigm with a power perspective (i.e. the concept of empowerment climate). Power at the interpersonal level has been defined as 'having the discretion and the means to asymmetrically enforce one's will over others' (Sturm & Antonakis, 2015, p. 139). Within the structure of formal organizational interdependencies this capacity can be distributed more or less evenly. Individual employees may have

been empowered to a certain extent when a leader or manager shares his or her power with subordinates (Conger & Kanungo, 1988). At the more macro level, we can distinguish empowering organizational structures, policies and practices that are conceptualized in the construct of empowerment climate: a contextual variable affecting individual organizational members' feelings of empowerment (Seibert et al., 2004).

An empowerment climate is defined as a shared perception regarding the extent to which an organization rewards, supports and expects employee empowerment (Seibert et al., 2004). Empowerment is concerned with the psychological experience of subordinates and their motivation and self-efficacy. In organizations with an empowerment climate, sensitive information is shared and can cut across organizational levels. Those lower down the organization possess considerable autonomy and different areas of responsibility are clearly defined. Accountability for decisions and performance rests with subordinates, rather than with senior management alone (Blanchard, Carlos, & Randolph, 1995; Randolph, 1995; Seibert et al., 2004). An empowerment climate therefore represents a 'negotiated order' (Strauss, 1978) and is not under the full control of senior management, yet it creates a context which can affect executive behaviour (Pfeffer & Salancik, 1978; Sturm & Antonakis, 2015).

Although the decision process comprehensiveness and empowerment climate are embedded in different theoretical traditions (e.g. information processing vs. power in formal interdependence), they are based on compatible assumptions regarding the structural dependencies within an organization (Astley & Zajac, 1991) (see Table 1 for an overview of the conceptual domains of the two constructs). Information-processing theory assumes a collective goal orientation where accurate decisions help goals to be attained. For the power perspective, it is coalition formation, political behaviour and conflict that shape organizational goals in the first place (Pfeffer & Salancik, 1978). Specifically, the empowerment climate in the organization refers to the way areas of responsibility are allocated so that the tasks undertaken will enable the organization as a collective to achieve its goals. An empowerment climate regulates individual needs to accrue power through an established 'negotiated order' of dependencies once the goals have been established. Chen, Lam and Zhong (2007), for example, used this concept to show that empowerment climate can strengthen the exchange of critical and negative feedback between senior executives and their subordinates. Using power in this way to realize collective goals has been also shown to mitigate the barriers to information exchange and learning which may stem from status differences in the organization (Bunderson & Reagans, 2011). Lee (1997) also noted that, in the act of seeking advice, individuals acknowledge their incompetence and increase their dependence on others. The importance that individuals attach to accruing and maintaining power, shaped by the existing empowerment climate, can influence how and when they seek advice.

Hypotheses

Towards an organizational fit model of senior executive advice seeking

Organizational fit in contingency models comes in many forms, although most research typically focuses only on one (Drazin & Van de Ven, 1985). For senior executive advice seeking, two forms of fit are particularly appropriate, given the current state of the literature: fit as mediation and fit as moderation (Drazin & Van de Ven, 1985; Parker & Van Witteloostuijn, 2010). Fit as mediation seeks to explicate the intervening mechanisms that align with a given antecedent and allow a particular outcome to emerge (Venkatraman, 1989). We suggest using decision process comprehensiveness to provide fit as mediation (Table 2) (Fredrickson & Mitchell, 1984; Miller & Friesen, 1983). Fit as moderation, on the other hand, is concerned with the conditions that can interact with

Table 1. Conceptual Domains for Devising an Organizational Contingency Framework for Senior Executive Advice Seeking.

Foundational theory	Relevant key constructs	Construct features	Representative work
Information-processing	Decision quality	Ultimate goal of information-processing, assumed to be unequivocal and linked to performance	Forbes, 2007
	Accuracy	Determinable for structured tasks, replaced by process concerns for strategic decisions	Bonaccio & Dalal, 2006; Dean & Sharfman, 1996
	Levels of information processing	Individuals process information in a different way from organizations, but the processes run in parallel	Corner et al., 1994
	Perceived environmental dynamism	Can shift the cost/benefit ratio for organizational information processing	Heyden et al., 2013; Sutcliffe & Huber, 1998
Power in formal interdependence	Organizational decision process comprehensiveness	The process an organization establishes to ensure comprehensive decision-making	Fredrickson & Mitchell, 1984; Goll & Rasheed, 2005; Miller, 2008
	Workflow dependency	Discretion rooted in the interdependences within the current division of labour	Astley & Zajac, 1991; Bunderson & Reagans, 2011
	Negotiated order	Creates a social context, but one which is not under the direct control of executives	Strauss, 1978
	Collective goal orientation	Mitigates barriers to information exchange and learning across status hierarchies	Bunderson & Reagans, 2011
	Motivation to accrue and maintain power	Motivates individuals to <i>not</i> seek advice	DePaulo & Fisher, 1980; Lee, 1997
	Empowerment climate	Shared perception regarding employee empowerment	Blanchard et al., 1995; Seibert et al., 2004

an antecedent and modify its effect. We use empowerment climate as a contingency that provides fit as moderation (see Table 2). Fit-as-moderation hypotheses also allow us to assess whether the contingency can be an Edgeworth–Pareto complement, or in this case a substitute (Milgrom & Roberts, 1995; Samuelson, 1974; Titah & Barki, 2009) – i.e. whether the combined value of empowerment climate and decision process comprehensiveness with regard to advice seeking is less than the sum of each one separately (i.e. negative synergy). Figure 1 depicts the overall conceptual model for fit as mediation and fit as moderation.

The mediating role of decision process comprehensiveness

We model decision process comprehensiveness in a fit-as-mediation relationship in which (1) perceived environmental dynamism affects decision process comprehensiveness, (2) decision process comprehensiveness affects external and internal advice seeking, and (3) perceived environmental dynamism affects advice seeking and its effect is partially mediated by decision process comprehensiveness.

Table 2. Organizational Contingencies for Senior Executive Advice Seeking.

Type of 'fit'	Fit as mediation	Fit as moderation
Organizational structural feature	Decision process comprehensiveness	Empowerment climate
Foundational theories	Information processing, rationality	Power as structural interdependence, motivation
Key assumptions	Rationalistic and goal-oriented model of executive decision-making	Delegation of authority and establishing a 'negotiated order' of dependencies in pursuit of common goals
Function	Establish and maintain an organizational process that improves the accuracy and quality of decisions	Distribute authority and facilitate individual contribution
Role of perceived environmental dynamism	Important antecedent as it determines the information-processing demands for senior executives	Not a direct antecedent
Implications for senior executive advice seeking	Executives will strive for greater accuracy and look to reduce their individual biases	The importance that individuals attach to maintaining and accruing power influences the frequency of advice seeking
Representative works	Forbes, 2007; Fredrickson, 1984; Fredrickson & Mitchell, 1984; Goll & Rasheed, 2005; Miller, 2008	Blanchard et al., 1995; Conger & Kanungo, 1988; Lee, 1997; Randolph, 1995; Seibert et al., 2004

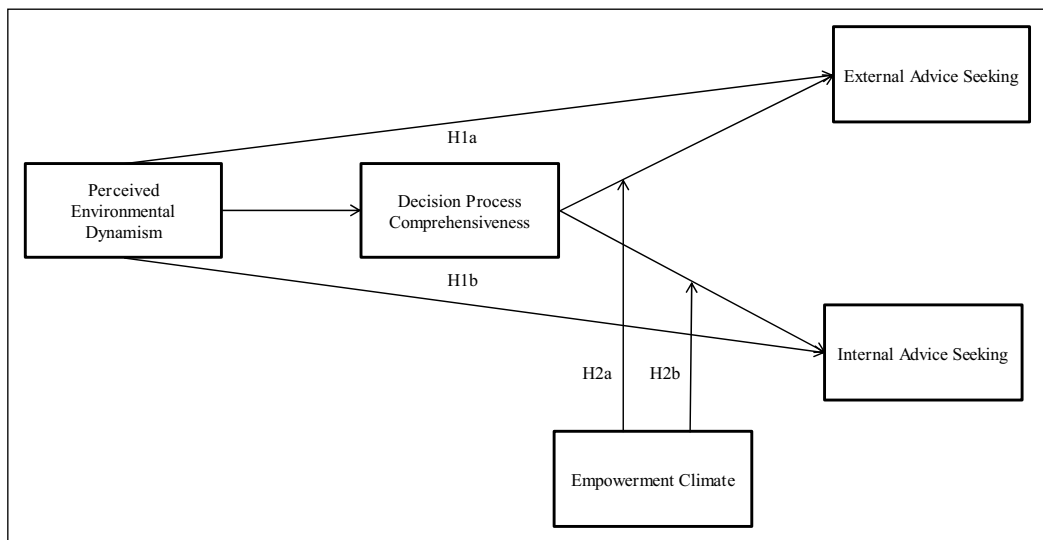


Figure 1. Research Model for Fit as Mediation (H1a, b) and Fit as Moderation (H2a, b).

