Managerial decision-making:

Construction and validation of an assessment instrument

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Chapter 1
Introduction

Decision-making plays such a central part in managerial work that some authors consider it almost synonymous with management. Peter Drucker (1955, p. 345) argued that "whatever a manager does, he does through making decisions. (...) Management is always a decision making process". Over the following five decades, many management scholars have subscribed to the view of decision-making as the central focus of management (e.g., Koontz, 1980; Sayles, 1990; Simon, 1977).

If we consider the basic management functions – planning, organising, leading, and controlling - which usually constitute the main parts of "Introduction to Management" textbooks (e.g., Bovée, Thill, Wood, & Dovel, 1993; Hampton, 1986; Robbins & Coulter, 2007; Stoner, Freeman, & Gilbert, 1995), decision-making emerges as a major component of these four functions. Planning involves decisions that address the specific future that managers desire for their organisations, usually translated into goals to be achieved in the short and long run. Organising involves decisions on how the organisation's activities are to be divided, integrated, and coordinated, as well as decisions on the rules and procedures to be followed. Leading involves decisions on the ways to motivate, direct, or influence task-related activities of individuals or groups. Controlling involves decisions about the processes that best monitor progress against objectives and standards derived from planning, or that best ensure that rules and procedures derived from organising are being followed.

In an early attempt to devise a model of universal characteristics of management, Rosemary Stewart (1967, 1982) also places decision-making at its centre. Based on observations of managers in various settings, the model proposes that all managerial jobs share three major characteristics: Demands, constraints, and choices. Any manager's job can be pictured as a three-ringed concentric circle, where the inner ring comprises the demands, the outer ring comprises the constraints, and the in-between ring comprises the choices. According to Stewart, effective managers are able to expand the range of choices (options managers have when faced with decisions), which allows them to decrease the range of demands (what has

to be done) and/or the range of constraints (factors inside or outside the organisation that limit what the manager can do). Choices, a fundamental component of decision-making, are therefore considered the key to effective management.

When the performance of a manager is being evaluated, the consequences of his/her decisions generally are the main, if not the sole, criterion. According to Harrison (1995, p. ix), "The sine qua non of good management is a track record of decision success. It is the most meaningful measure of management merit". Given the recognition that competence in decision-making differentiates effective from non-effective managers, it is not surprising that a vast body of literature on the topic has been developed over the years. Various disciplines have acknowledged the importance of decision-making and provided significant contributions to its study. As pointed out by Tversky (1982, p. 321):

> "Decision-making is a meeting ground for psychologists, economists, sociologists, organisational theorists, statisticians, philosophers and others. It is an exciting field, endowed with a deep formal theory, a rich technology, numerous intriguing observations of individuals and organisations, and a growing body of experimental results."

Several authors have attempted to group existing studies of decision-making into categories labelled according to aspects analysed in these studies (e.g., Eisenhardt & Zbaracki, 1992; Harrison, 1995; Schwenk, 1988; *Strategor*, 1988). Although different classifications have been put forward, two broad categories can usually be found: Studies focusing on the decision-maker, and studies focusing on the organisation (Shapira, 1997; Wright, 1985a). The focus of the present study is on individual aspects of decision-making. We intend to derive a framework of individual decision-making styles, which can be used for individual assessment and for further research on the association with performance and satisfaction in managerial functions.

We conceptualize decision-making styles as involving a general predisposition, which can also be developed and shaped according to different decision situations. A number of scholars have argued that individuals have general tendencies or preferences for particular decision behaviours (e.g., Arroba, 1977; Bromiley & Curley, 1992; Driver, Svensson,

Amato, & Pate, 1996; Maule, 1985; Wright & Philips, 1984), and they adapt their responses over the short-term to cope with the requirements of a specific decision situation, while maintaining their preference or tendency in general (Hayes, Allinson, Hudson, & Keasey, 2003). This view follows some contemporary thinking on an integrative dispositional-situational approach, which has been applied in areas such as personality (e.g., Murtha, Kanfer, & Ackerman, 1996) and social skills (e.g., Buck, 1991; Perrewé et al., 2005).

Consisting of contributions drawn from various disciplines, the literature on managers' individual decision-making includes different perspectives and different foci of analysis. In addition to being eclectic, this literature tends to be fragmented, since many studies focus on a particular aspect of decision-making, as a result of the emphasis given by the authors to specific disciplines (Dean, Sharfman, & Ford, 1991; Harrison, 1995). There are arguments against studying different aspects in isolation, given the complex and interactive nature of decision-making (e.g., Harrison, 1995; Hitt & Tyler, 1991; McCall & Kaplan, 1990; Pool & Koopman, 1992). The present study intends to integrate aspects of individual decision-making drawn from different perspectives, and to construct and begin to validate a self-report instrument providing a comprehensive assessment of individual decision-making in organisational context.

In the pursuit of this objective, we are well aware that researchers always bring to their studies a set of assumptions and patterns of thought moulded by their cultural background. No researcher can claim to have a totally free approach of his/her study since, as a person, the researcher is a product of a certain culture (Nasif, Al-Daeaj, Ebrahimi, & Thibodeaux, 1991; Segall, Dasen, Berry, & Poortinga, 1990; Wright et al., 1978; Wright & Wright, 2000). For this reason, researchers may be reflecting their own cultural background when choosing constructs and variables to be considered in a study, as well as when developing instruments (Berry, Poortinga, Segall, & Dasen, 2002; Boyacigiller & Adler, 1991: Segall et al., 1990). Therefore, the development of a decision-making instrument faces the challenge of being inclusive in aspects that may not be present in the author's own limited cultural experience, as well as the problem of possibly including aspects that may not be applicable in other cultures. Such considerations pointed to the need to test the instrument in different cultural settings.

Over the last decades, the growing internationalisation of business has brought about new challenges to managers and also new areas of research on decision-making. There is a growing awareness among scholars and professionals that cultural context exerts significant influence on decision processes, and empirical research has provided evidence to this effect (e.g., Adler, 1991; Harrison, 1995; Hofstede 1980, 1991; McDaniels & Gregory, 1991; Shweder & Sullivan, 1993; Stewart, 1985; Weber & Hsee, 2000; Wright, 1985b).

Whereas comparative (or cross-cultural) studies provide important knowledge about culture specific and universal aspects in decision-making, another question concerns the possible application of this knowledge in interactions of individuals from one culture with individuals from other cultures. In light of the growing internationalisation of business and the consequent multiplication of contacts involving individuals from different cultures, research that directly addresses behaviour in intercultural interactions has obvious practical applications (Adler & Bartholomew, 1992; Davison & Ward, 1999; Friedman & Berthoin Antal, 2005). For this reason, an analysis of the functioning of the decision-making instrument in intercultural interactions was included in the study.

In summary, this research has two main goals: First, contributing for the understanding of managers' individual decision-making, by attempting to devise an instrument that integrates aspects from different perspectives, so that the main dimensions of individual decision-making can be identified empirically; Second, contributing to the understanding of the role played by culture in individual decision-making processes, by analysing the structure and reliability of the instrument in different cultural contexts, and by exploring its functioning in intercultural interactions.

This study is organised in eight chapters, of which Chapter 1 is the present introduction. The two following chapters describe the literature review on which the development of the instrument was based. Chapter 2 presents a review of the literature on the main perspectives in decision-making from which the domains included in the instrument are identified. Chapter 3 describes the operationalisation of these domains into items that were sampled according to the main aspects of individual decision-making behaviour identified in the literature. The next two chapters present empirical studies conducted with samples of

Portuguese participants. Chapter 4 presents and discusses analyses on the instrument's structure and reliability. On the basis of results from this chapter, we identify which items and scales can be retained for a questionnaire to be used for further analyses of managers' decision-making characteristics. In Chapter 5 we explore the validity of the scales, by analysing whether correlations that could be theoretically predicted from the literature indeed are observed with Portuguese participants. The subsequent two chapters deal with the testing of the instrument in different cultural settings. Chapter 6 consists of a cross-cultural comparison of the decision-making scales, with samples of Dutch and Portuguese managers. Chapter 7 explores the scales' scores in intercultural interactions, with a sample of Portuguese managers and a sample of expatriate managers working in Portugal. The concluding chapter summarizes and discusses the main findings of this research. Limitations of the research are reviewed and suggestions for future research are proposed.

Chapter 2
Domains of decision-making

In organisational sciences, the need for multiple perspectives when studying decision-making has been appreciated since the work of Allison (1969). According to Allison, three different perspectives should be taken in consideration simultaneously: the "rational", the "organisational", and the "political". As an illustration, Allison described how each of these three perspectives explained President Kennedy's decision during the Cuban Missile Crisis in 1962. The "rational" analysis described how President Kennedy's team proposed alternative courses of action to solve the strategic problem and chose the alternative whose consequences best suited the objectives pursued. The "organisational" analysis showed how the decision was strongly influenced by organisational processes such as the administrative and military hierarchy, and the established communication channels. Finally, Allison added a "political" analysis, describing how the decision resulted from negotiations among various participants in the process.

Over the following years, several authors developed alternatives to Allison's perspectives, while others proposed compounded models of decision-making in which multiple perspectives were included, although not explicitly. Reviews of these early multi-dimensional models can be found in Linstone (1984), and *Strategor* (1988). Nowadays, the already vast body of decision-making literature is continuously being enriched with theoretical formulations and empirical investigations, resulting in various refinements of existing perspectives or in the development of new ones. Here a representative rather than an exhaustive review will be presented of research guided by various perspectives on individual decision-making.

In the early 1990s, Eisenhardt and Zbaracki (1992) classified existing empirical research under three research paradigms: "Rationality and bounded rationality", "politics and power", and "garbage can". The "rationality and bounded rationality" paradigm includes research related to the extent and limitations of the use of rationality by individuals when making decisions. Much of the theoretical and empirical developments in this paradigm have been inspired by the work of Herbert Simon (1947). Simon proposed the bounded

rationality model, which he considered to be more in accordance with human cognitive capacities than the classical rational model, derived from economic models. Limitations of the classical rational model and cognitive processes underlying decision-making are two main topics researched under this paradigm.

The roots of the "politics and power" paradigm lie in the political science literature of the 1950s; particularly in the work of Lindblom (1959). Two common research topics are the impact of power on decision-making, much inspired in the pioneer work of Pfeffer and Salancik (1974), and the types of political actions undertaken by individuals to influence decisions, where main references include the work of Pettigrew (1973), Quinn (1980), and Pfeffer (1981, 1992).

The "garbage can" paradigm is based on the work of March, Cohen and Olson (1972). For these authors, decision-making results from a random conjugation of opportunities, problems, solutions, and participants. In comparison to the rational and political perspectives, the garbage can model emphasizes the importance of chance factors, such as timing and luck. Research under the "garbage can" paradigm has sought to provide evidence of decision-making as a random confluence of streams, contingencies under which decision-making happens, and the role of chance, accidents, and random events in final decisions. Ás Eisenhardt and Zbaracki (1992) note, the "garbage can" paradigm is less empirically robust than the other two. It is unclear whether this dimension is simply a labelling of unexplained variance under the other paradigms, or whether it reflects an extreme form of bounded rationality.

The identification of three different perspectives on decision-making can be found in several studies prior to Eisenhardt and Zbaracki's (1992). Hickson (1987) identifies three basic modes of decision-making: "dual rationality", "incrementalism", and "garbage can". The "dual rationality" mode involves the process of handling both problems and politics, and therefore integrates aspects from the rational and the political perspectives. The "garbage can" mode is the same as in Eisenhardt and Zbaracki's review. Incremental decision-making refers to a step-by-step process by which marginal changes are introduced to previous decisions. "Incrementalism" was a major concept in Lindblom's (1959)

political model, where adjustments to previous decisions are made to include the views of various participants as they become known, and to adapt previous decisions to current situations. Therefore, the "incrementalism" mode includes aspects of the political perspective, as well as aspects of environmental adaptation.

Lyles and Thomas (1988) consider five primary modes of strategic decision-making: "rational", "avoidance", "adaptive", "political" and "decisive". However, as Das and Teng (1999) have noted, the "adaptive" mode is largely based on "incrementalism", and "garbage can" is the basis of the "decisive" mode. On the other hand, the "avoidance" mode, under which decision-making is viewed as a systematic process aimed at maintaining the status quo by avoiding the identification of new problems, is conceptually different from the perspectives mentioned so far.

Dean et al. (1991) also organised existing studies into three categories, this time considering the key dimensions underlying variations across decision processes: "rationality", "politicality", and "flexibility". The first two dimensions correspond to the first two research paradigms identified by Eisenhardt and Zbaracki (1992). The third dimension, "flexibility", and its opposite pole, "rigidity", can be related to the concepts introduced in the "avoidance" mode of Lyles and Thomas (1988), since the emphasis is on divergence from tradition and the status quo. The themes of flexibility and rigidity have been the subject of a considerable volume of research. Early investigations on flexibility have focused on a number of aspects, including organisational structure flexibility (e.g., Duncan, 1973), the capacity to look at problems in new ways and to look in new areas for information and alternatives (e.g., Alexander, 1979; Stein, 1981), and the willingness to reconsider previous decisions (e.g., Lyles & Mitroff, 1980; Staw, 1981). In an attempt at integration, Dean et al. (1991, p. 83) define flexibility as "the extent to which decision-makers diverge from tradition and structure in the process of decision-making, and the extent to which this divergence determines choice".

Already in the early 1970s, Mintzberg (1973a) also proposed three modes of strategic decision-making: The "planning" mode, the "adaptive" mode, and the "entrepreneurial" mode. Mintzberg's definitions of the "planning" mode and the "adaptive" mode are clearly

related to existing literature on the rational and the political approaches of decision-making, respectively. The essential features of the "entrepreneurial" mode include the active search for new opportunities, dramatic leaps forward in the face of uncertainty, and growth as the dominant goal.

Rational and political aspects of decision-making are considered virtually always by writers attempting to classify existing studies. Several authors have used these two aspects as the framework for analysing decision-making processes (e.g., Bourgeois & Eisenhardt, 1988; Browne, 1993; Dean & Sharfman, 1993b; Fredrickson, 1984). In an empirical study, Dean and Sharfman (1993b) concluded that rationality and political behaviour are independent dimensions of decision-making processes. However, a third aspect seems to emerge from the literature. The "flexibility" dimension of Dean et al. (1991), the "avoidance" mode of Lyles and Thomas (1988), and the "entrepreneurial" mode of Mintzberg (1973a), are conceptually different from rational and political aspects of decision-making. They all include issues related to change, innovation, and development, which are topics of environmental adaptation (Achrol, 1991; Chakravarthy, 1982; Kitchell, 1995; Zeithalm & Zeithalm, 1984). The third aspect identified by Eisenhardt and Zbaracki (1992), the "garbage can", has also been related to environmental adaptation by Lynn (1982), who analysed its impact on adoptions of innovations and change.

Most classifications presented so far are mainly derived from authors who attempt to group previous studies that share a single perspective of decision-making (e.g., Dean et al., 1991; Eisenhardt & Zbaracki, 1992; Hickson, 1987). However, some empirical studies have been carried out in which different aspects of decision-making are investigated simultaneously. Kirton (1976) conducted a study that included several items of decision-making, identified through interviews with managers. An analysis of the results revealed the presence of three factors, labelled "Weberian", "Mertonian", and "Originality". Items under the "Weberian" factor are related to what is usually identified as the rational perspective – i.e., attention to detail, thorough, methodical, and systematic behaviour. The "Mertonian" factor includes items related to social behaviour, generally considered under the political perspective – i.e. conformity for rules and authority, and search for agreement within the group. Items under the "Originality" factor include creativity and reactions to change and risk; this factor is

related to the novelty of alternatives proposed and, therefore, to innovation and environmental adaptation. Over three decades, Kirton's instrument has been extensively examined in a number of empirical studies (e.g., Beene & Zelhart, 1988; Loo & Shiomi, 1997; Rickards & Gaston, 1995). Construct validity of Kirton's three factor model was analysed by Bagozzi and Foxall (1996) using confirmatory factor analysis. The findings revealed stability of the three-factor representation.