Perceived environmental dynamism and decision process comprehensiveness. One of the key mechanisms of fit in contingency theory is selection (Drazin & Van de Ven, 1985). Selection takes place when certain patterns are reinforced through environmental or managerial choices. Here, senior managers select an internal decision-making process as one of the main ‘levers’ with which to

respond to the expected demands of different environments (Hart, 1992). Unlike objective environmental characteristics, perceived environmental dynamism can directly affect choices because managers put greater effort into comprehensive scanning, analysis, and processing of larger amounts of environmental information (Boyd & Fulk, 1996). This means that many alternatives may need to be considered simultaneously (Eisenhardt, 1989). Developing decision process comprehensiveness is done in order to increase the firm's chances of long-term survival, by enabling innovation and exploration, for example (Miller, 2008). The possibility of the firm failing in a dynamic market galvanizes managers to make a greater effort to achieve decision-making comprehensiveness. Under such conditions, they are likely to be thoughtful about how they use resources and to develop practices which will bring rationality into their organization (Cabantous et al., 2010). As noted by Meissner and Wulf (2014), the decision process in dynamic environments then tends to become more comprehensive.

Decision process comprehensiveness and external advice seeking. Once decision process comprehensiveness is in place, formal or informal organizational norms emerge that demand conformity to a prescribed behaviour. Individual senior executive behaviours that fit with the mediating contextual variable are retained and those that do not are discarded (Drazin & Van de Ven, 1985). In particular, decision process comprehensiveness makes the benefits of advice seeking more apparent and counters the tendency of individual executives not to seek advice in complex decision-making situations (Bonaccio & Dalal, 2006; Harvey & Fischer, 1997).

The following benefits will be realized by firms with decision process comprehensiveness. First, external advisers can make it easier for senior executives to make a final decision among the broad variety of options generated by comprehensiveness. Although clear selection criteria may have been set, 'paralysis by analysis' might complicate the choice to be made. Several options may appear to offer similar outcomes. Under such circumstances, a recommendation from a trusted external adviser can provide clarity and direction (Sniezek & Van Swol, 2001). Second, external advisers may also recommend new alternatives. A larger range of external advice networks can provide access to a richer variety of knowledge (Wong, 2008). In an organization pursuing decision process comprehensiveness this is particularly desirable and welcome. By acquiring external advice the organization can draw on expertise that is not available internally. Third, seeking outside advice in relation to a set of possible options generated by the organization can provide a level of critique and questioning that may not have been achievable by the decision-makers themselves. For example, important consequences for those involved in the decision might not be fully discussed, even though extensive analysis is conducted. When downsizing or corporate restructuring are considered, for example, executives may prefer not to share some of the decision options internally, for fear of employees' reactions (Mishra & Spreitzer, 1998). The use of external advisers can eliminate such barriers (Bonaccio & Dalal, 2006), and can make it easier to implement a decision that is acceptable to different interest groups within the organization.

Decision process comprehensiveness and internal advice seeking. In addition to seeking external advice, senior executives are also more likely to seek internal advice as a consequence of decision process comprehensiveness as this form of advice may be felt to lead to more accurate decisions and may provide greater confidence in the option selected.

Decision process comprehensiveness may expand the quantity and variety of information available to senior executives, but some critical pieces of information may still be missing. Seeking internal advice can help ensure that correct interpretations and valid conclusions are drawn, and can also facilitate the exchange of otherwise unavailable tacit knowledge (Nonaka & Takeuchi, 1995). The information used will be of a higher quality because it originates closer to the source.

Frontline employees, for example, can contribute with their 'feel' for the market, and technical personnel can offer thorough operational knowledge. Senior executives can obtain an understanding that is more congruent with others in the organization, and this can be a strong motivator for seeking internal advice. Second, decision process comprehensiveness may stimulate internal advice seeking by increasing the confidence of senior executives (Forbes, 2005). The fear of appearing incompetent is a common barrier to advice seeking (Lee, 1997; Menon et al., 2006), and even when decision-makers experience difficulties in making choices, they may refrain from acknowledging this openly. This tendency can be reduced when the organization has a comprehensive strategic decision-making process. Seeking advice becomes less problematic for the individual executive, as the importance of making a better decision outweighs the fear of appearing incompetent or indecisive (Menon & Pfeffer, 2003).

The mediating role of decision process comprehensiveness. Scanning the external environment is acknowledged to be 'only the first link in the series of activities needed to acquire the information needed for strategic decision making' (Arendt et al., 2005, p. 687). It could be that perceived environmental dynamism has a more direct effect on advice seeking. Senior executives might personally engage in the collection, processing and interpretation of environmental information and step up their advice seeking, both inside and outside the organization, as a way of reducing their cognitive burden (Hambrick, Finkelstein, & Mooney, 2005).

Yet, although this direct effect also seems possible, we argue that advice seeking will mostly occur *through* decision process comprehensiveness in the organization, rather than as an individual reaction to perceived environmental dynamism. Advice seeking takes place when the information search is not regarded as sufficient (Schrah et al., 2006), and while perceived environmental dynamism increases awareness of the need for information processing, it is the pursuit of comprehensiveness that stimulates advice seeking. Without decision process comprehensiveness, organizations will react on a more ad hoc basis to unexpected environmental changes, producing incremental decisions (Kukalis, 1991) that necessitate less use of advice. Where an organization builds a capacity to deal with information-processing tasks in dynamic circumstances, however, managers are likely to make more use of advice from others, both inside and outside the organization (Eisenhardt, 1989). Decision process comprehensiveness will therefore mediate the link between perceived environmental dynamism and advice seeking.

Hypothesis 1a: Decision process comprehensiveness mediates the relationship between perceived environmental dynamism and external advice seeking.

Hypothesis 1b: Decision process comprehensiveness mediates the relationship between perceived environmental dynamism and internal advice seeking.

The moderating role of empowerment climate

In addition to the fit-as-mediation role of decision-making comprehensiveness, we suggest that empowerment climate provides fit as moderation for the indirect relationship between perceived environmental dynamism and advice seeking. Fit as moderation is obtained when structure and context interact to produce organizational outcomes (Drazin & Van de Ven, 1985). Where there is a high empowerment climate, we suggest that decision process comprehensiveness will be related less strongly to both external and internal advice seeking. As the combined effect of empowerment climate and decision process comprehensiveness becomes less than the effect of each on its own, we can view these two contingencies as Edgeworth–Pareto substitutes (Samuelson, 1974).

The relationship with *external* advice seeking will be affected by the fact that this type of behaviour is then perceived as less beneficial. First, there is less need to choose between many different competing alternatives (Elenkov, 1997). Lower-level employees take responsibility for some decisions without the need for senior executives to integrate the information centrally (Ketokivi & Castañer, 2004). Making a choice becomes a less complex task because, by delegating control of organizational resources to those at lower levels, senior executives have less overall information to process. As the boundaries of responsibility are clearly defined, senior managers can concentrate on choices without 'noise' from other decision areas. For example, they may spend less time on operational issues and focus on strategic decisions instead. This frees up cognitive resources, and as a result decisions will less often require help from an external adviser.

Second, generating possible options is a highly demanding and creative process (Hambrick et al., 2005), so reducing the cognitive load on senior managers will help them to come up with a sufficient variety of alternatives. Cognitive overload, on the other hand, will significantly impede that process. An empowerment climate frees up resources at the top through clear vision and goals, and accountability that is spread across different management layers. In these conditions, there will be less need to use advice seeking as a way of generating possible alternatives.

Finally, using advisers as a sounding board will also become less pertinent. As sensitive information is allowed to circulate freely, there is no additional benefit to be gained from confiding in external advisers about sensitive issues. The overall balance of accountability and of division of responsibilities may in fact be threatened if senior managers attempt to seek external advice as this runs counter to the norm of delegated authority (Conger & Kanungo, 1988). Although acting in this way may be rational and well intentioned, it may send the wrong signal to the lower levels and will generally be avoided in this situation.

Hypothesis 2a: The indirect relationship between perceived environmental dynamism and external advice seeking via decision process comprehensiveness is moderated by empowerment climate such that the positive relationship between decision process comprehensiveness and external advice seeking becomes weaker as the level of empowerment climate increases.

Empowerment climate affects also the mechanisms that relate decision process comprehensiveness to *internal* advice seeking: a need for accuracy and greater confidence. In an empowerment climate, the need for accuracy requires less advice seeking by executives. Because decision-making power is distributed among multiple actors, senior executives are left with a narrower range of problems to focus on and require less additional input. In organizations that are pursuing comprehensiveness, senior executives can use the cognitive capacities of other individuals more efficiently. Some of the environmental information is then processed at lower levels. The exchange across levels will be less frequent but more focused on the specific concerns of senior managers (Balkundi & Kilduff, 2005). Having a comprehensive decision process ensures the overall integration of decisions so there is no need for extensive internal consultation. Thus, the need for accuracy can be satisfied with less internal advice seeking.

The second mechanism that explains how decision process comprehensiveness relates to internal advice seeking is increased confidence among senior executives. We argue that an empowerment climate means that decision process comprehensiveness is less strongly linked to internal advice seeking. Organizations with a high empowerment climate tend to have employees with a strong sense of personal efficacy (Conger & Kanungo, 1988). Such employees feel more secure in themselves, and are therefore less worried about being thought incompetent or dependent on others if they need to seek advice from others (DePaulo & Fisher, 1980; Lee, 1997). Decision process

comprehensiveness can reduce worries of this kind as it focuses attention on achieving a collective task or goal. However, an empowerment climate can have a stronger and more direct effect in terms of reducing such concerns. The sense of efficacy permeates across the ranks. Empowered employees are trusted as advisers because of their competent judgement, rather than because the organization is striving to be comprehensive in its decision-making. By contrast, in a low empowerment climate, decision process comprehensiveness will remain a strong mechanism that allows senior executives to overcome any individual concerns that stop them from seeking advice. When the lower ranks have less autonomy, the desire to achieve a comprehensive process will play a larger role in prompting senior executives to seek advice. These two mechanisms account for an Edgeworth–Pareto substitutability between decision process comprehensiveness and empowerment climate.

Hypothesis 2b: The indirect relationship between perceived environmental dynamism and internal advice seeking via decision process comprehensiveness is moderated by empowerment climate such that the positive relationship between decision process comprehensiveness and internal advice seeking becomes weaker as the level of empowerment climate increases.

Method

Sample and data collection

To test our hypotheses we collected data from archival sources and from a survey of senior executives from firms with more than 20 employees, representing a wide variety of industries. A sample of 9,000 firms was drawn from an electronic database, the largest information source on organizations registered with Chambers of Commerce across the Netherlands. We administered the survey in both paper-based and web formats, addressing it to the CEO or another high-ranking senior executive. We obtained fully completed surveys from senior executives from 808 firms (8.98% response rate), which is in line with similar large-scale multi-industry surveys. The final sample included firms from the food and agriculture industry (3.5%), manufacturing (30.2%), transportation (12.6%), construction (11.9%), business and financial services (28.2%), media and ICT (10.3%), and energy and utilities (3.3%). The average number of employees was 415 (s.d. = 4,995), the average age of the firm was 30.11 years (s.d. = 27.88) and the average size of the senior team was 5.42 (s.d. = 6.14) (Table 3).

To test for non-response bias, we examined differences between respondents and non-respondents. A t-test showed no significant differences ($p > .05$) between the two groups, based on the number of full-time employees and years since the firm was founded. We also compared early and late respondents, and paper-based and web-based respondents, in terms of demographic characteristics and model variables. These comparisons did not reveal any significant differences ($p > .05$). To examine reliability issues associated with single-informant data, we surveyed an additional senior manager from each respondent firm. We received a total of 111 second-respondent surveys, or 13.7% of our final sample, from firms that were comparable in size and age to those in our full sample. We calculated an interrater agreement score (r_{wg}) for each study variable (James, Demaree, & Wolf, 1993). The median interrater agreement ranged from .88 to .98, which suggests high agreement. The examination of intra-class correlations also revealed a strong level of interrater reliability: correlations were consistently significant at the .001 level.

We also tested for the possibility of interference of single-method bias. First, a Harman's one-factor test on the questionnaire items included in our models found multiple factors, and the first

Table 3. Descriptive Statistics and Correlation Coefficients.

Variable	Mean	s.d.	1	2	3	4	5	6	7	8
1. External advice seeking	3.72	1.55								
2. Internal advice seeking	5.11	1.39	.406**							
3. Decision process comprehensiveness	4.70	1.00	.297**	.411**						
4. Perceived environmental dynamism	4.61	1.36	.175**	.191**	.287**					
5. Empowerment climate	5.14	1.01	.108**	.300**	.397**	.236**				
6. Firm size ^b	415.02	4994.94	.063	.051	.078*	.056	.002			
7. Firm age ^c	30.11	27.88	.050	.043	.097**	-.020	-.048	.029		
8. Senior team size	5.42	6.14	-.001	.053	.040	.000	.014	.020	.085*	
9. Senior team heterogeneity	5.36	0.98	.088*	.240**	.333**	.199**	.237**	.033	.091**	.012

^aN = 808.

^bNumber of full-time employees.

^cYears since founding.

* $p < 0.05$.

** $p < 0.01$ (two-tailed).

factor did not account for the majority of variance. Second, we tested whether the addition of a single latent method factor connected with all the item scales would significantly improve the fit compared to a model with only the studied constructs as latent factors (Podsakoff, MacKenzie, & Podsakoff, 2012). The overall chi-square fit statistics for the model with the common method factor were significant ($\chi^2/df = 2.513$, CFI = .978, RMSEA = .044), but the incremental fit index had a rho of .023, which suggests a non-significant improvement. Additionally, the factor loadings for the studied constructs remained significant even after we had considered the method effect. These results suggest that common method bias did not affect the study's findings and that the respondents were able to differentiate well between the variables.

Measurement of constructs

To measure our constructs, we used scales from previous literature validated through various analyses (see appendix, Table 6). For external and internal advice seeking, we adapted a scale that captured the extent of senior managers' advice-seeking behaviour (McDonald & Westphal, 2003). To evaluate convergent and discriminant validity we used exploratory factor analysis. The results replicated the intended two-factor structure, with each item loading clearly on its intended factor (factor loadings were between .88 and .93 for external advice seeking and between .90 and .95 for internal advice seeking). The Cronbach's α was .92 and .94 for external and internal advice seeking respectively. The *decision process comprehensiveness construct* was measured using a six-item scale developed by Miller, Burke and Glick (1998) ($\alpha = .85$). We included a four-item measure for *perceived environmental dynamism* (cf. Dill, 1958; Jansen, Van den Bosch, & Volberda, 2006) ($\alpha = .85$). For *empowerment climate*, we adapted a scale that captured the theoretical dimensions of autonomy, team accountability and how information was channelled down the hierarchy (Conger & Kanungo, 1988; Seibert et al., 2004) ($\alpha = .73$).

Control variables. We controlled for various factors identified in previous literature as covariates of advice seeking and decision process comprehensiveness (Goll & Rasheed, 2005; McDonald et al.,

2008; Nebus, 2006). We accounted for *firm size*, measured by the natural logarithm of the number of full-time employees in the organization, as larger organizations can invest more resources in a comprehensive strategic decision-making process and advice seeking. We measured *firm age* by the number of years since the firm was founded, to capture the effect of formalization of organizational practices. The size of the senior team might affect dynamics in decision-making processes, and we therefore included *senior team size* as the number of senior executives responsible for strategy formulation and implementation. Industry effects may affect decision process comprehensiveness and advice seeking. In view of this, we included seven industry dummies based on aggregation of Standard Industry Classification codes: *manufacturing*, *food and agriculture*, *transport*, *construction*, *business and financial services*, *media and ICT*, *energy and utilities*. We also measured *senior team heterogeneity* (Miller et al., 1998) with a scale adopted from Campion, Medsker and Higgs (1993) ($\alpha = .77$).

Validation of measures

For all multi-item scales we constructed an integrated confirmatory factor analysis (CFA) in order to test for convergent and discriminant validity. Each item was constrained to load only on its respective latent variable. The results showed a good fit within the model ($\chi^2/df = 2.836$, CFI = .959, RMSEA = .048). All loadings were significant ($p < .001$), which showed the convergent validity of the scales. The factor correlation matrix had moderate values (between .080 and .478), and we tested whether each correlation differed significantly from unity. We constructed models where this correlation was constrained to 1 and compared this with the unconstrained model. The results from each of the 15 pairwise comparisons showed that constraining to unity worsened the model's fit in each case (rho values between .041 and .212), which attested to the discriminant validity of the latent variables.