Miller (1987) conducted a study in 97 small and medium-sized companies, in which also three perspectives of decision-making are included -- "rationality", "interaction", and "assertiveness". "Rationality" was defined as the extent to which attention is paid to analysis of the problem and of the alternatives, and the extent to which explicit policies exist. "Interaction" referred to the extent to which decision-making is either individual or by consensus and to the scope for negotiations, issues much related to social behaviour in decision-making. Finally, "assertiveness" meant whether behaviour is proactive and how far risks are taken in decisions, a description that is very close to Mintzberg's (1973a) definition of the "entrepreneurial" mode of decision-making. Results of factor analysis showed the independence of these three dimensions.

In summary, three conceptually distinct aspects of decision-making can be distinguished: Cognitive aspects, for which the rational label is generally employed; social interaction aspects, usually labelled as political; and environmental adaptation aspects, for which different labels have been used. The present study maintains the rational label for cognitive aspects, the political label for social aspects, and uses the entrepreneurial label for aspects of environmental adaptation. More specifically, under the rational label we include the extent of thorough and systematic information processing and the development of alternative courses of action. The political label includes aspects such as the influence of power and political actions on decision processes, the scope for negotiations, and the extent of openness to others reflected in the search for agreement. The entrepreneurial label, preferred for its broadness, encompasses the definitions of "flexibility", "originality" and "assertiveness" mentioned previously. This label covers aspects such as creativity and novelty in finding alternatives, acceptance of risk and change, and proactiveness in the identification of problems and opportunities.

Although the different perspectives on decision-making have often been viewed as competitive explanations of decision-making processes, several authors have argued that they are complementary (e.g., Browne, 1993; Harrison, 1995). Here we consider the three aspects of decision-making as distinguishable domains. The term domain is used following a practice found in psychometrics, where items that bear on the same category are referred to as addressing the same domain. The other term, perspective, refers more to the position that an observer takes when considering a category. The three domains are conceptually distinct since each includes different repertoires of decision-making behaviours. However, this argument should not be confused with an expectation that they are empirically uncorrelated, since correlations between the decision-making domains may exist and vary according to different contingencies (Dean et al., 1991).

The following sections will review the main literature on the three decision-making domains. This will provide the basis for the operationalisation of each of the three domains, which will be the subject of Chapter 3.

Rational domain

The classical rational model of decision-making derives from economic models and is often linked to the "Economic Man Theory", which has its origins in the writings of Mills, Bentham, and John Dewey (Browne, 1993; Schwenk, 1988). The basic assumption of this model is that human behaviour is rational, in the sense of reflective and purposeful. Contemporary literature considers this model to be essentially normative, since it is prescriptive rather than descriptive (Browne, 1993; Harrison, 1995). It attempts to prescribe precise conditions under which decisions ought to be made. These conditions usually include the following (Browne, 1993; Lemaitre-Rosencweg, 1986):

- Decision-makers have complete information about the situation at hand;
- Decision-makers enter decision situations with known objectives, which determine the value of the possible consequences of an alternative;
- Decision-makers have knowledge of all possible alternative actions;
- Decision-makers have knowledge of all the consequences of each alternative;

- Decision-makers will choose the alternative whose consequences are highest in value, according to the objectives.

The classical rational model is often called mono-rational, referring to the existence of one objective only, usually profit maximisation (e.g., Lemaitre-Rosencweig, 1986). Other authors focus mono-rationality on the fact that the decision is associated with a single decision-maker, either individual or collective (e.g., Strategor, 1988). In either view, mono-rationality implies that the model does not include the possibility of conflicting objectives.

Research in the Carnegie School revealed that neither the choices organisations make nor the way they make them generally meet the assumptions of normative economic models. According to Simon (1947), human rationality is limited since:

- Rationality requires a complete knowledge and anticipation of the consequences that will follow from each alternative. In reality, knowledge of consequences is always fragmentary;
- Since the consequences lie in the future, the value associated with each consequence can only be anticipated imperfectly;
- Rationality requires a choice among all possible alternatives. In real life, only few of all possible alternatives ever come to the mind of decision-makers.

Simon proposes the "bounded rationality" model, which features concepts such as sequential attention to goals, quasi-resolution of conflict, and "satisficing". According to Simon, decision-makers do not approach a complex problem globally but through sequential attention to its factors. Alternatives are developed according to known repertoires of action, that is, the options that are familiar to decision-makers, to which successive adaptations will be made. The selected course of action will not be an absolute optimal point but the first solution that is considered satisfactory, i.e., decision-makers "satisfice" rather than "optimize".

The bounded rationality model results in a view of rationality that is not as demanding as the economic model but nevertheless includes basic elements of that model (e.g., pre-specified objectives, and behaviour that is sensible and logic in pursuing those objectives).

On the other hand, the bounded rationality model allows for the inclusion of processes such as intuition, which are foreign to traditional economic models (Eisenhardt & Zbaracki, 1992). An important contribution of the bounded rationality model is that it avoids the rational/irrational duality of the classical rational model. The concept of rationality is not seen as an absolute but as a relative concept. All behaviours, actions, and decisions can be seen as having sense if the underlying logic system is known (Lemaitre-Rosenoweg, 1986).

Since Simon's work, much research has been undertaken on providing evidence that human cognitive limitations entice managers away from rationality as prescribed in classical normative models. Recognizing that information-processing capacities of decision-makers are limited (Schwenk, 1988; Simon, 1947; Tversky & Kahneman, 1974), an important stream of research has focused on the cognitive processes used by decision-makers to simplify complex information-processing requirements in decision-making situations. Four main categories of cognitive processes can be found in the literature: heuristics and biases, assumptions and beliefs, frames of reference, and analogies and metaphors.

The first category of cognitive processes, heuristics and biases, involve the use of rules of thumb to provide efficient short-cuts in processing information. Several studies have identified types of heuristics and bias used by decision-makers, including the availability heuristic, representativeness heuristic, anchoring heuristic, vividness heuristic, hindsight bias, illusion of control bias, framing bias, and prior hypothesis bias (e.g., Brewer & Chapman, 2002; Fischhoff, 1975, 1982, 2001; Gilovich, Kruger, & Medvec, 2002; Haley & Stumpf, 1989; Harvey, 2007; Kahneman & Frederick, 2002; Levinthal & March, 1993; Lyles & Thomas, 1988; Oppenheimer, 2004; Schwarz & Vaughn, 2002; Tversky & Kahneman, 1974, 1981, 1986; Wang & Fischbeck, 2004).

The second category of cognitive processes, assumptions and beliefs, involve the use of taken-for-granted views of reality that help managers provide structure to complex decision-making situations (e.g., Mitroff, Ernshoff, & Kilmann, 1979; Schwenk & Thomas, 1983; Shrisvastava & Mitroff, 1984; Tripsas & Gavetti, 2000). The use of assumptions leads managers to sustain selective views of reality and consequently shapes the collection and interpretation of information, as well as the generation and choice of alternatives

(Shrisvastava & Mitroff, 1984; Tripsas & Gavetti, 2000). Assumptions are necessary since decision-makers often must take action in the absence of certainty, and assumptions enable them to deal with uncertainties associated with the decision (Mason & Mitroff, 1981; Schwenk & Thomas, 1983; Shrisvastava & Mitroff, 1984). However, assumptions may also negatively affect the quality of the decision, in particular when their accuracy is not verified in new decision situations (Schwenk & Thomas, 1983). This verification is rarely undertaken because decision-makers are often unaware of their assumptions and of methods that can help them to assess the accuracy of their assumptions (Mason & Mitroff, 1981).

The third category of cognitive processes, frames of reference, refers to fundamental cores of assumptions organised in conceptual frameworks or models displaying causal relationships, which are used to provide meaning and structure to information, as well as a guide to behaviour (Fiol & Huff, 1992; Gioia & Poole, 1984; Schwenk, 1988; Shrisvastava & Mitroff, 1983). The study of frames of reference has been undertaken in connection with concepts from the cognitive psychology literature, including: cognitive maps (e.g., Axelrod, 1976; Fiol & Huff, 1992; Hodgkinson, Bown, Maule, Glaister, & Pearman, 1999; Osborne, Stubbart, & Ramaprasad, 2001; Priem, 1992; Schneider & Angelmar, 1993), schemas (e.g., Clarke & Mackaness, 2001; Gioia & Poole, 1984; Ireland, Hitt, Bettis, & De Porras, 1987; Tversky & Kahneman, 1980; Weick, 1979), and belief structures (e.g., Daft & Weick, 1984; Fiske & Taylor, 1984; O'Reilly, 1983; Walsh, 1988). Research has shown that managers use frames of reference to make sense of and to simplify complex information (e.g., Fiol & Huff, 1992; Hodgkinson, 1997; Osborne et al., 2001).

The fourth category of cognitive processes, analogies and metaphors, deals with the transfer of frames of reference from one situation to another (Schwenk, 1984, 1988). While this helps managers to structure complex problems and to reduce the uncertainty perceived (Duhaime & Schwenk, 1985), sometimes transfer is undertaken without the recognition of crucial differences between the analogue and the current decision situation (Schwenk, 1984, 1988). Also, reasoning by analogy may involve a transfer from simple situations to more complex ones, where the analogy is not applicable, and may also direct attention to a particular set of variables, resulting in the exclusion of other variables that could be more relevant (Duhaime & Schwenk, 1985).

Studies on human rationality limitations and cognitive processes used to deal with those limitations have found a renewed focus in Behavioural Finance. In the 1980's, Thaler and colleagues started researching rational limitations in the behaviour of financial markets (e.g., De Bondt, Thaler, & Bernstein, 1985; Thaler, 1991, 1993). Since then, a considerable amount of studies on antecedents and consequences of human rationality limitations have been undertaken in the field of financial decision-making (e.g., Fama, 1991, 1998; Fenton-O'Creevy, Nicholson, Soane, & William, 2003; Hirshleifer, 2001; Hirshleifer & Shumway, 2003; Houghton, Simon, Aquino, & Goldberg, 2000; Romer, 2000; Thaler & Johnson, 1990; Thaler, Tversky, Kahneman, & Schwartz, 1997).

Operational definitions of rational behaviour usually follow the concept of rationality used in economics. Economists have developed a variety of definitions but tend to focus on the basic assumption that individuals seek to maximise their expected utility, that is, their anticipated level of goal fulfilment. Therefore, rationality is usually equated with utility-maximisation or optimality (Beach & Mitchell, 1978; Dean & Sharfman, 1993b; Freeman, 1999; Maule, 1985). The economic concept of profit maximisation, obtained by producing until marginal revenue equals marginal cost, predates the concept of optimality in decision-making (Chu, Spires, & Sueyoshi, 1999). Optimality involves maximising the net gain of benefits over costs, or choosing the alternative that yields the highest return (Beach & Mitchell, 1978; Todd & Benbasat, 1994; Weeks & Whimster, 1985).

However, several authors have presented evidence of the poor capacity for rationality as optimality or maximisation to describe decision-making processes (e.g., Drucker, 1973; Feldman & March, 1981; Harrison, 1995; Mintzberg, 1978; Mitchell & Beach, 1990). An alternative approach to optimality/maximization has been put forward by Fredrickson and Mitchell (1984). According to these authors, one of the basic features of the rational model is the emphasis placed on being comprehensive when making decisions, that is, attempting to be exhaustive or inclusive in activities connected to the decision-making process. This led Fredrickson and Mitchell to proposing comprehensiveness as a measure of rationality. Dean et al. (1991, p. 80) go in the same direction when they define decision process rationality as "the extent to which decision-makers collect and analyse information to

distinguish among alternatives in terms of their relationship to pre-established organisational objectives, and this process is the basis for choice"

According to Fredrickson and Mitchell (1984), although the comprehensiveness construct is just one measure of the extent to which decision-making approximates the rational model, its multifaceted nature makes it particularly valuable in operationalising rational decision-making. Based on a literature review, Janis and Mann (1977) attempted to identify a range of behaviours underlying the comprehensiveness construct, and concluded that a comprehensive decision-making process is characterised by:

- The thorough canvassing of a wide range of alternatives;
- Surveying a full range of objectives;
- Carefully weighing the costs and risks of various consequences;
- Intensively searching for information to evaluate alternative actions;
- Objectively evaluating information or expert judgement regarding alternative actions;
- Re-examining the positive and negative consequences of all known alternatives;
- Making detailed plans, including the explicit consideration of contingencies, for implementing the chosen action.

Although rationality can be operationalised through the concept of comprehensiveness, rational decision-making should not be equated with achieving total comprehensiveness. In fact, the literature is filled with controversy about the reliability and desirability of totally comprehensive decision-making. Several authors have argued that the extent of comprehensiveness that can be considered rational will depend on the characteristics of each specific decision situation (e.g., Driver, Brousseau, & Hunsaker, 1993; Fredrickson & Mitchell, 1984), and much investigation has been undertaken on issues that may reduce or increase the required level of comprehensiveness.

Concerns of costs and time constraints have long been identified in the literature as negatively related to the extent of comprehensiveness considered rational (e.g., Beach & Mitchell, 1978; Braybrooke & Lindblom, 1970; Driver et al., 1993; Feldman & March, 1981; Janis & Mann, 1977; Maule, 1985; Tallman & Gray, 1990; Wildavsky, 1983). For

example, the costs of obtaining all necessary information may overrun the benefits that such information could provide, and therefore it would not be sensible to attempt to achieve total comprehensiveness in information gathering. It has also been suggested that attempting to be comprehensive may result in "achieving tomorrow's solution for yesterday's problem" (Braybrooke & Lindblom, 1970, p. 121). Fulfilling total comprehensiveness demands may not be possible or sensible due to time constraints imposed by pressure to solve urgent problems, or by deadlines to take advantage of an opportunity. On the other hand, accuracy or confidence concerns are often mentioned as positively related to the extent of comprehensiveness sought (e.g., Chervany & Dickson, 1974; Connolly, 1977; Driver et al., 1993; O'Reilly, 1980). Decisions with higher stakes imply a greater need for confidence in the accuracy of the decision and, in turn, may result in more comprehensive decision processes (Dean & Sharfman, 1993a; Driver et al., 1993).

As mentioned earlier, it has been recognised that rationality is a relative concept and that different behaviours can be considered rational if the underlying logic or contingencies are known (Lemaitre-Rosenweg, 1986). The main contingencies, or the main characteristics of the decision situation, can be summarized as time pressure, cost-benefit, and accuracy concerns. When there is high time pressure, and not much importance is attached to the accuracy of the outcome, the cost of obtaining all available information would probably outrun its benefits and, therefore, a less comprehensive decision process would be more rational. An example would be the decision which brand of pen and pencil supplies to buy for the company. On the other hand, when one is deciding on a complex, lifetime or dangerous matter, all details must be investigated whatever the time and cost involved, since the stakes are high and a high-quality faultless decision must be achieved. This would be the case when designing a space vehicle to take human beings to other planets.