Results

Table 3 contains the descriptive statistics and bivariate correlations between the numeric variables used in the analysis. We report the standardized coefficients of the linear regression models in Table 4. models 1, 3 and 6 (see Table 4) are the baseline models and include the control variables, models 2, 4 and 7 show the main effects, and models 5 and 8 include the two-way interaction effects.

The required conditions for the OLS regression method were satisfied. To reduce the impact of multicollinearity we mean-centred the independent variables that were used in the interaction terms (Aiken & West, 1991). We used variance inflation factors (VIFs) to judge the presence of multicollinearity in the models. Across all models the highest VIF was 1.55, which is well below the cut-off point of 10 (Neter, Wasserman, & Kutner, 1990). The full models showed an R^2 of 12.4% and 23.7%. Of the control variables, senior team heterogeneity had a positive relationship with decision process comprehensiveness ($p < .001$) and internal advice seeking ($p < .01$). Industry differences were observed with regard to internal advice seeking, with construction having a lower level ($p < .01$) and energy and utilities a higher level ($p < .01$) of internal advice seeking relative to manufacturing, our baseline industry category.

To assess the mediating role of decision process comprehensiveness and the moderating role of empowerment climate, we took several steps, which included evaluating the models which predicted decision process comprehensiveness, external advice seeking and internal advice seeking (Baron & Kenny, 1986; Hayes, 2009) (Table 4). Hypotheses 1a and 1b concern the relationship between perceived environmental dynamism and decision process comprehensiveness. Perceived

Table 4. Results of Hierarchical Regression Analyses.^a

	Decision process comprehensiveness (DPC)		External advice seeking (EA)			Internal advice seeking (IA)		
	1	2	3	4	5	6	7	8
	β	β	β	β	β	β	β	β
(Constant)					0.038			0.023
Log (Firm size)	0.062†	0.036	0.062†	0.052	0.057	0.063†	0.055†	0.058†
Log (Firm age)	0.040	0.054	-0.046	-0.061†	-0.070†	0.001	-0.014	-0.019
Senior team size	0.027	0.030	-0.001	-0.010	-0.001	0.049	0.038	0.043
Senior team heterogeneity								
Food & agriculture	-0.013	-0.002	0.066†	0.065†	0.061†	-0.024	-0.015	-0.018
Transport	-0.053	-0.043	-0.017	-0.005	-0.004	0.020	0.034	0.035
Construction	-0.075*	-0.068†	-0.026	-0.007	-0.013	-0.114**	-0.089*	-0.092**
Business & financial services	-0.013	-0.018	-0.046	-0.040	-0.047	0.039	0.031	0.027
Media & ICT	0.027	-0.007	-0.014	-0.012	-0.018	0.052	0.051	0.048
Energy & utilities	-0.028	-0.008	0.054	0.056	0.053	0.105**	0.107**	0.105**
Perceived environmental dynamism (ED)		0.225***	0.165***	0.105**	0.112**	0.136***	0.043	0.047
Decision process comprehensiveness (DPC)				0.281***	0.277***		0.302***	0.300***
Empowerment climate (EC)				-0.016	-0.031		0.137***	0.128***
EC × DPC					-0.096**			-0.058*
R ²	0.127	0.172	0.049	0.112	0.124	0.117	0.232	0.237
F change	11.54***	43.69***	3.73***	28.31***	10.45**	9.61***	59.55***	4.38*

^aStandardized coefficients, N = 808, †p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001.

environmental dynamism was positively and significantly associated with decision process comprehensiveness ($\beta = .23, p < .001$) (model 2). Decision process comprehensiveness had a positive relationship with *external* advice seeking ($\beta = .28, p < .001$) (model 4) and *internal* advice seeking ($\beta = .30, p < .001$) (model 7). In models 3 and 6, perceived environmental dynamism had positive direct association with *external* advice seeking ($\beta = .17, p < .001$) and *internal* advice seeking ($\beta = .14, p < .001$). When decision process comprehensiveness was added to the models, the relationship between perceived environmental dynamism and *external* advice seeking became weaker, but remained significant ($\beta = .11, p < .01$) (model 4), while the relationship with *internal* advice seeking became statistically insignificant ($\beta = .04, p > .05$) (model 7). This result suggests partial mediation for *external* advice seeking (hypothesis 1a) and full mediation for *internal* advice seeking (hypothesis 1b) (Baron & Kenny, 1986).

The interaction term with the moderator variable, empowerment climate, was negative and significant both for *external* advice seeking ($\beta = -.10, p < .01$) (model 5, hypothesis 2a) and *internal* advice seeking ($\beta = -.06, p < .05$) (model 8, hypothesis 2b). Hypotheses 2a and 2b were therefore supported. Simple slope analysis showed that the positive relationships remained

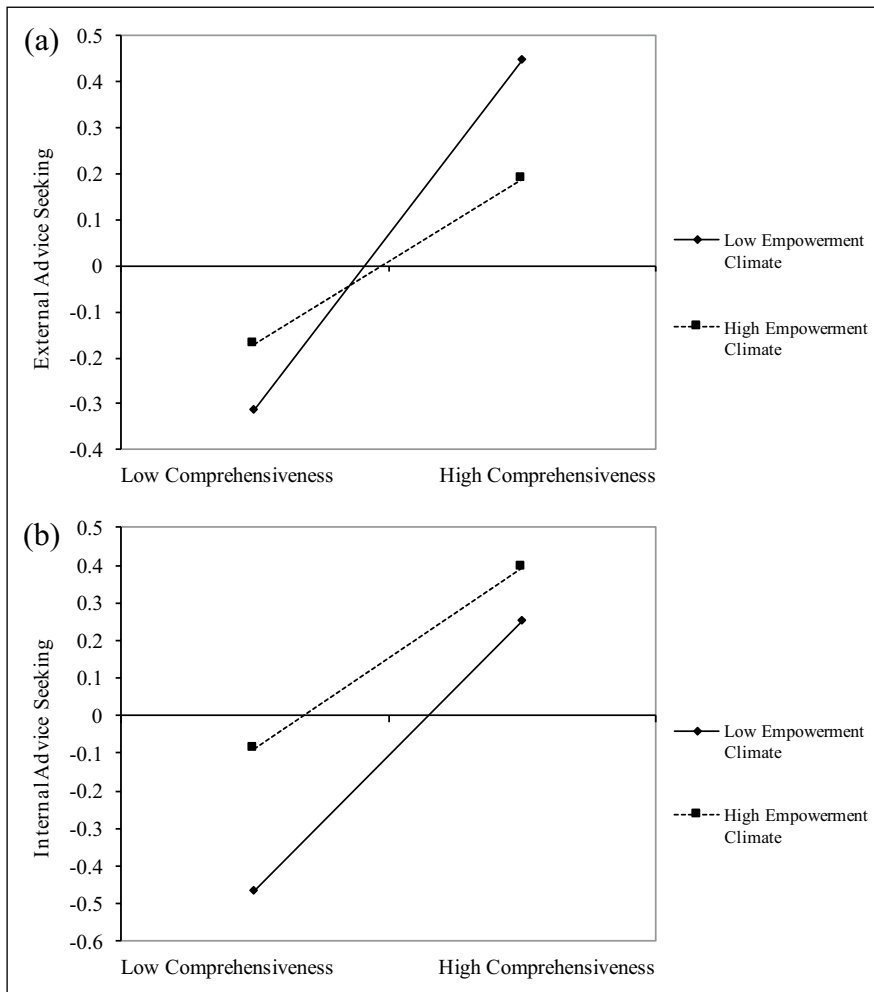


Figure 2. Interaction Plots of Decision Process Comprehensiveness and Empowerment Climate. (a) External Advice Seeking; (b) Internal Advice Seeking.

significant at both low and high levels of empowerment climate ($p < .001$). Figure 2 plots the interaction relationship at different levels of the moderator. With a high empowerment climate, the positive relationship is less strong for both types of advice seeking. The greatest level of *external* advice seeking is reached with a high decision process comprehensiveness and a low empowerment climate. Highest *internal* advice seeking is reached, however, when high decision process comprehensiveness is combined with a high empowerment climate. Based on partial derivative analyses (see appendix), we can conclude that decision process comprehensiveness and empowerment climate are Edgeworth–Pareto substitutes. That is, their combined effect is inferior to the sum of their separate effects; an increase in empowerment climate will reduce the marginal impact of an increase in decision process comprehensiveness, and an increase in decision process comprehensiveness will reduce the marginal impact of an increase in empowerment climate.