In summary, rational behaviour may be operationalised through the concept of comprehensiveness, but a high level of comprehensiveness is not a requirement for behaviour to be considered as rational. An adequate level of comprehensiveness should be sought given the costs and time limitations and the accuracy demands of each particular situation. For these reasons, in this study rational behaviour will be defined as the extent of

comprehensiveness in decision-making activities, resulting from cost-benefit, response-time, and accuracy concerns.

Political domain

The root for studies on political aspects of decision-making can be traced back to the Political Science literature of the 1950s, when various authors studying the legislative branch of government started to draw attention to its conflictual nature. Due to underlying competing interests, many decisions resulted from coalitions and/or the preferences of the most powerful people involved in the process (Eisenhardt & Zbaracki, 1992). Based on observations of public institutions, Lindblom (1959) developed what is usually considered the first political model of decision-making. This model is founded on the concept of "incrementalism" and its central notion that choice is marginal. Decisions are made through a continuous series of adjustments or increments, as the views of the various participants become known. Incrementalism also means that decision-makers focus only on those policies that differ marginally from existing policies, and produce only marginal adjustments to current situations. Going far beyond the current situation involves too much difficulty in getting agreement on the relative priorities of the many goals involved. Also, it should be considered that the model was developed for public administration decisions, where sudden changes can be dangerous, with consequences that are difficult to predict. In Lindblom's model, contrary to the rational model, a course of action or solution can be selected without previous specification or clarification of the goals or values the decision intends to pursue. The reason is that there is generally no agreement among the decision-makers on these matters. Concrete actions are proposed directly and discussed, and each decision-maker evaluates these in light of specific and limited alternatives ("muddling through").

Since the early 1960s, conceptual and theoretical studies on political behaviour started to appear in the organisational behaviour literature (Gandz & Murray, 1980). Similar to the bounded rationality model, the development of the political perspective was a reaction to the classical rational model's assumption that decisions follow a single, super-ordinate goal (Bourgeois, 1980; Eisenhardt & Zbaracki, 1992; Hills & Mahoney, 1978). The political

perspective assumes that the various decision-makers involved in a particular decision have divergent and sometimes contrasting goals (Borum 1980; Dean & Sharfman, 1993b; Feldman, 1988; Pettigrew, 1973). The resulting conflict and the way it is handled are the focal points of the political perspective (Eisenhardt & Zbaracki, 1992; Feldman, 1988; Harrison, 1995; Koopman & Pool, 1991). Handling competing interests and conflict implies that decisions may not result from a rational intention of pursuing objectives, but from power games and political tactics (e.g., coalitions and negotiations) among individuals or groups (Dean & Sharfman, 1993b; Mintzberg, 1983; Pettigrew, 1973; Pfeffer, 1981). Also, the primary criterion for choosing an alternative course of action may not be its contribution to pre-defined goals but the degree of acceptance it obtains among the decision-makers (Koopman & Pool, 1991; Strategor, 1988).

Two main areas of research can be found in the literature concerning political decision-making. One body of research has been concerned with identifying or providing evidence for the main features of political decision-making, with authors generally focusing on actual political behaviour. A second area relates to the impact of political activities, with most authors referring to perceptions of political behaviour, that is, the perceived degree of organisational or decision-making politicisation (Harrell-Cook, Ferris, & Dulebohn, 1999).

Within the first area of research, a substantial number of studies have been undertaken to provide empirical evidence for three main features of political decision-making in organisations: Organisations as political systems, that is, collectives of people with at least partially different goals; decisions reflecting the preferences of the most powerful people; and the use of political tactics ("politics"), that is, observable but often covert actions, by which people enhance their possibility of influencing a decision (Eisenhardt & Zbaracki, 1992).

Several empirical studies have supported the assertion of organisations as political systems, where various groups (e.g., professional groups or organisational units) or different individuals pursue goals that may be more or less conflicting and more or less deviate from organisational goals. These studies were undertaken in different types of organisations, including both state-owned and private companies (e.g., Allison, 1971; Balridge, 1971;

Borum, 1980; Bourgeois, 1980; Bourgeois & Eisenhardt, 1988; Dess, 1987; Eisenhardt & Bourgeois, 1988; Hayward & Boeker, 1998; Hills & Mahoney, 1978; Hrebiniak & Snow, 1982; Pettigrew, 1973; Quinn, 1980).

As far as the second feature of political decision-making is concerned, several empirical studies have provided evidence that decisions are a function of the power distribution among individuals and among organisational groups (e.g., Balridge, 1971; Borum, 1980; Hills & Mahoney, 1978; Hinings, Hickson, Pennings, & Schneck, 1974; Pfeffer & Moore, 1980; Pfeffer & Salancik, 1974; Salancik & Pfeffer, 1974). A substantial amount of research has also been directed at identifying sources of gaining power to affect decision-making (e.g., Allison, 1971; Borum, 1980; Emerson, 1962; French & Raven, 1959; Hegarty & Hoffman, 1987; Hickson, Hinings, Lee, Schneck, & Pennings, 1971; Lachman, 1989; Mintzberg, 1983; O'Reilly, 1983; Pettigrew, 1973; Pfeffer & Salancik, 1978; Raven & Kruglanski, 1970).

The third feature of political decision-making, the use of political tactics or "politics" to influence decisions, is often equated with the use of power (Feldman, 1988; Madison, Allen, Porter, Renwick, & Mayes, 1980). However, while power is an important part of organisational politics, many political tactics are not based directly on its use (Dean & Sharfman, 1993b). Harrison (1995) suggests that politics are a process of actual influence, whereas power is a reservoir of potential influence. Mintzberg (1983) also argues that in order to influence decisions, a person must not only have access to power sources but also the will and capacity to use them, implying that a powerful person may choose not to engage in political actions or may not have the ability to undertake such actions. Based on anecdotes and accounts from popular business journals, Pfeffer (1981, 1992) presents a comprehensive identification of types of political actions undertaken in organisations. Although Pfeffer's work is not based on empirical studies, it often provided the grounds for later studies attempting to bring empirical evidence to the use of political tactics in decision-making. In fact, over the years a substantial amount of research has been devoted to identifying types of political actions used by decision-makers and their consequences. Examples often found in the literature include information manipulation and withholding, use of coercion and pressure, impression management and ingratiation, and developing

alliances and coalitions (e.g., Allen, Madison, Porter, Renwick, & Mayes, 1979; Caldwell & O'Reilly, 1982; Case, Dosier, Murkison, & Keys, 1988; Chen & Fang, 2008; Erez, Rim, & Keider, 1986; Falbe & Yukle, 1992; Harrell-Cooke et al., 1999; Kipnis & Schmidt, 1988; Koopman & Pool, 1991; Oliver, 1991; Pfeffer & Salancik, 1978; Schilit & Locke, 1982; Stevenson, Pearce, & Porter, 1985; Vigoda & Cohen, 2002; Zivnuska, Kacmar, Witt, Carlson, & Bratton, 2004).

As mentioned earlier, a second area of research has been devoted to assess the impact of political decision-making. Several studies have investigated the impact of political behaviour for organisational performance and for employees' attitudes and behavioural intentions. Several empirical studies have found a negative relationship between employees' perceptions of organisational politics and performance (Chen & Fang, 2008; Kacmar, Bozeman, Carlson, & Anthony, 1999; Vigoda, 2000a; Witt, Kacmar, Carlson, & Zivnuska, 2002). As far as attitudes and harmful consequences for employees are concerned, job satisfaction, organisational commitment, turnover intentions, and job stress have received much attention.

A large number of studies have found a significant negative correlation between perceived level of politicisation and job satisfaction (e.g., Bozeman, Hochwarter, Perrewé, & Brymer, 2001; Cropanzano, Howes, Gandey, & Toth, 1997; Ferris et al., 1996; Ferris & Kacmar, 1992; Gandz & Murray, 1980; Gresov & Stephens, 1993; Harrell-Cook et al., 1999; Harris, Andrews, & Kacmar, 2007; Kacmar et al., 1999; Nye & Witt, 1993; Randall, Cropanzano, Bormann, & Birjulin, 1999; Valle & Perrewé, 2000; Valle & Witt, 2001; Vigoda, 2000ab, 2001, 2002; Witt et al., 2002; Zhou & Ferris, 1995), as well as between level of politicisation and organisational commitment (e.g., Cropanzano et al., 1997; Drory, 1993; Maslyn & Fedor, 1998; Randall et al., 1999; Vigoda, 2000ab, 2002; Vigoda & Cohen, 2002). Significant positive correlation have also been found between level of politicisation and turnover intentions (Cropanzano et al., 1997; Harris et al., 2007; Huang, Chuang, & Lin, 2003; Kacmar et al., 1999; Maslyn & Fedor, 1998; Randall et al., 1999; Valle & Perrewé, 2000; Vigoda, 2000ab), job stress (e.g., Valle & Perrewé, 2000; Vigoda, 2002), and stress-related aspects such as job tension, somatic tension, general fatigue, and burnout (e.g., Cropanzano et al., 1997).

Miller, Rutherford, and Kolodinsky (2009) conducted a meta-analysis on a sample of existing studies on the outcomes of perceived level of politics and found a significant negative relationship with job satisfaction and organisational commitment, and a significant positive relationship with turnover intentions and job stress. The relationship with job performance was not significant. Besides these five consequences, other negative impacts have been researched for individuals, groups, and organisations. For individuals, significant positive correlations were found between level of politicisation and psychological withdrawal (Cropanzano et al., 1997), and alienation (Kumar & Ghadially, 1989). For groups, significant negative correlations were found between level of politicisation and interpersonal trust (Kumar & Ghadially, 1989), and interpersonal facilitation (Witt et al., 2002). Significant positive correlations were found between level of politicisation and antagonistic work relations (Cropanzano et al., 1997) and aggressive behaviour (Vigoda 2002). Finally, for organisations, significant positive correlations were found between level of politicisation, negligent behaviour (Ferris et al. 1996; Vigoda, 2000ab, 2001), absenteeism (Vigoda 2001), and low job dedication (Witt et al., 2002).

A more neutral view on political behaviour can also be found in the literature, defending that it may be harmful in some situations but helpful in others (e.g., Hrebiniak & Joyce, 1984; Janis, 1989; Pfeffer, 1981, 1992; Randolph, 1985; Stevenson et al., 1985). The general argument is that politics is a tool people can use either for the good of the organisation or for personal gain. This divergence among authors as to the impact of political behaviour may have its roots in different foci. Authors who regard it as generally disruptive usually take the perspective of the observer, focusing on the effects of perceptions of level of political activity in the organisation. On the other hand, authors arguing that political behaviour is not always dysfunctional and may even have positive effects, usually take the perspective of the actor and his/her intentions, and focus on level of personal engagement in political behaviour or types of political action followed.

The two divergent views perhaps can be reconciled with further theoretical and empirical explorations on the nature of the relationship between perceptions of organisational politicisation and personal engagement in political activities, a perspective that to date has received limited attention (Harrell-Cook et al., 1999; Valle & Perrewé, 2000). Gresov and

Stephens (1993) consider that there is a direct relationship between the two constructs. Individuals who perceive their organisation as highly politically charged tend to engage more in political activities than individuals who consider political activities to be less pervasive in their organisation. The rationale is that members of organisations receive cues from the patterned behaviour of others regarding what they are expected to believe and how they are expected to behave. When they observe or perceive a high level of politicisation, this cue signals the acceptability of political behaviour, in a normative sense, and its advisability from a strategic point of view. Ferris, Russ and Fandt (1989) argue that individuals who perceive their working environments as highly political do not necessarily engage more in political activities. They suggest that there are at least three potential responses to perceptions of a politically charged environment: employees may withdraw from the organisation, they may remain in the organisation but choose not to become involved in the politics, or they may stay and increase their engagement in the political activity.

The relationship between perceptions of organisational politicisation and engagement in political behaviour may also depend on the type of political activity. For example, Harrell-Cook et al. (1999) report a significant negative correlation between employees' perception of level of politicisation and ingratiatory behaviour, but a non-significant correlation between perceptions of level of politicisation and self-promotion behaviour. Valle and Perrewé (2000) found that perceptions of level of politicisation are significantly and negatively correlated with reactive political behaviour (actions or influence tactics taken as a response to a perceived threat in the political game), but these perceptions are non-significantly correlated with proactive political behaviour (actions or influence tactics taken as a response to a perceived opportunity). Therefore, there is evidence that a relationship exists between perceptions of level of politicisation and ingratiatory and reactive behaviour, but not with self-promotion and proactive behaviour.

It is difficult to draw a coherent picture of main factors of politically inspired organisational decision-making. One possible reason for contradictory findings is that there is a lack of uniformity in the ways different writers define political behaviour (Cropanzano, Kacmar, & Bozeman, 1995; Drory & Romm, 1988, 1990; Ferris et al., 1989; Gandz & Murray, 1980;

Kacmar & Carlson, 1997; Kacmar et al., 1999; Porter, Allen, & Angle, 1981). This lack of definitional agreement causes difficulties for empirical developments, and has been an impediment for studies on organisational politics to reach their full potential of contributing to the management literature (Kacmar et al., 1999).

Drory and Romm (1990) attempted to classify the main definition elements found in the literature, and identified three major categories. The first category includes the purpose of behaviour (outcomes pursued), with elements such as self-serving behaviour, going against organisational goals, influencing the distribution of resources or other advantages, and attaining power. The second category includes elements based on the means used, that is, the behaviour itself, including influence attempts, power tactics, informal behaviour, and concealment of one's motives. Finally, the third category involves the relevant context of behaviour (situational characteristics), and generally includes conflict and uncertainty in decision-making as definition elements.

While some authors focus on one particular definition element and others include or combine several elements, no definition has managed to integrate the entire complexity of the topic (Drory & Romm, 1990; Zanzi & O'Neill, 2001). On the other hand, it has often been argued that a precise definition of political behaviour should be distinguished from the elements which are central to most existing definitions (e.g., Eisenhardt & Bourgeois, 1988; Gandz & Murray, 1980). If the definition elements identified by Drory and Romm (1990) are analysed in detail, it becomes clear that political behaviour cannot simply be equated with any of them.

However, analysing the individual elements of political behaviour definitions allows for an identification of the topics of agreement between the authors and the themes that should be included in an overall definition of political behaviour. First of all, there seems to be agreement that political behaviour is associated with divergence of goals, that is, lack of consensus on goals, views, interests, or preferences (e.g., Borum, 1980; Feldman, 1988; Gray & Ariss, 1985; Harris et al. 2007; Kacmar & Baron, 1999; O'Connor & Morrison, 2001; Perrewé et al., 2004; Pettigrew, 1973; Pfeffer, 1981; Porter et al., 1981). Some authors have attributed this lack of consensus to specific reasons (e.g., self-interest, whether

consistent with or against organisational goals; power attainment; and influencing the distribution of resources or advantages), while others point out that a wide variety of motives may underlie divergent perspectives. Therefore, an overall definition of political behaviour should include the issue of divergence of goals but should not be restricted to one specific motive or to a limited number of motives.

Secondly, there is wide agreement in the literature that political behaviour is essentially influencing behaviour, i.e., trying to change or affect someone's decisions, behaviours, or attitudes. In fact, influence is most frequently mentioned in proposed definitions of political behaviour (e.g., Allen et al., 1979; Farrell & Petersen, 1982; Ferris et al., 1989; Gray & Ariss, 1985; Hegarty & Hoffman, 1987; Hochwarter, Witt, & Kacmar, 2000; Kipnis & Schmidt, 1988; Kipnis, Schmidt, & Wilkinson, 1980; Liden & Mitchell, 1988; Madison et al., 1980; Mayes & Allen, 1977; Mintzberg, 1985; Mowday, 1978; O'Connor & Morrison, 2001; Pfeffer, 1992; Tedeschi & Melburg, 1984; Treadway, Hochwarter, Kacmar, & Ferris, 2005; Valle & Perrewé, 2000; Vigoda, 2001; Vigoda & Cohen, 2002). Some authors have associated attempts at influencing others with power tactics and concealment of one's motives, while others note that a wide variety of means may be employed. Again, an overall definition of political behaviour should include attempts at influencing others but should not be restricted to one or a limited number of means employed in doing so.