To test the indirect effects of environmental dynamism through decision process comprehensiveness (hypotheses 2a and 3b), we performed bootstrapping by resampling 5,000 times with replacement. The procedure established bias-corrected 95% confidence intervals for the direct effects and conditional indirect effects at different levels of the moderator (-1 SD, mean, +1 SD) (Preacher, Rucker, & Hayes, 2007). The confidence interval of the direct relationship of perceived environmental dynamism with *external* advice seeking (.11, $p < .01$) did not contain zero (95% bootstrapped CI = .04, .18), and the confidence interval of the indirect relationship also did not contain zero at any level of the moderator (95% bootstrapped CI = .05, .12 [-1 SD]; .04, .09 [mean]; .02, .08 [+1 SD]), which shows evidence of a partial mediation. The mean indirect effect decreased as the moderator increased (.08 [-1 SD]; .06 [mean]; .04 [+1 SD]), thus showing the moderator to have a negative effect on the indirect relationship. The confidence interval for the direct relationship with *internal* advice seeking (.05, $p > .05$) did contain zero (95% bootstrapped CI = -.02, .11), while that for the conditional indirect relationship did not contain zero at any level of the moderator (95% bootstrapped CI = .05, .12 [-1 SD]; .04, .10 [mean]; .03, .09 [+1 SD]). This shows evidence of a full mediation. The moderator also had a negative effect on the indirect relationship, as the mean indirect effect decreased as the moderator increased (.08 [-1 SD]; .07 [mean]; .05 [+1 SD]), but did so at a slower pace than with external advice seeking. Hypotheses 3a and 3b were therefore supported.

Discussion

Extending previous studies, we have argued that the external and internal advice-seeking behaviour of executives in response to perceived environmental dynamism is affected by the comprehensiveness of the strategic decision-making process and the empowerment climate. The two types of advice seeking are positively related to decision process comprehensiveness, and this suggests that comprehensiveness reduces the barriers to advice seeking, regardless of whether the source used is external or internal. A desire to be exhaustive in the decision-making process justifies the additional effort of obtaining recommendations from internal or external advisers. We show therefore that an organizational process can tip the balance when an executive is considering whether or not to seek advice (Nebus, 2006). While traditional upper echelons research focuses primarily on within-group decision behaviours such as conflict, debate and consensus-building (Bromiley & Rau, 2016; Carpenter et al., 2004), we demonstrate that the organizational decision-making process stimulates senior managers to go beyond the boundaries of their group. The comprehensiveness of the strategic decision-making process ensures that executives seek advice from others, overcoming internal competition and social barriers in order to do so (Lee, 1997; Menon et al., 2006). To realize some of the desired consequences of advice seeking (Alexiev et al., 2010; McDonald & Westphal, 2003), organizations need to consider how their decision process might create a context that stimulates this behaviour.

We suggested that decision process comprehensiveness has a fit-as-mediation relationship to perceived environmental dynamism and advice seeking. Our argument was that when executives perceive there to be dynamism in the environment, they will seek more advice in order to respond to the increased information-processing demands. Decision process comprehensiveness mediates the relationship as in dynamic environments organizations will attempt to be more exhaustive in their decision-making process. Our analysis showed a mixed picture, however: we found full mediation with respect to internal advice seeking and only partial mediation for external advice seeking. While decision process comprehensiveness provides a critical means of stimulating internal advice seeking, external advice seeking is stimulated through other mechanisms as well. More research is needed to explore and test for such alternative mechanisms. For instance, perceived environmental

dynamism may stimulate executives to seek advice in order to establish legitimacy for their organizations – for example, when no industry standards are available and organizations have to struggle to obtain key resources (Kostova & Zaheer, 1999). Approaching influential people for advice may also be a way of validating choices already made or signalling conformity to external demands, rather than being driven by a desire for a comprehensive strategic decision-making process. Nevertheless, our results show that, in order to ensure that they keep abreast of shifts in the environment, executives develop comprehensive decision-making processes which then stimulate them to seek advice. The implication of this finding is that information-processing at the organizational level can explain internal advice seeking, but it only explains some of the mechanisms relating to external advice seeking.

We tested whether empowerment climate diminishes the relationship between decision process comprehensiveness and external and internal advice seeking on the premise that the distribution of structural power within organizations influences the effects of established strategic decision-making processes. The findings were in line with our hypotheses: in an empowerment climate, executives expect fewer of the benefits associated with external advice: namely, being able to choose between multiple options, identifying other new options and having access to a sounding board for discussion of sensitive issues. Similarly, when there is decision process comprehensiveness, senior executives seek internal advice less often, even though they may have more trust in their subordinates' advice. Although decision process comprehensiveness helps to reduce individuals' wariness of seeking advice, this advantage is lost when comprehensiveness is combined with a high empowerment climate. Well-defined goals and a clear vision that sets out the boundaries of autonomous action help lower-level managers make judgements and provide advice to the upper echelons only on issues that are critical or highly strategic (Blanchard et al., 1995; Seibert et al., 2004). When senior executives have more confidence in the judgement of lower-level managers, they will be less reliant on having structures for decision process comprehensiveness that will encourage internal advice seeking. Therefore, with this study we also show that, while empowerment is discussed in the literature as a primarily relational and motivational construct (Conger & Kanungo, 1988), where information processing is concerned it also serves as a substitute for organizational structures. This idea has important implications for further research and theory development.

Conclusion

Our goal was to explore how organizational context affects the relationship between perceived environmental dynamism and senior executive advice seeking. The main problem in the existing literature was, as we have argued, that much of what we know about advice seeking relates to the individual-level antecedents of this behaviour, rather than to the organizational stimuli that might motivate executives to seek advice or constrain them from doing so. We relied on the concept of 'fit' to theorize how decision process comprehensiveness and empowerment climate serve as organizational contingencies which affect how senior executives seek advice when perceived environmental dynamism requires it. In particular, we showed that a firm's pursuit of decision process comprehensiveness fully mediates the relationship between perceived environmental dynamism and internal advice seeking and partially mediates the relationship between perceived environmental dynamism and external advice seeking. Empowerment climate is a critical moderator of this indirect relationship and reduces advice seeking when an organization is pursuing decision process comprehensiveness. By elaborating the information-processing perspective on advice seeking and introducing theory on organizational structural power interdependencies, we have taken the first steps towards a more contextualized and realistic understanding of this phenomenon.

Taking a broader view, these findings have important implications for theory on strategic decision-making in general, and on senior executive advice seeking in particular. Individual information-processing motivations dominate current theory about why advice seeking takes place (e.g. Heyden et al., 2013; Nebus, 2006). Although behavioural studies have pointed out that individuals have concerns beyond decision accuracy and problem-solving (e.g. Lee, 1997), research has not yet shown how an organizational context activates or mitigates these. More importantly, our findings show that empowerment climate has unanticipated implications for the flows associated with information processing. This study is the first to show that, in the context of advice seeking, decision process comprehensiveness and empowerment climate interact in their relationship to advice seeking. An empowerment climate in which decision-making power is distributed across the hierarchy can allow information processes to occur in a distributed, yet coherent, manner. Senior executives in organizations with an empowerment climate are thus less likely to seek advice as a consequence of decision process comprehensiveness. Our study shows that it is important to see the organization of decision processes and the advice-seeking behaviour of senior executives in relation to the structural power interdependencies within the organization. Of course, such interdependencies are not fixed, and internal politics and conflict can reshape how they are configured in the longer run (Pfeffer & Salancik, 1978). Our findings show that when a certain negotiated order is obtained, it has critical implications for how decision-making processes affect executive behaviour.

There are several limitations to this study which warrant further discussion. One limitation is that we used cross-sectional empirical tests of the hypotheses which, although allowing us to make a systematic comparison of a large number of organizations, prevented us from drawing firm conclusions about the direction of causality between the variables. It might be that the causality runs in the opposite direction. For instance, senior executives embedded in advice ties may be more likely to try to achieve decision process comprehensiveness in their organization and may also be more skilled at creating an empowerment climate. However, most of the literature suggests that decision process comprehensiveness emerges as a consequence of particular characteristics at the country, industry, team or individual level, and that it can be expected to lead to different types of executive behaviour (e.g. Papadakis et al., 1998). Future work is most certainly needed to address thoroughly the issue of causality among the constructs of this study. Future research could also study the relationships at the level of individual decisions. The characteristics of the specific decision situation, and the nature and importance of the decision itself, might also shape the dynamics of these processes (e.g. Hough & White, 2003).