Thirdly, there is ample consensus that political behaviour is applied through informal means, that is, means falling outside of formal organisational rules, procedures, or job descriptions (e.g., Chen & Fang, 2008; Eisenhardt & Zbaraki, 1992; Farrell & Petersen, 1982; Ferris et al., 1989; Gandz & Murray, 1980; Harris et al., 2007; Hochwarter et al., 2000; Mayes & Allen, 1977; Mintzberg, 1985; O'Connor & Morrison, 2001; Porter et al., 1981; Treadway et al., 2005). Divergence from the formal organisation is therefore a central element in the definition of political behaviour.

While the definitional elements of divergence of goals, influence attempts, and informal behaviour capture the essence of political behaviour (Drory & Romm, 1990), their use for an empirical operationalisation is not without problems. As far as divergence of goals is concerned, subjects may prefer not to openly acknowledge its existence, due to, for

example, fear of authority, lack of trust, or social norms regarding harmony (Drory & Romm, 1990; Feldman, 1988; Hofstede, 1980). Subjects may also be reluctant to admit their involvement in influence attempts, since these behaviours are often covert and/or considered illegitimate (Ferris et al., 1989; Gandz & Murray, 1980; Kacmar et al., 1999; Zanzi & O'Neill, 2001). Finally, informal behaviour is also difficult to assess objectively. Different individuals may have different perceptions of what lies inside and outside the boundaries of expected and formal behaviour. In other words, the same behaviour can be considered political or non-political depending on the actor's or the observer's perceptions and frames of reference (Kacmar et al., 1999).

These difficulties have led our operationalisation of political behaviour to focus on what is underlying the three definitional elements mentioned – namely that political behaviour involves at least two parties, either two decision-makers, or one decision-maker and one person actually or potentially affected by the decision. Each party's engagement in political behaviour and choice of particular means of exerting influence derives from the consideration of others' goals, interests, views, and potential reactions. For a situation of lack of consensus to exist, individuals must identify that other parties have divergent goals, views, preferences, or interests. Similarly, attempts at influencing others, or attempts to change a target's views or preferences, result from a previous identification that these views or behaviours differ from those of the actor. Finally, an analysis of the target's interests, feelings and potential reactions increases the likelihood of choosing the informal behaviour most likely to succeed in influencing the target. Conducting such an analysis may thus be considered as the basis for political behaviour.

Therefore, in this study, political behaviour will be defined as the extent of consideration of other people's goals, views, interests, feelings, and reactions, in order to identify informal means of influencing decisions in situations where there is lack of consensus among the decision-makers, or where conflicting goals or courses of action are possible.

Entrepreneurial domain

Contemporary entrepreneurship research originated in the work of Austrian economist Joseph Schumpeter (1934, 1950). Schumpeter argued that the main agents of economic growth are entrepreneurs who introduce new products, new methods of production, and other innovations that stimulate economic activity. Entrepreneurship is essentially described as "doing things that are not generally done in the ordinary course of a business routine" (Schumpeter, 1934, p.7). The focus of Schumpeter's writings is on the individual level, that is, on the activities of individuals who continually replace existing products or methods of production with new ones.

Schumpeter's work acquires an important position nowadays, with organisations facing environmental changes of such speed and complexity that existing expertise, methods of production, and products rapidly become obsolete (Achrol, 1991; Amabile, 1997; Hosking & Anderson, 1992; Kitchell, 1995). Entrepreneurship, and related concepts of innovation, creativity, and change, are often put forward as conditions for organisational success and ultimate survival in rapidly changing environments (e.g., Baer & Frese, 2003; Barringer & Bluedorn, 1999; Covin & Slevin, 1989; Damanpour, 1992; Drucker, 1986; Hitt, Hoskisson, Johnson, & Moesel, 1996; Kilduff & Dougherty, 2000; Knight, 1997; Lumpkin & Dess, 1996; Miller, 1983; Peters & Waterman, 1982; Sorensen & Stuart, 2000; Tushman & Nadler, 1986; Van de Ven, 1986; Woodman, Sawyer, & Griffin, 1993; Zahra, 1993).

Entrepreneurship was initially equated with the process of new venture creation, and much research was devoted to explain this process and its consequences (e.g., Brockhaus, 1980; Gartner, 1985; Hisrich & Peters, 1989; MacMillan, Block, & Narasimha, 1986; Mueller & Thomas, 2001; Powell & Bimmerle, 1980; Sandberg & Hofer, 1987; Shaver & Scott, 1991; Stuart & Abetti, 1987; Timmons, 1994; Vesper, 1980; Webster, 1976). However, even in Schumpeter's (1934) work, the concept of entrepreneurship was broadened to include not only independent businessmen who created new companies, but also employees of a company who are involved in "the carrying out of new combinations" (p. 74). These "new combinations" involve the introduction of new goods and new methods of production, the

opening of new markets, the conquest of a new source of supply, and obtaining a new position in an industry, such as creating or breaking a monopoly position.

After Schumpeter's work, many authors accepted the identification of entrepreneurship with innovation, and the two concepts are often related in the literature (e.g., Busenitz, Gómez, & Spencer, 2000; Krueger & Brazeal, 1994; Mueller & Thomas, 2001; Quinn, 1979; Stevenson & Jarillo, 1990; Zahra, 1993). Since innovation, whether involving new products, markets, processes, or procedures, necessarily implicates the introduction of change (Aiken, Bacharach, & French, 1980; Bowen, De Visch, & Steyaert, 1992; Hosking & Anderson, 1992; West & Farr, 1990), entrepreneurship and change are also often related (e.g., Beckert, 1999; Mintzberg, 1973b; Naman & Slevin, 1993). Mintzberg (1973b) goes as far as describing the role of the entrepreneur as designing and initiating change in the organisation. Naman and Slevin (1993) consider that an entrepreneurial firm is distinguished by its ability to innovate, initiate change, and rapidly react to change.

Innovation is also strongly connected with creativity (Blau & McKinley, 1979; Ford, 1996; Rickards, 1996; Staw, 1990; West & Farr, 1990; Woodman et al., 1993), and some authors even use the terms creativity and innovation interchangeably (e.g., Ford, 1996; King, 1990). Creativity is the production of novel and appropriate ideas, and is often the first step of innovation (Amabile, 1997), although it can also present important contributions throughout different stages of the innovation process (Ford, 1996). Innovation need not involve absolute novelty; it may be the introduction of something familiar in another context where it is unfamiliar (Aiken et al., 1980; Damanpour & Evan, 1984; West & Atlink, 1996; Zaltman, Duncan & Holbeck, 1973). Therefore, creativity and innovation should not be viewed as overlapping concepts. Rather, creativity can be considered as a sub-domain of the broader concept of innovation (Woodman et al., 1993), with creativity being the ideation component of innovation (West & Farr, 1990).

Given the close relationship of entrepreneurship with innovation, creativity, and change, these related concepts have to be included in a review of entrepreneurship. This diversified body of literature has been increasingly evolving, and each concept has been subject of large amounts of research. Over the last decades, several models attempting to explain the

phenomenon of entrepreneurship - in the sense of new venture creation - have been developed (e.g., Gartner, 1985; Krueger & Brazeal, 1994; Powell & Bimmerle, 1980; Shapero, 1982; Webster, 1976). These models have identified several individual level variables as antecedents to new venture creation (e.g., need for achievement, perceptions of self-efficacy, decisiveness, propensity to act, energy, and experience). The concepts of creativity and innovation are often connected in the literature (e.g., Anderson & King, 1993; Pina e Cunha, Rego, Campos e Cunha, & Cabral-Cardoso, 2004; Staw, 1990), and various attempts at explanation have been made (e.g., Amabile, 1983; Basadur, Graen, & Green, 1982; Campbell, 1960; Farr & Ford, 1990; Ford, 1996; Lovelace, 1986; Woodman & Schoenfeldt, 1989). Individual level variables identified by the models include cognitive style (e.g., divergent thinking and ideational fluency), intrinsic motivation, need for self-actualisation, personality traits (e.g., self-esteem and locus of control), factual knowledge, and past history,

With regard to change, much research has been devoted to identifying individual reasons for resisting change and to devise models of overcoming change resistance. The main reasons identified for resisting change include the effects of habits and routines, need for security, fear of the unknown, fear of personal loss, selective perception, social pressures, and legitimate concerns (Bedeian, 1980; Hannan & Freeman, 1989; Katz & Kahn, 1978; Kotter & Schlesinger, 1979; Nadler, 1983; Stanislao & Stanislao, 1983; Van de Ven, 1986; Venkataraman, MacMillan, & McGrath, 1992; Zaltman & Duncan, 1977). Several models have also been developed on how to overcome resistance to change (e.g., Armenakis, Harris, & Field, 1999; Galpin, 1996; Judson, 1991; Kotter, 1995; Lewin, 1947, 1951).

The discovery and pursuit of opportunities is central in many of the definitions proposed for entrepreneurship (e.g., Baron, 1998; Block & MacMillan, 1993; Burgelman, 1984; Bygrave & Hofer, 1991; Drucker, 1986; Kaish & Gilad, 1991; Krueger & Brazeal, 1994; Mitton, 1989; Morris, Davis, & Allen, 1994; Schumpeter, 1950; Shane & Venkataraman, 2000; Shapero, 1982; Shaver & Scott, 1991; Stevenson & Gumpert, 1985; Stevenson & Jarillo, 1990; Stevenson, Roberts, & Grousbeck, 1989; Tiessen, 1997; Timmons, 1994; Timmons, Muzyka, Stevenson, & Bygrave, 1987; Venkataraman, 1997). The search for opportunities and their exploitation are accomplished by a "purposeful enactment" of decision-makers

(Van de Ven & Poole, 1995), i.e., intentional processes and practices aimed at creating or taking advantage of new environmental conditions.

Opportunities are generally viewed as future situations that allow for advancing current situations to quantitatively or qualitatively higher levels. Concern with their identification and exploitation is considered a fundamental posture in shifting conditions in the environment of organisations. Therefore, concern with opportunities is equated with concern for environmental adaptation. The emphasis on search and exploitation of opportunities broadens the concept of entrepreneurship from starting up a new organisation, since opportunities can be identified and pursued within existing organisations. On the other hand, research has shown that the process of search for opportunities and their pursuit may require different repertoires of behaviour in different situations, and that these behaviours may vary independently of each other in a given context (e.g., Brockhaus, 1980; Cooper & Dunkelberg, 1986; Nelson & Winter, 1982; Schollhamer, 1982). For example, a new opportunity may be pursued with an insignificant level of innovation but under considerable risk; with high levels of innovation and low levels of risk; or with high levels of both innovation and risk.

Searching for a more detailed operationalisation of the concept of entrepreneurship, several authors attempted to identify key dimensions to characterize the concept. Miller (1983) provided a starting point, distinguishing the dimensions of "innovativeness", "risk-taking", and "proactiveness", to characterize and test entrepreneurship at the organisational level. According to Miller, innovativeness relates to the extensiveness and frequency of product-market innovation. Risk-taking refers to investment decisions and strategic actions in the face of uncertainty, and reflects a preference for high-risk projects with chances of very high returns, over low-risk projects with lower and more predictable rates of return. Proactiveness consists of initiating actions to which competitors then respond, that is, attempting to be the first in the introduction of new products, services, or technologies, rather than merely responding to competitors. Several authors later adopted an approach much based on Miller's (1983) original three-dimensional conceptualisation (e.g., Barringer & Bluedorn, 1999; Covin, 1991; Covin & Slevin, 1989, 1991; Morris et al., 1994; Morris & Paul, 1987; Naman & Slevin, 1993; Schafer, 1990; Slevin & Covin, 1990).

Lumpkin and Dess (1996) further developed Miller's (1983) conceptualisation by adding two other dimensions: "autonomy" and "competitive aggressiveness". Autonomy refers to action taken free from organisational constraints (e.g., bureaucracy, tradition, and the status quo). Its importance to entrepreneurship is based on Burgelman's (1983) finding that in the case of internal corporate venturing "the motor of corporate entrepreneurship resides in the autonomous strategic initiative of individuals at the operational level of the organisation" (p. 241). The concept of autonomy underlies studies of idea champions, i.e., individuals who promote entrepreneurial activity by shielding developed ideas from organisational constraints and by taking action to ensure their implementation (e.g., Day, 1994; Howell & Higgins, 1990a; Shane, 1994). Examples of autonomous action by idea champions include going outside usual lines of authority, and bypassing rules, procedures, and budgets (Kanter, 1983; Peters & Waterman, 1982; Shane, 1994).

The other dimension proposed by Lumpkin and Dess (1996), competitive aggressiveness, refers to being responsive to competitors' actions in the environment and being oriented towards achieving competitive advantage. The authors also redefine the concept of proactiveness as acting in anticipation of future situations using a forward-looking perspective, excluding Miller's (1983) specification of trying to be first in the market. This redefinition explains the differentiation of proactiveness and competitive aggressiveness, the later also being referred to as responsiveness. Proactiveness is seen as taking the initiative in an effort to change the environment to one's own advantage, while responsiveness is seen as being adaptive to environmental challenges, which is in line with the view of several other authors (e.g., Bateman & Crant, 1993; Chen & Hambrick, 1995). Both proactiveness and responsiveness represent action-oriented postures towards environmental conditions and are not conceptual opposites. The opposite of proactiveness is not responsiveness but passiveness, that is, indifference or inability to identify and seize opportunities.

Lumpkin and Dess (1996) also present a redefinition of the innovativeness dimension. While Miller's (1983) definition focused exclusively on product-market activities, the authors broaden the concept and view it as a "tendency to engage in new ideas, novelty, experimentation, and creative processes that may result in new products, services, or

technological processes" (p. 142). Innovativeness is considered an important component of entrepreneurial behaviour because it reflects ways in which new opportunities are being pursued. Several studies have related innovativeness to entrepreneurial behaviour. Smith and Miner (1985) found that new venture founders scored higher on personal innovation than individuals in management positions. Similarly, Carland and Carland (1991) found that entrepreneurs had significantly higher levels of innovative preferences than managers. In studies with students as participants, Sexton and Bowman-Upton (1985) and Goldsmith and Kerr (1991) found that students of entrepreneurship tend to be more innovative than other business administration students.

The final dimension of entrepreneurship, risk-taking, considered by Miller (1983) and also by Lumpkin and Dess (1996), has posed considerable problems to researchers. While many authors view risk-taking as one of the characteristics that distinguishes entrepreneurs from others in society (e.g., Hull, Bosley, & Udell, 1980; Ray, 1994; Teoh & Foo, 1997), there is also evidence that entrepreneurs tend to avoid situations involving extreme risks and that not all entrepreneurs are characterized by a high risk-taking propensity (e.g., Begley & Boyd, 1987; Brockhaus, 1980; Ho & Koh, 1992; Kee & Chye, 1993; Lafuente & Salas, 1989; Low & MacMillan, 1988; McCarthy, 2003; Webster, 1976). Lumpkin and Dess note that the lack of success of researchers in finding consistent patterns stems from different definitions and measurements of risk. They advocate the use of Miller's (1983) approach, which measures risk-taking as preferences for bold versus cautious acts, and Venkatraman's (1989) approach, which measures low risk-taking as preferences for tried-and-true paths and for projects in which the expected returns are certain.

The definition of entrepreneurial behaviour followed in the present study includes both the general issue of new opportunities' search and exploitation, and the specific key dimensions proposed by Lumpkin and Dess (1996). Entrepreneurial behaviour will thus be defined as the extent to which attention is paid to the discovery and pursuit of new opportunities, resulting from proactiveness, responsiveness, innovativeness, and risk concerns.

Summary

This chapter has identified three decision-making domains: Cognitive aspects, for which the rational label is employed; social interaction aspects, labelled as political; and environmental adaptation aspects, for which the entrepreneurial label is used.

These three domains arise from the literature as conceptually distinct, i.e., each includes different repertoires of decision-making behaviour. This chapter provided a definition of each domain, which will orient the sampling of items of behaviour to be investigated under each domain:

- Rational behaviour is defined as the extent of comprehensiveness in decision-making activities, resulting from cost-benefit, response-time, and accuracy concerns.
- Political behaviour is defined as the extent of consideration of other people's goals, views, interests, feelings, and reactions, in order to identify informal means of influencing decisions in situations where there is lack of consensus among the decision-makers, or where conflicting goals or courses of action are possible.
- Entrepreneurial behaviour is defined as the extent to which attention is paid to the discovery and pursuit of new opportunities, resulting from proactiveness, responsiveness, innovativeness, and risk concerns.

Chapter 3
Sampling the three domains of decision-making

In Chapter 2 three different domains of decision-making – Rational, Political, and Entrepreneurial - were identified. The present chapter will address the identification of decision-making behaviours within each domain, in order to arrive at a representative and systematic operationalisation. A perennial problem in scale construction is how to make a scale representative of the trait or domain it is supposed to reflect (e.g., DeVellis, 2003). For example, in an arithmetic test on adding, subtracting, multiplication, and division, all four operations should be about equally represented. If in 100 questions only five involve multiplication, or if in 100 questions 50 questions are on multiplication, the test is not representative of the four operations.

In order to arrive at an adequate coverage of each domain, we used three further distinctions. The first is between activities related to information gathering and analysing, and activities related to developing and choosing alternative courses of action. This distinction was based on two broad research foci found in the literature: Some authors have focused their research on understanding and improving the use of information in decision-making (e.g., Chervany & Dickson, 1974; Feldman & March, 1981; Long & Ziller, 1965; O'Reilly, 1980, 1983; Walsh, 1988; Wildavsky, 1983; Wright, 1980; Zaheer & Zaheer, 1997), while others have focused on understanding and improving the development and choice of alternatives (e.g., Aiken et al., 1980; Alexander, 1979; Brunsson, 1982; Keeney, 1994; Nutt, 1998, 2000; Stein, 1981). From now on this distinction will be labelled as "managing information" and "managing alternatives".

The second distinction relates to phases in the decision-making process. Various phases have been identified, each requiring different skills and producing different behaviours (Harrison, 1995; Mintzberg, Raisinghani, & Théorêt, 1976; Simon, 1977). By systematically covering the various phases, a more representative coverage of decision-making was likely to result. This is not to say that managers are likely to proceed orderly from one step to another in time. In fact, there is evidence that the phases can come in any order, can be repeated, and can be intermingled (e.g., Hickson, Butler, Cary, Malory, &

Wilson, 1986; McCall & Kaplan, 1990; Mintzberg et al., 1976; Nutt, 1984; O'Reilly, 1983; Poole, 1983). However, the phases can still differ in characteristic skills and activities.

Following early work by Dewey (1910), Simon (1960, 1977) proposed three phases for the decision-making process, named "intelligence activity", "design activity", and "choice activity". Intelligence activity involves gathering and processing information, providing cues for recognizing potential decision needs or opportunities, and for formulating alternatives. Design activity involves identifying alternative courses of action in order to determine likely outcomes and whether these outcomes will satisfy the needs or goals associated with the decision. In the choice activity, decision-makers make judgements and choose among the previously identified alternatives. Several authors later proposed alternatives to Simon's (1960) phases. Overviews can be found in Schwenk (1984), Gore, Murray, & Richardson (1992), and Van de Ven (1992). An analysis of these reviews shows that each contribution consists of disaggregating or aggregating some phases identified in former contributions. However, the three main phases proposed by Simon are always present, and all existent models are in many respects similar (Fredrickson, 1985; Gore et al. 1992; Schwenk, 1984). In the present study, Noorderhaven's (1995) terminology of the three phases - "awareness", "analysis", and "action" - will be used, not only for the simplicity of the 3 A's categorization, but also for the broadness of repertoires that it allows to include under each phase.

As far as managing information is concerned, under the awareness phase we can include the ways in which managers initiate, carry, and discontinue information gathering activities, the extent and types of information considered, and the number and types of sources consulted. The analysis phase refers to methods and criteria for analysing information, the analysis foci, and possible influences and biases in the analysis. The action phase involves the main goals or concerns for making a decision, and the personal skills that are the most likely to be used. For managing alternatives, the awareness phase relates to how managers become aware of existing alternatives, as well as methods for searching, generating, and designing alternatives. It also includes ideas and models that affect the number, type, and implications of the alternatives developed or considered. The analysis phase refers to methods and criteria used for comparing alternatives, or for weighting the pros and cons of one

alternative. The action phase includes ways of carrying out the decision, that is, the implementation characteristics, as well as skills managers rely on for that implementation.

The third distinction was based on the consideration that the same tendencies or preferences in decision-making may contribute positively to an adequate decision in some situations, but negatively in other situations (e.g., Driver et al., 1996; Starbuck & Milliken, 1988). In other words, a decision style cannot be considered as correct or incorrect; depending on the situation it may have positive or negative implications. For example, using only a limited amount of information may enable managers to decide more effectively in some situations, since attention is focused on the most relevant aspects. In other situations it may lead to less than optimal decision-making, because relevant information is being ignored. For this reason, two formulations were generated for each topic, one emphasizing positive aspects and the other emphasizing negative aspects. If individual characteristics are reflected in the items, managers who, for example, endorse the item "I prefer to gather all information available", should also endorse the item "I tend to collect a lot of irrelevant information". Similarly, those who endorse the item "I propose alternatives that involve substantial change" can be expected to also endorse the item "I propose alternatives that are difficult to implement in the present circumstances of the organisation".

The following sections will present the sampling of decision-making repertoires of behaviour in each of the three decision-making domains. For each domain, the formulation of items was guided by the distinctions mentioned. The first distinction within each domain is between the two activities of managing information and managing alternatives. Per domain twelve items were developed for each of these two categories, taking care that the phases of awareness, analysis and action are all represented (four items per phase). Finally, two formulations - one with emphasis on the positive aspects, and one on the negative aspects - were generated for each topic.

By crossing the various distinctions a matrix can be defined. By formulating items in each cell of the matrix, the probability is greatly reduced that major aspects of the domain of decision-making are left unrepresented in the item set. Thus, the item construction followed a design matrix with three domains (Rational, Political, Entrepreneurial), two activities

(Managing information, Managing Alternatives), three phases (Awareness, Analysis, Action) and two formulations (Positive aspects, Negative aspects). There are 36 cells (3 * 2 * 3 * 2) to this matrix. With two items in each cell of the matrix, the number of items to be constructed was 36 * 2 = 72.

Sampling the Rational domain

In the previous chapter, we defined rational behaviour as the extent of comprehensiveness in decision-making activities, resulting from cost-benefit, response-time, and accuracy concerns. Two labels related to comprehensiveness have often been put forward in the literature: satisficing behaviour and maximizing behaviour (e.g., Driver & Mock, 1975; Driver et al., 1996; Harrison & Pelletier, 1997; Simon, 1947). The two labels will be used as poles for a dimension ranging from low to high levels of comprehensiveness.

Managing information

The twelve items developed for managing information in the Rational domain are presented in Table 3.1. The following sub-sections present issues in the literature relevant for the development of those items.

Awareness

In the awareness phase, comprehensiveness involves being exhaustive in the amount of information gathered, but also being inclusive in the sources consulted, for different sources may provide different amounts and/or different contents of information (Builtjens & Noorderhaven, 1996; Miller, 1989). Therefore, maximizing behaviour can be equated with the preference for gathering all available information and consulting all available sources, whereas satisficing behaviour involves selecting only some information and consulting only a few sources, usually the ones considered most relevant.

As far as the amount of information gathered is concerned, the issue of relevance is often mentioned (e.g., Daft & Weick, 1984; Dean & Sharfman, 1993a; Dutton, Walton, & Abrahamson, 1989; Feldman & March, 1981; Harrison, 1995; Janis & Mann, 1977; O'Reilly, 1980; Rindova, 1999; Starbuck & Milliken, 1988). In a literature review of

decision-making studies conducted in organisational settings by Feldman and March (1981), one of the main conclusions was that much of the information gathered in organisations had little decision relevance, and that much of the information gathered in response to requests was not even considered in the making of decisions for which it was requested. The final conclusion was that the relevance of the information provided was less conspicuous than the insistence on information. In a literature review of studies on information and decision-making conducted in laboratory settings, O'Reilly (1980) also concluded that decision-makers tend to seek more information than required, and that increased amounts of irrelevant information reduces decision-makers' ability to identify relevant information and consequently reduces decision performance. The reason for this tendency to seek additional information is to increase decision-makers' confidence, since more available information reduces perceptions of uncertainty (see also Milliken, 1990). These reviews of studies on organisational context and laboratory settings imply that a maximising mode of decision-making can increase the quantity of irrelevant information being gathered. On the other hand, following a satisficing mode may result in missing relevant aspects, necessary for an accurate decision (Driver et al., 1996; Wildavsky, 1983).

Another issue related to information gathering is that of cognitive strain, a breakdown in the decision-makers' cognitive processes due to information overload (e.g., Harrison, 1995; O'Reilly, 1980; Taylor, 1975b). Taylor (1975b) clearly considers satisficing behaviour as a response to cognitive strain and information overload. In his review, O'Reilly (1980) concluded that individuals do not accurately perceive their objective information processing capacities and seek more information that can be optimally processed, even to the point of inducing overload. For indecisive individuals, Ferrari and Dovidio (2001) found that under high cognitive load the amount of information gathered tends to be limited; maximizing behaviour appears to occur when individuals do not experience feelings of overload. It stands to reason that maximizing behaviour will be more likely to occur when available information is felt to be insufficient, leading to further searches. Although the literature is not entirely clear, we chose to include perceptions of overload as characteristic of satisficing behaviour, and perceptions of underload as characteristic of maximizing behaviour.

The extent of information gathered and the inclusiveness of sources consulted were chosen to formulate two items addressing positive aspects of information awareness (items R1 and R3). The (ir)relevance of information, and underload versus overload feelings were chosen to address negative aspects (items R2 and R4).

Analysis

Analysis of information has often been studied in connection with cognitive style. In a review of the literature, Hayes and Allinson (1994) identified 29 different categorizations of cognitive style constructs. However, several authors have argued that these multiple constructs are different conceptions of a super-ordinate dimension, whose poles are usually labelled "analytic" and "intuitive" (e.g., Allinson, Armstrong, & Hayes, 2001; Hammond, Hamm, Grassia, & Pearson, 1987; Hayes et al., 2003; Lynch, 1986; Mitchell & Beach, 1990; Rayner & Riding, 1997). An analytic style is characterized by a tendency to prefer a structured approach to decision-making, to apply systematic methods of analysis, and to be especially comfortable when handling problems that require step-by-step solutions. On the other hand, an intuitive style is characterized by a tendency to prefer a rapid approach, to rely on random methods of analysis, and to work on problems favouring a holistic approach (Allinson et al., 2001; Lynch, 1986).

In order to operationalise the analytic and intuitive information analysis styles, we considered the main issues identified in the literature: detailed versus holistic approach (e.g., Allinson et al., 2001; Lynch, 1986; Mitroff & Killman, 1976); systematic versus non-systematic analysis (e.g., Allinson et al., 2001; Isenberg, 1984; Lynch, 1986; Wally & Baum, 1994), and reliance on factual information versus reliance on intuition and experience (e.g., Adler, 1991; Dean & Sharfman, 1993a; Fredrickson, 1985; Isenberg, 1984; Wally & Baum, 1994). While some authors relate the analytic style to maximizing behaviour and the intuitive style to satisficing behaviour (e.g., Driver et al., 1996), it should be noted that reviews of existing studies have reported inconsistent results on the relationship between these two main cognitive styles and preferences regarding the amount of information gathered (e.g., Huber, 1983; Libby & Lewis, 1977; Zmud, 1979). Therefore, it is not certain that information analysis items will form a consistent dimension with the information gathering items developed in the previous section.

The use of a holistic approach and the use of a systematic method were taken to address two positive aspects of information analysis (R5 and R7). The use of a detailed approach, and reliance on intuition and experience were selected for two items addressing negative aspects (items R6 and R8).

Action

Since Herbert Simon's (1947) work on bounded rationality, it has widely been recognised that managers often have to make decisions in the absence of all necessary information, either due to environmental ambiguity or to lack of resources to collect and deal with information. Important differences in behaviour may be found under such circumstances. Behaviour alternatives include, for example, postponing the decision until more information is available, or making the decision based on the information already available.

The (in)decisiveness concept has often been used in empirical studies concerning decision behaviour in situations where the available information does not exclude the possibility of uncertainty. However, this concept has been defined and measured in different ways. Two main emphases can be derived from the literature: Time taken before making a decision, and the degree of confidence necessary for making a decision. When time is considered as central, definitions of indecisiveness include hesitation to make a decision, the tendency to postpone or avoid making a decision, or the inability to make decisions in a timely manner (Ferrari, Johnson, & McCown, 1995; Ferrari & Pychyl, 2007; Frost & Shows, 1993; Hofstede, 1980; Janis & Mann, 1977; Patalano & Wengrovitz, 2006). Some authors prefer the term procrastination when referring to the time managers postpone making a decision (e.g. Ferrari et al., 1995; Mann et al., 1998). For authors who put the emphasis on the degree of confidence held for a particular decision, the definition of indecisiveness includes being certain that actions are correct or without error (e.g., MacCrimmon, Wehrung, & Stanbury, 1986; Tse, Lee, Vertinsky, & Wehrung, 1988). The underlying assumption that a "perfect" or "best" decision can be found has led several theorists to link indecisiveness with perfectionism (e.g., Frost & Shows, 1993; Guidano & Liotti, 1983). Recent studies (e.g. Ferrari & Pychyl, 2007; Rassin, Muris, Booster, & Kolsloot, 2008; Rassin, Muris, Franken, Smit, & Wong, 2007) have strengthened the idea that indecisiveness implies a need to be certain of the decision made.

When analysing the two groups of definitions (time versus confidence), it becomes evident that they are complementary, which explains why sometimes they are even used interchangeably (e.g., Tse et al., 1988). Although confidence is related to perceived accuracy of the decision and not to the time spent, the absence of confidence may lead to postponing the decision or procrastinating in order to minimize the risk of making a mistake. If the two emphases are integrated, decisiveness can be related to the trade-off between accuracy and speed involved in many decision-making situations. The main theoretical explanation for different responses to this trade-off has been developed on the assumption that behaviours are associated with different costs to the individual, either in time or effort (Maule, 1985).