Although the study measured the degree to which senior managers sought advice when making strategic decisions, it did not capture whether advice was sourced from multiple advisers. Advice from many sources may leave decision-makers with conflicting recommendations about what should be done and may thus complicate their task. For critical decisions, people tend to consult a small number of advisers (for example, in other contexts, journal editors or healthcare professionals) and it is worth exploring whether that is true of strategic organizational decisions and how executives decide which advice to follow. Future studies could also explore what determines whether the advice sought is actually used to inform the decisions taken. Researchers might concentrate also on identifying how existing organizational structures, policies and conditions may stimulate managers to use the advice they have been given (McDonald & Westphal, 2003). Taking into account that advice seeking has been shown to affect important organizational outcomes, researchers could seek to clarify further the complex interrelationships between individual motivations and organizational context. All in all, our study has provided more detailed insight into the relationship between perceived environmental dynamism and advice seeking and explored two organizational contingencies that affect this relationship. In this way, we have integrated new

insights into the predominant information-processing paradigm of senior executive advice seeking, enabling us to show how decision process comprehensiveness plays a mediating role in advice seeking and empowerment climate a moderating role. Future studies could look in finer detail at other factors that may affect this relationship.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ORCID iD

Alexander Alexiev  <https://orcid.org/0000-0002-3150-7432>

Notes

1. Edgeworth–Pareto substitution hypotheses draw on the theory of complementarities, which was originally applied in economics to study the compound effect of multiple conditions. More recently this approach has been fruitfully applied in research on organizational and individual phenomena (e.g. Milgrom & Roberts, 1995; Titah & Barki, 2009).
2. In the literature, advice seeking and information search are often confused. Information search is a phase in the decision-making process that follows the identification of the problem and leads to the development of a number of alternative solutions (Mintzberg, Raisinghani, & Theoret, 1976). Advice seeking, on the other hand, is distinctive from information search on several counts (Schrah et al., 2006). First, it consolidates task-related information and is thus more likely to affect which particular option may be considered ‘correct’. Second, as advice is provided by other individuals, it necessarily carries their interpretation, judgement and intentions and is therefore evaluative and prescriptive. Third, the decision-maker evaluates not only the advice itself but also different cues ascribed to the person providing the advice. Such cues relate perhaps to the adviser’s expertise, trustworthiness or the similarity of goals (Sniezek, Schrah, & Dalal, 2004; Sniezek & Van Swol, 2001), and, in turn, also affect the decisions taken.

References

- Aiken, L. S., & West, S. C. (1991). *Multiple regression testing and interpreting interactions*. Newbury Park, CA: SAGE Publications.
- Alexiev, A. S., Jansen, J. J. P., Van den Bosch, F. A. J., & Volberda, H. W. (2010). Top management team advice seeking and exploratory innovation: The moderating role of TMT heterogeneity. *Journal of Management Studies*, 47, 1343–1364.
- Arendt, L. A., Priem, R. L., & Ndofor, H. A. (2005). A CEO-adviser model of strategic decision making. *Journal of Management*, 31, 680–699.
- Astley, W. G., & Zajac, E. J. (1991). Intraorganizational power and organizational design: Reconciling rational and coalitional models of organization. *Organization Science*, 2, 399–411.
- Balkundi, P., & Kilduff, M. (2005). The ties that lead: A social network approach to leadership. *Leadership Quarterly*, 16, 941–961.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical consideration. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Blanchard, K. H., Carlos, J. P., & Randolph, W. A. (1995). *The empowerment barometer and action plan*. Escondido, CA: Blanchard Training and Development.
- Bonaccio, S., & Dalal, R. S. (2006). Advice taking and decision-making: An integrative literature review, and implications for the organizational sciences. *Organizational Behavior and Human Decision Processes*, 101, 127–151.
- Boyd, B. K., & Fulk, J. (1996). Executive scanning and perceived uncertainty: A multidimensional model. *Journal of Management*, 22, 1–12.

- Bromiley, P., & Rau, D. (2016). Social, behavioral, and cognitive influences on upper echelons during strategy process: A literature review. *Journal of Management*, *42*, 174–202.
- Bunderson, J. S., & Reagans, R. E. (2011). Power, status, and learning in organizations. *Organization Science*, *22*, 1182–1194.
- Cabantous, L., Gond, J.-P., & Johnson-Cramer, M. E. (2010). Decision theory as practice: Crafting rationality in organizations. *Organization Studies*, *31*, 1531–1566.
- Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology*, *46*, 823–847.
- Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, *30*, 749–778.
- Chen, Z., Lam, W., & Zhong, J. A. (2007). Leader–member exchange and member performance: A new look at individual-level negative feedback-seeking behavior and team-level empowerment climate. *Journal of Applied Psychology*, *92*, 202–212.
- Collins, C. J., & Clark, K. D. (2003). Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage. *Academy of Management Journal*, *46*, 740–751.
- Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: Integrating theory and practice. *Academy of Management Review*, *13*, 471–482.
- Corner, P. D., Kinicki, A. J., & Keats, B. W. (1994). Integrating organizational and individual information processing perspectives on choice. *Organization Science*, *5*, 294–308.
- Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review*, *9*, 284–295.
- DePaulo, B. M., & Fisher, J. D. (1980). The costs of asking for help. *Basic and Applied Social Psychology*, *1*, 23–35.
- Dess, G. G., & Beard, D. W. (1984). Dimensions of organizational task environments. *Administrative Science Quarterly*, *29*, 52–73.
- Dill, W. R. (1958). Environment as an influence on managerial autonomy. *Administrative Science Quarterly*, *2*, 409–443.
- Drazin, R., & Van de Ven, A. H. (1985). Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, *30*, 514–539.
- Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal*, *32*, 543–576.
- Eisenhardt, K. M., & Bourgeois, L. J. (1988). Politics of strategic decision making in high-velocity environments: Toward a midrange theory. *Academy of Management Journal*, *31*, 737–770.
- Eisenhardt, K. M., & Zbaracki, M. J. (1992). Strategic decision making. *Strategic Management Journal*, *13*, 17–37.
- Elenkov, D. S. (1997). Strategic uncertainty and environmental scanning: The case for institutional influences on scanning behaviour. *Strategic Management Journal*, *18*, 287–302.
- Finkelstein, S., & Peteraf, M. A. (2007). Managerial activities: A missing link in managerial discretion theory. *Strategic Organization*, *5*, 237–248.
- Forbes, D. P. (2005). The effects of strategic decision making on entrepreneurial self-efficacy. *Entrepreneurship: Theory and Practice*, *29*, 599–626.
- Forbes, D. P. (2007). Reconsidering the strategic implications of decision comprehensiveness. *Academy of Management Review*, *32*, 361–376.
- Fredrickson, J. W. (1984). The comprehensiveness of strategic decision processes: Extension, observations, future directions. *Academy of Management Journal*, *27*, 445–466.
- Fredrickson, J. W., & Mitchell, T. R. (1984). Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal*, *27*, 399–423.
- Ghoshal, S., & Bartlett, C. A. (1994). Linking organizational context and managerial action: The dimensions of quality of management. *Strategic Management Journal*, *15*(S2), 91–112.