Payne (1982) developed a cost-benefit framework of cognition, with as main point the notion that decision-makers focus on trade-offs between accuracy and effort. This notion was largely supported by empirical studies of Payne and colleagues (e.g., Bettman, Johnson, & Payne, 1990; Creyer, Bettman, & Payne, 1990; Johnson & Payne, 1985; Johnson, Payne, & Bettman, 1988). According to this framework, decision-makers face the joint objectives of maximizing accuracy (or decision quality) and minimizing efforts. As these objectives conflict, trade-offs must be made between the two. However, whether decision-makers typically weigh effort or accuracy more highly in the trade-off is an open question in the literature (Todd & Benbasat, 1994). Driver et al., (1993) argue that different managers tend to make different trade-offs and that satisficers are more willing to favour speed and rapid decisions, while maximizers tend to favour accuracy and to identify the best possible decision. This is in accordance with early experimental studies that found that limited information search, or satisficing in information gathering, was associated with rapid and confidently held decisions, that is, decisiveness (Long & Ziller, 1965; Taylor 1975a; Taylor & Dunnette, 1974). Recent studies have also found that indecisiveness is associated with the tendency to gather more information (Rassin et al., 2007, 2008), as well as a tendency to take longer and to be more concerned with accuracy (Ferrari & Pychyl, 2007). An important consequence of tendencies in the speed-accuracy trade-off relates to managerial skills and preferred decision situations. Research has associated a maximising style with good performance in situations where detailed planning is important since overlooked details may have dramatic repercussions, while a satisficing style is seen as

effective in situations with time pressures, or involving frequent changes that demand rapid answers (e.g., Driver et al., 1996; Harrison & Pelletier, 1997).

Concern with speed versus concern with accuracy and, its consequences for performance in emergency situations versus performance in planning decisions, were operationalised as two items addressing positive aspects in the action phase (R9 and R11). Reactions to uncertainty (e.g., postponing the decision) and reactions to time pressures were constructed as two items addressing negative aspects (items R10 and R12).

Table 3.1 *Rational domain – Managing information items*

Item	Satisficing pole	Maximizing pole
R1 (+)	I tend to only want the information that is necessary for an efficient understanding of the situation.	I tend to want all available information, so that important aspects are not overlooked.
R2 (-)	I tend to miss some information that turns out to be relevant.	I tend to collect a lot of information that turns out to be irrelevant.
R3 (+)	I tend to consult only the most important sources of information for the issue in hand.	I tend to consult all sources of information available on the issue in hand.
R4 (-)	I tend to feel I have more information available than I have time to process.	I tend to feel I need or could make use of more information than is available to me.
R5 (+)	I tend to be interested in seeing the "big picture".	I tend to be interested in the specifics of the situation in hand.
R6 (-)	I tend to pay insufficient attention to details.	I tend to pay too much attention to details.
R7 (+)	I tend to analyse information in different ways, according to the needs of the situation, without following a predetermined method.	I tend to follow a predetermined method of analysis, with steps that make sure everything is considered.
R8 (-)	I tend not to be very systematic when analysing information, I prefer to use my intuition and experience more.	I tend not to take advantage of my intuition and experience, I prefer to be more systematic when analysing information.
R9 (+)	Making a decision rapidly so that action can start tends to be my major concern.	Being certain that I make the best possible decision tends to be my major concern.
R10 (-)	Even when I do not have all information I consider necessary, I tend not to wait any longer and make a decision anyway.	When I do not have all information I consider necessary, I tend to postpone making a decision.
R11 (+)	I am particularly good in situations that require on the spot decisions (e.g., emergency situations or when an opportunity may be lost).	I am particularly good in situations that require carefully planned decisions (e.g., detailed implementation plans).
R12 (-)	I do not like having to make decisions about practical details that require a lot of time and attention.	I do not like having to make decisions that need to be made under pressure, without enough time to think.

Managing alternatives

The twelve items developed for managing alternatives in the Rational domain are presented in Table 3.2. The following sub-sections present issues in the literature leading to the development of those items.

Awareness

In the awareness phase, managers identify alternative courses of action by following and/or blending two processes: The first is a process of search and discovery, where alternatives are considered to pre-exist and can be identified by processing relevant information; the second is a process of design and creation, where alternatives do not pre-exist but have to be generated from new ideas (Alexander, 1979). In both cases, limits of knowledge, ability, resources, and time, inhibit an exhaustive development of alternatives (Cohen, 1981; Harrison & Pelletier, 1997; Simon, 1947). Several authors have put forward that, contrary to what traditional rational models prescribe, decision-makers tend to expose themselves to only a limited number of alternatives (e.g., Das & Teng, 1999; March & Shapira, 1987; Schwenk, 1984). Mintzberg (1975) even found that most managers' decisions involved only one option rather than multiple options, and the decision was whether or not to go with that option rather than a choice among competitive options.

Managers can be said to face the problem of finding an adequate level of closure in their development of alternatives. A degree of closure is necessary in order to meet decision constraints (e.g., urgency), but too much closure may pre-empt or eliminate possibly valuable options. This dilemma results in different behavioural responses. According to Driver et al. (1993), behavioural repertoires may range from a "unifocus" pattern, where people use information and their mental abilities to come up with one definite course of action, to a "multifocus" pattern, where individuals attempt to identify multiple alternative courses of action. However, the problem of closure is not only related to the number of alternatives considered, but also to the depth or concreteness with which these alternatives are elaborated. For example, individuals who follow a "multifocus" pattern sometimes tend to make proposals that only involve "sketchy ideas" (Driver et al., 1993). Already in 1974, Steinbruner's research suggested that in many decision processes only one alternative at a time is actually elaborated to the point where evaluation can start.

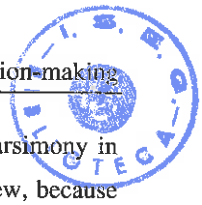
An important issue concerning the depth of elaboration is the consideration of the consequences of an alternative for other decisions or situations, which is defined by Fredrickson and Mitchell (1984) as integrative comprehensiveness. The importance of considering the implications of an alternative to other problems or situations in the organisation has often been pointed out, although it is recognized that integrative comprehensiveness is difficult to achieve (Mintzberg, 1978; Stoner et al. 1995). Individuals who are used to and/or comfortable with dealing with several tasks or situations simultaneously may be more prone to identify relationships with other situations. In contrast, individuals who prefer to focus on one task or problem at a time may be "tunnel-visioned" in a particular decision situation (Driver et al., 1993).

Preference to generate one or multiple alternatives, and preference to work on one or multiple projects at a time were the two items addressing positive aspects in the development of alternatives (R13 and R15); the depth with which managers elaborate these alternatives, and the consideration of the implications of those alternatives for other situations, were the two items addressing negative aspects (R14 and R16).

Analysis

In the analysis phase, a comprehensive consideration of a wide range of alternatives, in terms of their advantages and disadvantages, and their possible costs and risks, is normally put forward as a characteristic of rational analysis of alternatives (e.g., Fredrickson & Mitchell, 1984; Janis & Mann, 1977). However, it is often found that during the process of identifying possible alternatives only one alternative is taken in consideration (Mintzberg, 1975; Nutt, 1998; Shull, Delbecq, & Cummings, 1970), which has obvious consequences for the process of analysis. Satisficing behaviour in the identification of alternatives leads to a process of analysis that only searches for consequences in one direction, that is, the pros and cons of one alternative, while maximizing behaviour leads to the analysis of the advantages and disadvantages of competing alternatives.

In a study of 316 analyses of alternatives, Nutt (1998) verified that in 201 of the cases (64%) only one alternative was being considered. The author investigated different evaluation tactics and consequences linked to the number of alternatives analysed, but



suggested no explanation for the variation. Brunsson (1982) suggested that parsimony in the number of alternatives analysed can make sense from an action point of view, because considering multiple alternatives evokes uncertainty, and this reduces later motivation and commitment to the decision made. Decision-makers may get rid of alternatives that have weak to moderate chances of being selected very early in the decision process, so that uncertainty is avoided in the analysis phase.

Another consideration in determining the number of alternatives considered in the analysis may again be the trade-off between accuracy and speed. Driver et al. (1993) suggest that while some managers direct the purpose of analysis into finding the "best" solution", giving more weight to accuracy, for other managers the purpose is finding an expedient solution. Several authors (e.g., Harrison & Pelletier, 1997; Maule, 1985) also link maximizing and satisficing behaviour with the purpose of the analysis, defining the former as attempting to obtain the best possible result and the latter as seeking to obtain satisfactory results by choosing the first alternative that meets a minimum set of criteria. However, recent studies on indecisiveness, which, as mentioned earlier, implies a tendency to prefer accuracy over speed, have found that indecisive individuals tend to gather more information about the alternative they ultimately choose, while largely neglecting other options (Ferrari & Dovidio, 2001; Rassin et al., 2008). Rassin et al. (2008) suggest that indecisive individuals protect themselves against an overload of information by not consulting as much information about non-chosen alternatives as they do about the chosen alternative. According to the authors, indecisive individuals use this "tunnel-vision", or excessively focusing information search on one alternative, as a defence against their tendency to gather as much information as possible.

On the other hand, while consideration of a limited number of alternatives and satisficing behaviour are usually connected with a concern for speed, several empirical studies have shown that simultaneous consideration of many alternatives is an antecedent condition of decision speed (Eisenhardt, 1989; Judge & Miller, 1991; Wally & Baum, 1994). In a study conducted in the microcomputer industry, considered by the author as a "high velocity environment industry", Eisenhardt (1989) found that decision speed was associated with simultaneous consideration of multiple alternatives. Judge and Miller (1991) extended these

results for other industries (Biotechnology, Hospitals, and Textiles) facing different levels of environmental change, and found that the number of alternatives simultaneously considered was always positively correlated with decision speed, regardless of environmental context. Therefore, it is not certain whether simultaneous consideration of alternatives falls more to the side of satisficing or of maximizing behaviour. We chose to keep it with the maximizing pole, as it is always related to higher comprehensiveness in the theoretical literature.

Empirical research has put forward another important issue in the analysis of alternatives, namely the tendency to distort the analysis of alternatives in the direction of an a priori preferred conclusion or alternative (e.g., Boiney, Kennedy, & Nye, 1997; Russo, Medvec, & Meloy, 1996). It has long been recognized that information supporting a favoured alternative is preferred to information that opposes it (e.g., Frey, 1986; Janis & Mann, 1977). Studies have shown that this does not only occur after the decision has been made; managers may favour or commit to a certain alternative at different stages of the decision process and, from that moment on, incorporation of new information in the analysis of alternatives has a tendency to be biased (Boiney et al., 1997; Russo et al., 1996; Schulz-Hardt, Frey, Luthgens, & Moscovici, 2000). This bias in incorporating new information is much related to the prior hypothesis bias mentioned in the previous chapter.

Two topics were used for the operationalisation of the analysis phase, accuracy-speed trade-off, and bias towards one alternative. Items R17 and R18 were formulated to address, respectively, positive and negative aspects of accuracy speed trade-off; items R19 and R20 addressed positive and negative aspects of bias towards one alternative.

Action

For the action phase, the implementation of alternatives has been linked to the number of courses of action put into motion for achieving objectives or for solving a particular problem. According to Driver et al. (1993), a multifocus person often tries to put several courses of action into motion at once, in an attempt to have different possibilities for reaching objectives and to control for the risk of failure of one course of action. In contrast,

a unifocus person will concentrate resources and energy on one course of action, which can yield higher results but may also be riskier, for "all the eggs are in one basket".

Another issue in the literature concerns behaviour in situations where an implemented course of action becomes questionable (not leading to expected gains or leading to unexpected losses), but where consequences of persistence or withdrawal are uncertain. Persistence involves the risk of additional negative outcomes but holds the prospect for eventual gain, while withdrawal involves a sure loss of previous investments. Reactions can vary from deciding to cut losses and terminate the course of action, to committing more effort and resources into making that course of action pay off (Staw, 1981). A substantial amount of research has demonstrated that individuals tend to persist in supporting failing courses of action beyond an economically defensible point (e.g., Brockner, 1992; Drummond, 1998; Kisfalvi, 2000; Staw, 1981; Staw & Ross, 1987).

One major explanation for this tendency is the desire to be correct or accurate, for reasons of self-esteem or justification to others, which leads to further commitment in the hope that escalation of resources will bring a turnaround of results and make the course of action successful. Another explanation is that of consistency norms. Individuals may become locked in a course of action because they believe consistency is an appropriate form of behaviour (Staw, 1981). On the other hand, different individuals may value consistency differently. Driver et al. (1996) argue that multifocus individuals prefer flexibility, that is, keeping options open even after a decision has been made, while unifocus individuals prefer consistency and commitment to decisions. A third kind of explanation is related to information gathering and processing. Escalation of commitment may be explained by information poverty (Drummond, 1998), as well as by the use of heuristics and bias in its analysis (Duhaime & Schwenk, 1985; Miller, 1993; Staw & Ross, 1987). Earlier studies had already found limited information search, or satisficing, to be associated with inflexibility in changing decisions (Long & Ziller, 1965; Taylor 1975a; Taylor & Dunnette, 1974).

Two contents were used for the operationalisation of items – preference to implement one versus multiple courses of action, and preference for commitment versus flexibility. Items

R21 and R22 were formulated to address, respectively, positive and negative aspects of preference regarding number of alternatives; items R19 and R20 addressed, respectively, positive and negative aspects of preference for commitment versus flexibility.

Table 3.2 *Rational domain – Managing alternatives items*

Item	Satisficing pole	Maximizing pole
R13 (+)	I tend to identify one concrete line of action or solution for the situation in hand.	I tend to identify several alternative courses of action or solutions for the situation or problem in hand.
R14 (-)	I tend to develop in depth one possible course of action, without searching for the full range of possible actions.	I tend to present general ideas, without developing them in much depth or detail, since my concern is to first identify the full range of possible actions.
R15 (+)	I tend to work on one project or problem at a time.	I tend to work on several projects or problems simultaneously.
R16 (-)	I tend to focus too much on a specific problem and so the solution I propose may not consider its implications on interrelated situations.	I tend not to concentrate enough on a specific problem and so the solution I propose may not consider the unique characteristics and demands of that problem.
R17 (+)	I tend to want to find an expedient solution or course of action.	I tend to want to find the best solution or course of action in terms of quality.
R18 (-)	I tend to be quick and efficient in the process of analysis but sometimes I miss the alternative that would give the best results.	I tend to take too long in the process of analysis but normally I identify the alternative that gives the best results.
R19 (+)	I tend to analyse exhaustively the pros and cons of the alternative I consider as the best course of action.	I tend to compare the advantages and disadvantages of several different alternatives.
R20 (-)	In the presence of new information, I tend to maintain my original view about which alternative or solution should be selected.	In the presence of new information, I tend to quite radically change my original view about which alternative or solution should be selected.
R21 (+)	I tend to prefer to concentrate resources and energy on one single alternative.	I tend to prefer to put more than one alternative into action at once, to reduce the risk of loss or failure.
R22 (-)	I tend to become too dependent on the success (or failure) of one single option or activity.	I tend to end up with too many activities or options that all have to be monitored simultaneously.
R23 (+)	I tend to think it is more important to have a strong commitment when the decision has been made.	I tend to think it is more important to leave options open, even after the decision has been made.
R24 (-)	I tend to persist too much on a decision that has shown not to be able to lead to results.	I tend not to persevere enough in a decision, changing it before it has time to show good results.

Sampling the Political domain

In Chapter 2, political behaviour was defined as the extent of consideration of other people's goals, views, interests, feelings, and reactions, in order to identify informal means of influencing decisions in situations where there is lack of consensus among the decision-makers or where conflicting goals or courses of action are possible. Two labels related to attention to others in political decision-making have been put forward in the literature: Adversarial and consensual behaviour (e.g., Lijphart, 1984; McRae, 1997). The two labels will be used as the poles of a dimension of political behaviour. The following sub-sections address issues in the formulation of items for the representation of this domain.

Managing information

The twelve items developed for managing information in the Political domain are presented in Table 3.3. The following sub-sections present issues in the literature leading to the development of those items.

Awareness

A range of research has shown that individuals in organisations have access to different amounts and kinds of information. Structural role, technical expertise, and the organisations' formal and informal communication systems have been put forward to explain why particular information is available to some individuals and not to others (e.g., Allison, 1971; Borum, 1980; Dess, 1987; Feldman, 1988; Mintzberg, 1978; O'Reilly, 1983; Ungson, Braunstein, & Hall, 1981). When in possession of information not available to others, individuals may choose to share or to restrain that information. Many discussions of information and political behaviour have been based on the subject of information control (Allen et al., 1979; Allison, 1971; Caldwell & O'Reilly, 1982; Cialdini & Richardson, 1980; Eisenhardt & Bourgeois, 1988; Feldman, 1988; Mowday, 1978; O'Reilly, 1978; Pettigrew, 1973; Plott & Levine, 1978; Quinn, 1980; Schilit & Locke, 1982; Sterba, 1978; Tushman, 1977a). Not sharing information may be a way to gain power (Browne, 1993; Kacmar & Ferris, 1993; Wirsing, 1973), a way to influence other decision-makers in the direction of one's preferred position (Pettigrew, 1973; Schilit & Locke, 1982; Weiss, 1979), or a strategy to avoid potential conflict (Drory & Romm, 1990; Feldman, 1988).

Therefore, at the stage of information gathering, attempts to control the access of other people to information may reflect intentions to attain power, pursue self-interest, or avoid conflict. However, controlling the information that reaches other people may have other underlying reasons that are more in consonance with organisational goals like, for example, preventing others from engaging in political activities such as leaking or threatening to leak sensitive information to competitors or to the media (Schilit & Locke, 1982). Whether oriented to personal or to organisational interests, attempts to gain privileged or exclusive access to available information, or to limit the access of other people to the information in one's possession, may result in restricting other peoples' rights or needs of information, and therefore will be included under the adversarial pole rather than the consensual pole.

One way of getting privileged or exclusive access to information is being part of informal groups or participating in the grapevine (the social network that transmits information in the organisation). Many authors have acknowledged informal groups and the grapevine as instrumental in information management (Bacharach & Lawler, 1998; Davis, 1953; Feldman, 1988; Ferris et al., 2005; March & Sévon, 1988; Pfeffer, 1992; Wittek & Wielers, 1998). Informal groups may help members to communicate and enlarge the information available to each member. Members of informal groups develop their own informal channels of communication to supplement more formal channels. However, informal groups can also exclude others when available information is only shared within the group. The group may thus become a depository of information not shared with other organisational members.

The grapevine can enhance the sharing of information, but it can also be used as a way of controlling information flow. According to Davis (1953), liaison individuals in the grapevine are likely to pass on the information they have obtained only to people they trust, or from whom they would like to receive favours. Obtaining information from informal groups and from the grapevine has risks attached of information inaccuracy and consequent inadequate decisions based on false rumours or gossip. However, it is sometimes the only way for obtaining relevant and trustworthy information (Lyles & Mitroff, 1980). Being central in social networks may allow individuals to gain information that would not be available to them through their formal position, and oral information provided by social

networks is sometimes considered more credible than formal written sources because its transmission is often based on trust (Builtjens & Noorderhaven, 1996; Ibarra & Andrews, 1993; Mintzberg, 1973b; O'Reilly, 1983). Whether with positive or negative consequences, obtaining information through informal groups and through the grapevine denotes a concern with social networks and with social information that may be relevant when interacting with other decision-makers, or when making decisions that affect other people. Therefore, this type of information gathering will be considered under the consensual pole.

Two topics were used for the operationalisation of items: Control of information available to others, and use of informal means of communication. Items P1 and P2 were formulated to address, respectively, positive and negative aspects of information control; items P3 and P4 addressed, respectively, positive and negative aspects of use of informal means of communication.

Analysis

The degree of acceptance of a decision is often seen as a major concern of political decision-making (e.g., Browne, 1993; Harrison, 1995; Koopman & Pool, 1991; Strategor, 1988). Identifying means for gaining acceptance thus becomes a concern of political information analysis. Research has revealed that managers' information processing tends to focus on information supporting their goals, preferences or views, while ignoring or even attempting to conceal, distort, or manipulate information that actually or potentially challenges them (Feldman, 1988; Janis & Mann, 1977; O'Reilly, 1983; Ross & Staw, 1986; Schulz-Hardt et al., 2000; Zdaniuk & Levine, 1996). Research has also shown that decision-makers are more likely to use information that is supportive of their favoured positions, does not lead to conflict among the set of relevant actors, and cannot be attacked by those in opposition (Lyles & Mitroff, 1980; 0'Reilly, 1983).

Pfeffer (1992) argues that managing power (i.e., political behaviour) means figuring out what various individuals or units have on issues. The reverse also occurs: Figuring out what one has on issues that are of concern to others. The literature seems to indicate that one common way of trying to get acceptance is to direct the analysis towards finding information supporting one's goals and identifying information which should be withheld

from others in order to avoid raising conflicting views. Since these tactics amount to restricting other peoples' rights or needs of information, they will thus be included under the adversarial pole.

Also mentioned in the literature is the effect of power relations on the interpretation and analysis of information. Much research has shown that factual analysis is often made inferior to internal power and influence relations (Conrad, 1983; Kacmar & Ferris, 1993; Koopman & Pool, 1991); that is, the analysis of information can be biased in order to conform to the expectations of powerful people. For example, Pettigrew (1973) described how advice on the purchase of a computer system was mainly determined by the expectations the advisors had of the views held by those who would ratify the decision. Porter and Roberts (1976) found that people paid more attention to messages from their superiors than the ones from their subordinates, and they actually analysed more information from their superiors even though more messages originated from subordinates. Lyles and Mitroff (1980) found that fear of retaliation by the politically powerful was a recurring theme in the analysis of information; individuals were afraid of the consequences of identifying a problem that resulted from a past error by an upper level executive, and they also feared the consequences of identifying a problem whose solution conflicted with the interests of a superior. O'Reilly (1978, 1983) reported that individuals tended to withhold from superiors unfavourable information even if this information was necessary or important to them.

Taken together, the findings of these authors seem to indicate that information analysis may be directed to identify and defer to the views of powerful people in the organisation, probably as a means of gaining present or future acceptance and support. Since these tactics denote an attention to others in the organisation, although only the powerful ones, they will be included under the consensual pole.

Two topics were used for the development of items: Preference for information supporting favoured positions, and the influence of power relations on the analysis. Items P5 and P6 were formulated to address positive and negative aspects of preference for information

supporting favoured positions; items P7 and P8 addressed positive and negative aspects of the influence of power relations in the analysis.

Action

Political analysis of information has obvious consequences for the use of information in the action phase. If information analysis leads to a choice of concealing or manipulating information, this will affect sharing and communicating information in the action phase of decision-making. Besides concealment and manipulation, another political concern when sharing information is how information should be formulated and conveyed (Ferris et al., 2005; Pfeffer, 1992). The same information content may be formulated in different ways, depending on an individual's concern with effectiveness and appropriateness. While effectiveness reflects a concern with accomplishing goals and objectives, and is related to an assertive communication, appropriateness reflects a concern with sensitivity to the situational or relational rules governing the communicative context (Canary & Spitzberg, 1987, 1989).

These different orientations become particularly salient in the case of divergent views. If important consequences are at stake, conflict may entail substantial emotional involvement, which may increase the possibility of inappropriate behaviour (Canary & Spitzberg, 1987, 1989). These orientations also have substantial effects when one party has to give negative feedback (or criticism) to the other. In addition to what is said, how it is said has consequences for the reactions of the other party in present and future situations (Baron, 1990; Nomura & Barnlund, 1983; Ohbuchi, Chiba, & Fukushima, 1996). Each intervenient faces the challenge of achieving his/her goals, while respecting the relational and situational expectations of the other. Different individuals may place different values on effectiveness and appropriateness, and thus come up with different behavioural responses in the trade-off between the two.

The use of directness or indirectness in information transmission is a behavioural choice related to the trade-off between effectiveness and appropriateness, and this choice has been identified as an important issue in political behaviour (e.g., Dean & Sharfman, 1993b; Eisenhardt & Bourgeois, 1988). The direct approach involves factual, open, straightforward

communication and forthright discussion, where individuals directly communicate their goals, wishes or views to opponents, and, at the extreme, engage in aggressive communication (Eisenhardt & Bourgeois, 1988; Falbo & Peplau, 1980; Nomura & Barnlund, 1983). The opposite, indirectness, is generally related to respect for social rules, including politeness, consideration of others, and respect for authority and status. Here individuals seek to avoid conflict and maintain social harmony, at the extreme making the choice of withdrawal, for example by remaining silent (Becker, 1986; Gao, 1998; Hofstede, 1980; Nomura & Barnlund, 1983; Ohbuchi & Takahashi, 1994; Tanaka & Bell, 1996).

Indirectness may also be related to equivocation in communication, although the two concepts are not the same. Indirect messages may be clear in meaning and intent, therefore not equivocal, but formulated to conform to rules of politeness or other rules of social interaction. Bavelas, Black, Chovil, & Mullett (1990) define equivocation as "non-straightforward communication, including messages that are ambiguous, indirect, contradictory or evasive" (p.287). Therefore, equivocal messages are always indirect, but not all indirect messages are equivocal (Tanaka & Bell, 1996). Since concern with social interactions underlies the use of indirect communication, indirectness is seen as a part of the consensual pole of political behaviour. However, some research, particularly from the United States, has shown that expressing opinions openly during decision-making processes and the experience of a greater amount of open disagreement, leads to achieving greater consensus (e.g., Fisher, 1980; Priem, 1990). Therefore, it is uncertain whether, at least in some cultures, directness is related to the consensual pole.

Concern with (in)appropriateness when expressing criticism, and concern with gaining the support of others were operationalised in two items addressing positive aspects (items P9 and P11). Concern with directness/equivocation and concern with (avoiding) personal confrontations were used for developing two items addressing negative aspects (items P10 and P12).

Table 3.3 *Political domain – Managing information items*

Item	Adversarial pole	Consensual pole
P1 (+)	I tend to centralise the task of gathering information to myself or to a few selected people.	I tend to prefer that as many people as possible are engaged in the task of gathering information.
P2 (-)	I tend to put too many restrictions on information access (e.g., some people have been deprived of information they needed).	I tend to put too few restrictions on information access (e.g., there have been problems because of public knowledge of sensitive or delicate information).
P3 (+)	I tend to rely only on information that has been confirmed in writing.	I tend to rely on information obtained off-the-record
P4 (-)	I tend to be the last to know about interesting information that circulates through the grapevine.	I tend to receive a lot of non-confirmed information that circulates through the grapevine.
P5 (+)	I tend to focus on information that confirms my points of view, so that I have strong arguments to defend them.	I tend pay attention to information that may prove my points of view wrong, so that I can understand other peoples' positions.
P6 (-)	I tend to withhold information that could be relevant, in order to avoid discussions I consider unnecessary to the issue at hand.	I tend to create unnecessary discussions in meetings because I do not withhold any information, even if it is only marginally relevant to the issue in hand.
P7 (+)	When analysing information, I tend to want to be independent and avoid being influenced by other people's views and opinions about the question in hand.	When analysing information, I tend to ask or try to anticipate other people's views and opinions about the question in hand.
P8 (-)	I tend to pay insufficient attention to the expectations and interests of important people in the organisation when I analyse a situation.	I tend to adapt my analysis to meet the expectations and interests of important people in the organisation.
P9 (+)	If I have a criticism to make, I tend to put it straight so that the problem can be solved.	If I have a criticism to make, I tend to present it smoothly (put it in a way that does not sound so bad), in order to keep a good working environment.
P10 (-)	I tend to create animosity and opposition in other people because I am too direct when presenting my arguments.	I tend to create suspicion and disbelief in other people because I do not present my reasons overtly.
P11 (+)	I am particularly good when it is necessary to make a presentation that is clear, informative and is understood by all.	I am particularly good when it is necessary to make a presentation that convinces or gains other people's support
P12 (-)	When I disagree with what someone is saying in public, I tend to become rather emotional and heated defending my point of view.	When I disagree with what someone is saying in public, I tend to avoid a personal confrontation (e.g., postpone arguing my position to a better opportunity).

Managing alternatives

The twelve items developed for managing alternatives in the Political domain are presented in Table 3.4. The following sub-sections present issues in the literature leading to the development of those items.

Awareness

As described in the previous chapter, self-interest or group interest is one of most frequently mentioned elements in descriptions of political behaviour (Cropanzano et al., 1997; Ferris & Kacmar, 1992; Gray & Ariss, 1985; Harris et al., 2007; Harris & Kacmar, 2005; Kacmar & Baron, 1999; Miller, Byrne, Rutherford, & Hansen, 2009; Vigoda & Cohen, 2002). These interests have obvious implications for alternatives identified or developed by managers. The extent to which alternatives proposed are based on individual or sub-unit (group) goals, rather than on organisational goals, is viewed as a major issue in political behaviour (Dean & Sharfman, 1993b). When identifying alternative courses of action, individuals may be mainly oriented towards their personal interests, or the interests of the group they represent and the unit under their management. This orientation will be considered under the adversarial pole. Alternatively, they may tend to be mainly oriented towards the pursuit of organisational goals, or by a concern with maintaining harmony through the consideration of other people's or other groups' goals. This tendency will be included under the consensual pole.

While agreeing with the view that self and group interests may not be contrary to organisational interests, and are not necessarily pursued at the expense of other persons or units goals (e.g., Ahearn, Ferris, Hochwarter, Douglas, & Ammeter, 2004; Ferris et al., 2005; Gresov & Stevens, 1993; Hochwarter et al., 2000; Perrewé et al., 2004; Valle & Perrewé, 2000; Vigoda, 2000a), it appears relevant to analyse whether a tendency to focus on self-interest or on group interest versus organisational goals and/or the goals of other people or units contributes to a consistent representation of political behaviour.

Two topics were used for the operationalisation of items: Self-assertion in the pursuit of personal interests and self-assertion in the pursuit of the interests of own department or unit. Items P13 and P14 were formulated to address positive and negative aspects of self-

assertion in the pursuit of personal interests; items P15 and P16 addressed positive and negative aspects of self-assertion in the pursuit of the interests of own department or unit.

Analysis

As was the case with information analysis, concerns with social relationships and with gaining acceptance or support for present or future positions may influence the criteria and the process used for analysing and selecting alternative courses of action. Several authors have pointed out that analysis and choice are often a result of power distribution in the organisation; that is, alternatives are not analysed in an abstract way but in the context of perceived power and influence relationships (e.g., Dean & Sharfman, 1993b; Pettigrew, 1973; Pfeffer, 1981; Stewart, 1985). Hence, the power of the people proposing the various alternatives may strongly influence the analysis, especially when support from these people may be needed in the future (Conrad, 1983; Kacmar & Ferris, 1993). Since this reflects a concern with social relationships in the organisation, it will be considered under the consensual pole. Concern with people versus concern with production of results are other criteria for analysing alternatives that have long been identified (e.g., Blake & Mouton, 1964; Stewart, 1985). These criteria have often been employed in the literature of conflict management (e.g., Pruitt & Rubin, 1986; Rahim, 1983; Van de Vliert & Kabanoff, 1990). Concern with people, reflecting attention to others in the organisation, will be considered under the consensual pole.