- Goll, I., & Rasheed, A. A. (2005). The relationships between top management demographic characteristics, rational decision making, environmental munificence, and firm performance. *Organization Studies*, 26, 999–1023.
- Hambrick, D. C., Finkelstein, S., & Mooney, A. C. (2005). Executive job demands: New insights for explaining strategic decisions and leader behaviors. *Academy of Management Review*, 30, 472–491.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9, 193–206.
- Hart, S. L. (1992). An integrative framework for strategy-making processes. *Academy of Management Review*, 17, 327–351.
- Harvey, N., & Fischer, I. (1997). Taking advice: Accepting help, improving judgment, and sharing responsibility. *Organizational Behavior and Human Decision Processes*, 70, 117–133.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76, 408–420.
- Heyden, M. L. M., van Doorn, S., Reimer, M., Van den Bosch, F. A. J., & Volberda, H. W. (2013). Perceived environmental dynamism, relative competitive performance, and top management team heterogeneity: Examining correlates of upper echelons' advice-seeking. *Organization Studies*, 34, 1327–1356.
- Hough, J. R., & White, M. A. (2003). Environmental dynamism and strategic decision-making rationality: An examination at the decision level. *Strategic Management Journal*, 24, 481–489.
- Ingram, P., & Roberts, P. W. (2000). Friendships among competitors in the Sydney hotel industry. *American Journal of Sociology*, 106, 387–423.
- James, L. R., Demaree, R. G., & Wolf, G. (1993). rwg: An Assessment of Within-Group Interrater Agreement. *Journal of Applied Psychology*, 78, 306–309.
- Jansen, J. J. P., Van den Bosch, F. A. J., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance effects of organizational antecedents and environmental moderators. *Management Science*, 52, 1661–1674.
- Ketokivi, M., & Castañer, X. (2004). Strategic planning as an integrative device. *Administrative Science Quarterly*, 49, 337–365.
- Kostova, T., & Zaheer, S. (1999). Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management Review*, 24, 64–81.
- Kukalis, S. A. L. (1991). Determinants of strategic planning systems in large organizations: A contingency approach. *Journal of Management Studies*, 28, 143–160.
- Lee, F. (1997). When the going gets tough, do the tough ask for help? Help seeking and power motivation in organizations. *Organizational Behavior and Human Decision Processes*, 72, 336–363.
- Lomi, A., Lusher, D., Pattison, P. E., & Robins, G. (2014). The focused organization of advice relations: A study in boundary crossing. *Organization Science*, 25, 438–457.
- McDonald, M. L., Khanna, P., & Westphal, J. D. (2008). Getting them to think outside the circle: Corporate governance, CEOs' external advice networks, and firm performance. *Academy of Management Journal*, 51, 453–475.
- McDonald, M. L., & Westphal, J. D. (2003). Getting by with the advice of their friends: CEOs' advice networks and firms' strategic responses to poor performance. *Administrative Science Quarterly*, 48, 1–32.
- Mehra, A., Dixon, A. L., Brass, D. J., & Robertson, B. (2006). The social network ties of group leaders: Implications for group performance and leader reputation. *Organization Science*, 17, 64–79.
- Meissner, P., & Wulf, T. (2014). Antecedents and effects of decision comprehensiveness: The role of decision quality and perceived uncertainty. *European Management Journal*, 32, 625–635.
- Menon, T., & Pfeffer, J. (2003). Valuing internal vs. external knowledge: Explaining the preference for outsiders. *Management Science*, 49, 497–513.
- Menon, T., Thompson, L., & Choi, H.-S. (2006). Tainted knowledge vs. tempting knowledge: People avoid knowledge from internal rivals and seek knowledge from external rivals. *Management Science*, 52, 1129–1144.
- Milgrom, P., & Roberts, J. (1995). Complementarities and fit strategy, structure, and organizational change in manufacturing. *Journal of Accounting and Economics*, 19, 179–208.
- Miller, C. C. (2008). Decisional comprehensiveness and firm performance: Towards a more complete understanding. *Journal of Behavioral Decision Making*, 21, 598–620.

- Miller, C. C., Burke, L. M., & Glick, W. H. (1998). Cognitive diversity among upper-echelon executives: Implications for strategic decision processes. *Strategic Management Journal*, *19*, 39–58.
- Miller, D., & Friesen, P. H. (1983). Strategy-making and environment: The third link. *Strategic Management Journal*, *4*, 221–235.
- Mintzberg, H. (1973). *The nature of managerial work*. New York: Harper & Row.
- Mintzberg, H., Raisinghani, D., & Theoret, A. (1976). The structure of ‘unstructured’ decision processes. *Administrative Science Quarterly*, *21*, 246–275.
- Mishra, A. K., & Spreitzer, G. M. (1998). Explaining how survivors respond to downsizing: The roles of trust, empowerment, justice, and work redesign. *Academy of Management Review*, *23*, 567–588.
- Nebus, J. (2006). Building collegial information networks: A theory of advice network generation. *Academy of Management Review*, *31*, 615–637.
- Neter, J., Wasserman, W., & Kutner, M. H. (1990). *Applied linear statistical models* (3rd edition). Homewood, IL: Irwin.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company*. New York: Oxford University Press.
- Papadakis, V. M., Lioukas, S., & Chambers, D. (1998). Strategic decision-making processes: The role of management and context. *Strategic Management Journal*, *19*, 115–147.
- Parker, S. C., & Van Witteloostuijn, A. (2010). A general framework for estimating multidimensional contingency fit. *Organization Science*, *21*, 540–553.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper & Row.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*, 185–227.
- Randolph, W. A. (1995). Navigating the journey to empowerment. *Organizational Dynamics*, *24*(4), 19–32.
- Samuelson, P. A. (1974). Complementarity: An essay on the 40th anniversary of the Hicks-Allen revolution in demand theory. *Journal of Economic Literature*, *12*, 1255–1289.
- Schrah, G. E., Dalal, R. S., & Sniezek, J. A. (2006). No decision-maker is an island: Integrating expert advice with information acquisition. *Journal of Behavioral Decision Making*, *19*, 43–60.
- Seibert, S. E., Silver, S. R., & Randolph, W. A. (2004). Taking empowerment to the next level: A multiple-level model of empowerment, performance, and satisfaction. *Academy of Management Journal*, *47*, 332–349.
- Simsek, Z., Heavey, C., & Fox, B. C. (2018). Interfaces of strategic leaders: A conceptual framework, review, and research agenda. *Journal of Management*, *44*, 280–324.
- Sniezek, J. A., Schrah, G. E., & Dalal, R. S. (2004). Improving judgement with prepaid expert advice. *Journal of Behavioral Decision Making*, *17*, 173–190.
- Sniezek, J. A., & Van Swol, L. M. (2001). Trust, confidence, and expertise in a judge-advisor system. *Organizational Behavior and Human Decision Processes*, *84*, 288–307.
- Strauss, A. L. (1978). *Negotiations: Varieties, contexts, processes, and social order*. SciELO Brasil.
- Sturm, R. E., & Antonakis, J. (2015). Interpersonal power: A review, critique, and research agenda. *Journal of Management*, *41*, 136–163.
- Sutcliffe, K. M., & Huber, G. P. (1998). Firm and industry as determinants of executive perceptions of the environment. *Strategic Management Journal*, *19*, 793–807.
- Titah, R., & Barki, H. (2009). Nonlinearities between attitude and subjective norms in information technology acceptance: A negative synergy? *MIS Quarterly*, *33*, 827–844.
- van Doorn, S., Heyden, M. L. M., & Volberda, H. W. (2017). Enhancing entrepreneurial orientation in dynamic environments: The interplay between top management team advice-seeking and absorptive capacity. *Long Range Planning*, *50*, 134–144.
- Venkatraman, N. (1989). The concept of fit in strategy research: Toward verbal and statistical correspondence. *Academy of Management Review*, *14*, 423–444.
- Wong, S.-S. (2008). Task knowledge overlap and knowledge variety: The role of advice network structures and impact on group effectiveness. *Journal of Organizational Behavior*, *29*, 591–614.

Author biographies

Alexander Alexiev is a lecturer at Amsterdam Business School, University of Amsterdam. He holds a PhD from the Rotterdam School of Management, Erasmus University. His research concentrates on the role of advice in strategic decision-making, top management teams, corporate venturing, innovation and interorganizational collaboration.

Henk W. Volberda is Professor of Strategic Management & Innovation at Amsterdam Business School, University of Amsterdam. He is also Scientific Director of the Amsterdam Centre for Business Innovation. He has been a visiting scholar at the Wharton School at the University of Pennsylvania and Cass Business School, London and obtained his PhD *cum laude* in Business Administration at the University of Groningen. His work on strategic flexibility, coevolution, management innovation and new organizational forms has led to an extensive number of published articles in academic journals including the *Academy of Management Journal*, *Global Strategy Journal*, *Journal of Business Venturing*, *Journal of Management*, *Journal of Management Studies*, *Journal of International Business*, *Management Science*, *Organization Studies*, *Organization Science*, *Strategic Entrepreneurship Journal* and *Strategic Management Journal*. He is a member of the editorial boards of *Long-Range Planning*, *Journal of Strategy and Management*, *Management and Organization Review* and *Organization Studies*. For the fifth year in a row, Volberda has been included in the Clarivate Analytics highly cited researcher list.

Justin Jansen is Professor of Corporate Entrepreneurship at the Rotterdam School of Management, Erasmus University. His research provides insights into the roles of leadership and organizational design as well as the development of novel capabilities in order to improve long-term viability and performance. His research has focused on strategic leadership, organizational learning and absorptive capacity, organizational ambidexterity, and corporate entrepreneurship.

Frans A. J. Van Den Bosch is Professor of Management Interfaces between Organizations and Environment, Rotterdam School of Management, Erasmus University. He has published several books and over 165 articles in scientific journals and book chapters in the areas of strategy, international business, general management, economics, and industry studies. His scientific papers have appeared in, among others, *Academy of Management Journal*, *Business and Society*, *Journal of Management Studies*, *Management Science* and *Organization Science*. He is a board member of several scientific journals, including *Long Range Planning* and *Organization Studies*.

Appendix

Table 5. Consequences and Antecedents of Senior Executive Advice Seeking in Previous Studies.

Variables	Constructs previously studied	Method	Studies
Consequences	Organizational turnaround	Empirical	McDonald & Westphal, 2003
	Exploratory innovation	Empirical	Alexiev et al., 2010
	Boundary-spanning alliances	Conceptual	Balkundi & Kilduff, 2005
	Senior team's absorptive capacity	Empirical	Van Doorn et al., 2017
	Organizational performance	Empirical	Collins & Clark, 2003; McDonald & Westphal, 2003
Antecedents	Board control	Empirical	McDonald et al., 2008
	CEO leadership style	Conceptual	Arendt et al., 2005
	Intended firm strategy	Conceptual	Arendt et al., 2005
	Perceived environmental dynamism	Conceptual, empirical	Arendt et al., 2005; Heyden et al., 2013

Table 6. Measures.

Scale	CFA Loadings	Mean / st. dev.	Scale
External advice seeking ($\alpha = .918$)		3.72 / 1.55	1–7 (Not at all – Very much)
To what extent do you...			
...frequently use advisers from other organizations	.848		
...ask for advice from managers of other organizations about the current strategy	.939		
...ask for advice from managers of other organizations about the future strategy	.885		
Internal advice seeking ($\alpha = .941$)		5.11 / 1.39	1–7 (Not at all – Very much)
...frequently use advisers from your own organization	.861		
...ask for advice from managers of your own organization about the current strategy	.972		
...ask for advice from managers of your own organization about the future strategy	.925		
Decision process comprehensiveness ($\alpha = .854$)		4.70 / 1.00	1–7 (Not at all – Very much)
We develop multiple scenarios and alternatives to solve a problem	.712		
We consider many diverse criteria for ruling out possible courses of action	.787		
We thoroughly examine multiple possibilities for the problem or opportunity	.846		
For important decisions, we conduct various analyses on suggested courses of action	.747		
We investigate multiple responses in depth	.675		
Our decisions are based on factual information	.443		
Perceived environmental dynamism ($\alpha = .848$)		4.61 / 1.36	1–7 (Strongly disagree – Strongly agree)
The changes in our environment are very intensive	.779		
Our customers regularly demand new products or services	.747		
In the markets where our organization operates, changes take place continuously	.893		
Demand in our environment changes often and rapidly	.644		
Empowerment climate ($\alpha = .728$)		5.14 / 1.01	1–7 (Strongly disagree – Strongly agree)
Our organization regularly invests in developing the organizational structure so as to make the most of our staff	.683		
Employees are allowed to define their own role and to pursue different roles	.755		
Groups of employees are encouraged to set their own structure and functioning	.630		

Edgeworth–Pareto Substitutability and Partial Derivative Analyses for Decision process comprehensiveness and empowerment climate

Edgeworth–Pareto substitutability is defined as a situation where the combined effect of two factors is less than the sum of their separate effects. Increasing either factor decreases the marginal impact of the other. Hypotheses 2a and 2b proposed that empowerment climate (EC) would diminish the positive relationship between organizational decision process comprehensiveness (DPC) and external (EA) and internal advice (IA) seeking respectively. In Table 4, models 5 and 8 present the equations that tested these hypotheses. We employed partial derivative analysis for H2a and H2b in order to interpret further the significant interactions. We studied the functional form of the interactions by taking the partial derivative and determining mathematically whether the moderated relationship was monotonic or non-monotonic. The partial derivatives are as follows:

$$dEA/dDPC = 0.277 - 0.096EC$$

$$dIA/dDPC = 0.300 - 0.058EC$$

We then plotted the partial derivatives over the observed range of the moderating variable [−4.098 to 1.843] (See also appendix Tables 7 and 8). The inversion point for EA is at $EC = 2.885$, and for IA at $EC = 5.172$. Both inversion points fall beyond the observed range, which allows us to conclude that both moderated relationships are monotonic, i.e. positive for all values of the moderator.

We also applied the Johnson–Neyman technique (Hayes, 2013) to derive regions of significance for the conditional effect of the moderator across the range that is observed in the data. The technique allows us to visualize that region if the border points fall within the observed range. If the confidence bands of the conditional effect contain the zero point, the effect is not statistically significant. For EA, the confidence interval crosses the zero line at 1.606, which is towards the maximum observed value of EC. For values higher than 1.606, the conditional effect of DPC on EA will not be statistically significant. For values below that range, the effect will remain positive and increase as EC decreases. For very high levels of EC, DPC will have no effect on EA. For the equation for IA, there are no points along the observed continuum of EC where the conditional effect transitions between statistically significant and non-significant. DPC remains positively associated with IA for all values of EC, although the strength of that relationship decreases with the increase in the moderator.

These results reveal that there is an Edgeworth–Pareto substitutability between DPC and EC. For EA, EC substitutes for DPC so that at a higher level of EC, DPC's relationship with EA becomes non-significant. In the case of IA, EC also substitutes for DPC, but DPC continues to be significant throughout the whole range of EC.

Table 7. Partial Derivative Analysis for the Coefficient of Decision Process.Comprehensiveness (DPC) on external advice seeking (EA) at different levels of empowerment climate (EC), standardized values.

EC	Coef. DPC	SE	t-value	Lower bound CI	Upper bound CI
−4.098	.669	.126	5.308	.422	.917
−3.801	.641	.118	5.443	.410	.872
−3.504	.612	.109	5.595	.398	.827
−3.207	.584	.101	5.766	.385	.783
−2.910	.556	.093	5.961	.373	.738

(continued)

Table 7. (Continued)

EC	Coef. DPC	SE	t-value	Lower bound CI	Upper bound CI
-2.612	.527	.085	6.182	.360	.694
-2.315	.499	.077	6.433	.346	.651
-2.018	.470	.070	6.716	.333	.607
-1.721	.442	.063	7.028	.318	.565
-1.424	.413	.056	7.359	.303	.523
-1.127	.385	.050	7.677	.286	.483
-.830	.356	.045	7.916	.268	.444
-.533	.328	.041	7.962	.247	.408
-.236	.299	.039	7.678	.223	.376
.061	.271	.039	6.994	.195	.347
.358	.242	.040	5.993	.163	.322
.655	.214	.044	4.873	.128	.300
.952	.185	.049	3.806	.090	.281
1.249	.157	.054	2.877	.050	.264
1.546	.128	.061	2.102	.008	.248
1.606	.123	.062	1.963	.000	.245
1.843	.100	.068	1.466	-.034	.233

SE, standard error of coefficient DPC.
 CI, 95% confidence interval of coefficient DPC.

Table 8. Partial Derivative Analysis for the Coefficient of Decision Process.Comprehensiveness (DPC) on internal advice seeking (IA) at different levels of empowerment climate (EC), standardized values.

EC	Coef. DPC	SE	t-value	Lower bound CI	Upper bound CI
-4.098	.537	.118	4.562	.306	.768
-3.801	.520	.110	4.729	.304	.736
-3.504	.503	.102	4.918	.302	.703
-3.207	.485	.095	5.134	.300	.671
-2.910	.468	.087	5.382	.297	.639
-2.612	.451	.080	5.667	.295	.607
-2.315	.434	.072	5.996	.292	.576
-2.018	.417	.065	6.375	.288	.545
-1.721	.399	.059	6.809	.284	.514
-1.424	.382	.052	7.292	.279	.485
-1.127	.365	.047	7.802	.273	.457
-.830	.348	.042	8.278	.265	.430
-.533	.330	.038	8.601	.255	.406
-.236	.313	.036	8.611	.242	.385
.061	.296	.036	8.192	.225	.367
.358	.279	.038	7.390	.205	.353
.655	.262	.041	6.389	.181	.342
.952	.244	.045	5.378	.155	.334
1.249	.227	.051	4.465	.127	.327
1.546	.210	.057	3.684	.098	.322
1.843	.193	.064	3.031	.068	.317

SE, standard error of coefficient DPC.
 CI, 95% confidence interval of coefficient DPC.