As far as the process used for selecting alternatives is concerned, political groups can settle their conflicts by negotiated agreements among all the relevant actors, or the majority principle can be applied (Lijphart, 1984; McRae, 1997). Individuals may differ in their preferences for the one or the other; that is, the extent of agreement seeking behaviours may vary from individual to individual (Knight et al., 1999). Preference for using the majority rule, reflecting a lower degree of agreement seeking will be considered under the adversarial pole.

Analysis and choice are often a result of the relative effectiveness of the political tactics used by participants (e.g., Dean & Sharfman, 1993b; Pettigrew, 1973; Pfeffer, 1981). Political processes involve agreement seeking tactics such as negotiation and bargaining

(Dean & Sharfman, 1993b; Lyles & Mitroff, 1980). These tactics are often conducted behind the scenes, with some actors attempting to form coalitions with others, a form of political behaviour that has often been recognized in the literature (Eisenhardt & Bourgeois 1988; Ferris et al., 2005; Pettigrew, 1973; Pfeffer, 1992; Stewart, 1985). Since these tactics reflect attention to others in the organisation, they will be considered under the consensual pole.

Two topics were used for the operationalisation of items: Concern with social relationships versus concern with results, and the extent of agreement seeking. Items P17 and P18 were formulated to address positive and negative aspects of concern with social relationships versus concern with results; items P19 and P20 addressed positive and negative aspects of the extent of agreement seeking.

Action

When making a decision, decision-makers face the responsibility both for their choice and for getting the actions carried out (Brunsson, 1982). Individuals may prefer to involve others in the choice process; when making decisions in a group they may become less accountable for the decision outcomes, increase the likelihood of the decision being accepted, and enhance commitment to carrying out the decision (Burgoon, Dillard, Doran, & Miller, 1982; Kume, 1985; Rindova, 1999; Schwenk, 1984; Vroom & Jago, 1988; Vroom & Yetton, 1973; Woolridge & Floyd, 1990). On the other hand, participatory processes are slower, likely to represent more perspectives, and consequently reveal conflict and the need for building consensus (Rindova, 1999; Schwenk, 1984). Individuals may prefer to make decisions alone, without subjecting their views of preferences to opposition, and therefore maintaining control over the choices to be made. Since preference for making decisions alone reflects a lower attention to others people's goals, interests, or views, it will be considered under the adversarial pole. Preference for making decisions in a group will be considered under the consensual pole.

Involvement in the decision-making process can be insufficient to produce commitment and to guarantee the realization of the chosen action; for example, when members of a decision-making group delay or sabotage implementation (e.g., Guth & MacMillan, 1986;

Korsgaard, Schweiger, & Sapienza, 1995; Woolridge & Floyd, 1990). The extent to which group members agree with a decision (Hitt & Tyler, 1991; Priem, 1990), and perceive their inputs as being considered (Kim & Mauborgne, 1993; Korsgaard et al., 1995; Shapiro & Brett, 1993), affects subsequent commitment and cooperation towards implementation. Therefore, search for agreement and consideration given to members' points of view, even if their preferences are not met, are important aspects of political behaviour, particularly in the case when the implementation of the decision depends upon the acceptance and commitment of those involved.

Several tactics to search for agreement or resolve disputes have been put forward. Participants may engage in active mitigation tactics, such as proposing integrative or compromising solutions. Alternatively, they may follow passive mitigation tactics, such as refraining from direct self-assertion or refusing overt recognition of conflict (e.g., Burgoon et al., 1982; Hirokawa & Miyahara, 1986; Itoi, Ohbuchi, & Fukuno, 1996; Leung, 1987; Ohbuchi, Fukushima, & Tedeschi, 1999; Ohbuchi & Takahashi, 1994; Ting-Toomey, 1988; Trubisky, Ting-Toomey, & Lin, 1991).

Preference for sharing the responsibility versus maintaining control of outcomes, and the use of active mitigation tactics were operationalised in two items addressing positive aspects of preference for individual versus shared decisions (P21 and P23). Involvement of others in the decision process and use of passive mitigation tactics were operationalised in two items addressing negative aspects of preference for individual versus shared decisions (P22 and P24).

Table 3.4 *Political domain – Managing alternatives items*

Item	Adversarial pole	Consensual pole
P13 (+)	I tend to develop solutions or courses of action that pursue my personal objectives or interests.	I tend to develop solutions or courses of action that pursue organisational objectives or interests.
P14 (-)	I tend to take personal initiatives that make me stand out from the group, even if this creates a competitive atmosphere.	I tend to avoid taking personal initiatives and standing out from the group, in order not to create a competitive atmosphere.
P15 (+)	I tend to develop alternatives that focus on the specific interests or problems of my department or unit.	I tend to try to integrate the interests or problems of other departments or units in the alternatives that I develop.
P16 (-)	I tend to present proposals that strongly favour the group I represent.	I tend to present proposals that do not go far enough in defending the interests of the group I represent.
P17 (+)	I tend to consider performance criteria or task objectives more important than the impact of the decision on the people concerned.	I tend to consider the impact of the decision on the people concerned more important than performance criteria or task objectives.
P18 (-)	I tend not to favour proposals from important people in the organisation, even if this can lead to their lack of support in the future.	I tend to favour proposals from important people in the organisation, even if there are better proposals, so that I am likely to have their support in the future.
P19 (+)	In the case of divergence of opinions, I tend to propose that we use majority rule to make the decision.	In case the case of divergence of opinions, I tend to insist that we do not make a decision before everybody agrees.
P20 (-)	I tend not to try to smooth possible differences or incompatibilities of goals before the formal meeting takes place.	I tend to have private (background) meetings to try to prepare a possible agreement before the formal meeting takes place.
P21 (+)	I tend to prefer to make important decisions on my own, making sure I keep control of choices that have a crucial outcome or impact.	I tend to prefer to make important decisions in a group, sharing the responsibility for the choice made.
P22 (-)	I tend to take upon myself too much liability for potential failures because I do not involve other people in the decisions.	I tend to let other people participate in the decision so that I will not be solely responsible if something goes wrong.
P23 (+)	I tend to make few if any concessions because I do not want to compromise important aspects of the decision.	I tend to be willing to compromise or trade-off interests so that we reach a mutually acceptable position.
P24 (-)	I tend to try to impose my choices on other people.	I tend to let other people convince me that their position or option is preferable to mine.

Sampling the Entrepreneurial domain

In the previous chapter, entrepreneurial behaviour was defined in terms of the extent to which attention is paid to the discovery and pursuit of new opportunities, resulting from proactiveness, responsiveness, innovativeness, and risk concerns. Two major orientations for entrepreneurial behaviour can be found in the literature: development and order. Several authors suggest that, under shifting environmental conditions, organisations need both diversity and order for their ongoing viability, arguing that both change and stability are necessary for organisations to function effectively (e.g., Burgelman, 1983; Knight, 1997; Leana & Barry, 2000; Quinn, 1985; Sorensen & Stuart, 2000; Tushman & Nadler, 1986; Tushman, Newman, & Romanelli, 1986; Tushman & O'Reilly, 1996). Lack of order in an organisation's structures, systems, processes, and procedures is usually associated with performance problems. The congruence of the organisation's structures, systems, processes, and procedures is never perfect, and achieving order is an on-going process requiring continuous improvements, particularly when environmental changes alter previous conditions.

While a basic condition for order is stability, organisations often face the need for substantial change, far beyond incremental adjustments. Lack of focus on development compromises organisations' long-term viability, and is associated with long-term performance problems. Development and order may both underlie entrepreneurial behaviour, since they both these orientations reflect the aim to advance to quantitatively or qualitatively higher levels (the definition of opportunities) and to adapt to environmental conditions. However, the two orientations give rise to antagonistic mechanisms (change and stability) that may result in opposite directions of behaviour (Beckert, 1999; Tushman & Nadler, 1986). Order and development find a parallel in Kirton's (1976) adaption-innovation continuum, with "adaptors" concentrating on order, increasing efficiency, and conforming to established organisational rules and authority, while "innovators" are likely to propose more radical and novel perspectives, are motivated to doing things differently despite organisational resistance, and are more concerned with the "broad sweep" of tasks than with day-to-day problems (Kirton, 1976, 1980; Tullett & Kirton, 1995).

McCarthy (2003) found two types of entrepreneurs in her study of founders of small and medium size enterprises, which she labelled as "charismatic" and "pragmatic" entrepreneurs. The charismatic entrepreneur is described as long-term oriented, creative, idealistic, and risk-prone. In contrast, the pragmatic entrepreneur is down-to-earth, conservative, concerned with consolidation, and risk-averse. The two labels employed by McCarthy find a direct correspondence with those of other authors; the charismatic clearly being oriented toward development, and the pragmatic clearly more oriented towards order. In the present study, the labels of McCarthy (2003) will be preferred to those of Kirton (1976), since they invoke a wider range of behaviours than those simply related to innovation. However, since the term charismatic is generally associated with leadership studies (e.g., Conger & Kanungo, 1987; Klein & House, 1995; Shamir, Arthur, & House, 1994), the label "visionary", with which McCarthy refers to the decision-making style of charismatic entrepreneurs, is used. Therefore, visionary and pragmatic will be considered as the two poles of a dimension of entrepreneurial behaviour. The following sub-sections present an overview on issues related to visionary and pragmatic entrepreneurial behaviour.

Managing information

The twelve items developed for managing information in the Entrepreneurial domain are presented in Table 3.5. The following sub-sections present issues in the literature leading to the development of those items.

Awareness

In the awareness phase, alertness to major trends and events in the environment, which can represent opportunities, is a central component of entrepreneurship (e.g., Balakrishnan, Gopakumar, & Kanungo, 1999; Barringer & Bluedorn, 1999; Kaish & Gilad, 1991; O'Connor & Rice, 2001; Schneider & De Meyer, 1991). When scanning for information to learn about trends and events, different orientations may be followed. Information can be gathered in order to anticipate trends in the environment, or to respond to current events (Bateman & Crant, 1993; Miles & Snow, 1978; Schneider & De Meyer, 1991). Many authors defend that organisations and individuals should be proactive, that is, try to anticipate trends and actively effect change in their environments (e.g., Cooper & Schendel, 1982; Crossan, Lane, White, & Klus, 1996; O´Connor & Rice, 2001; Schneider & De

Meyer, 1991; Utterback, 1979). Others have argued that being responsive to short-term events is critical for success in today's turbulent and rapidly changing environments (e.g., Barringer & Bluedorn, 1999).

In the innovation literature, both proactiveness and responsiveness in information scanning have been identified as important antecedent conditions. Information scanning directed towards detecting and responding to current performance gaps has been mentioned as the motor of innovation processes (e.g., Zaltman et al., 1973). On the other hand, information scanning directed towards detecting future possibilities for improving organisational performance is also seen as responsible for the start of many innovation processes (e.g., Rogers, 1983). McCarthy (2003) found proactiveness and foresight as characteristic of visionary entrepreneurs, while responsiveness and reactiveness were more characteristic of pragmatic entrepreneurs. The innovation literature has also long recognized that, although businesses are confronted with a host of environmental threats, many of these may never materialize (e.g., Cooper & Schendel, 1982). Perceptions of environmental uncertainty and assumptions of environmental predictability lead to different behavioural responses by managers (Daft & Weick, 1984; Duncan, 1972), with some attributing less importance to forecasting for long-term events, based on the assumption that the results of this activity are often irrelevant, while others persist on considering this as essential for maintaining competitive advantage and ultimate survival.

Anticipation of future environmental trends has been probed by research on time perspective and its impact on individuals' decision-making in organisations (e.g., Bird, 1992; Das, 1987, 1991; Das & Teng, 2001; Jones 1988; Waller, Conte, Gibson, & Carpenter, 2001; West & Meyer, 1998; Zimbardo & Boyd, 1999). Those with a present-time perspective tend to believe that behaviours enacted in the present have no more effect on the probability of attaining a future goal than do future behaviours that are enacted as the goal comes near. Consequently, they tend to believe that anticipatory goal behaviour is of little use and that planning for the future is somewhat futile. In contrast, individuals with a future-time perspective tend to believe that present behaviours increase the probability of attaining future goals, and are more likely to scan for information concerning future consequences. Other authors have linked responses towards anticipating the future with the

ability to cope with ambiguity. Beliefs that the environment is understandable and controllable have been related to proactive behaviour (Waddock & Isabella, 1989), and to the search for innovative strategies (Miller, Kets de Vries, & Toulouse, 1982). Willingness to participate in an environment that is uncertain, changes frequently, and cannot be clearly assessed before action has been identified as a characteristic of entrepreneurs (e.g., Begley & Boyd, 1987; Ho & Koh, 1992; McGrath, MacMillan, & Scheinberg, 1992; Schere, 1982; Sexton & Bowman-Upton, 1985; Teoh & Foo, 1997).

Another issue related to environmental scanning concerns the sources of information used. The need to use peripheral sources of information for the production of creative solutions has long ago been advocated (Tushman, 1977b; Utterback, 1979). Wilson, Butler, Cray, Hickson, and Mallory (1985) argued that novelty in sources of data leads to breaking existing bounds of repertoires and structures for decision-making. Kaish and Gilad (1991) found that entrepreneurs use non-business related and untraditional sources of information as a means to expose themselves to opportunities in their environments. Oldham and Cummings (1996) argued that creativity involves the gathering information from multiple and differentiated sources, and using those sources to recognize unusual connections.

Studies on information sources have also considered the differentiation between internal and external sources of information. Webster (1976) argued that exposure to external information is necessary for organisations to keep abreast of developments for improving current operations. Several authors have also posited that the ability to recognize and use external information is crucial for detecting opportunities and for innovation (e.g., Becker, 1970; Bentley, 1990; Cohen & Levinthal, 1990; Kitchell, 1995; Maidique & Zirger, 1985; McCarthy, 2003). Aiken et al. (1980) found that external scanning was positively associated with innovation proposals by lower hierarchy personnel. Hoffman and Hegarty (1993) found that externally-oriented expertise and scanning activity are the executive characteristics which explain most of the influence on product-market innovations. In a study of research and development workers, Shapira (1995) found that the Japanese group which presented higher results (patents obtained and papers published) also considered increased contact with professionals outside the company as more important. Along similar lines, Tullett (1996) reported that groups whose focus of operation is oriented outside the

organisation have a more innovative cognitive style, as measured by Kirton's (1976) instrument. However, Dewar and Dutton (1986) found no relationship between the extent of information obtained from external sources and the adoption of either radical or incremental innovations.

Overall, these studies suggest differences in scanning behaviour related to two different classifications of information sources: business-related versus non-conventional, and internal versus external sources. Since the use of unconventional and external sources goes beyond improving current situations we will include them in the visionary pole of entrepreneurial behaviour.

For the operationalisation of items, two topics were used: Concern for proactiveness versus responsiveness, and type of information sources consulted. Items E1 and E2 were formulated to address positive and negative aspects of concern for proactiveness versus responsiveness. Items E3 and E4 addressed positive and negative aspects of type of information sources.

Analysis

A considerable amount of studies have investigated the cognitive properties underlying the way information regarding potential opportunities is analysed (e.g., Busenitz & Barney, 1997; Shane & Venkataraman, 2000; Shaver & Scott, 1991). There is wide agreement that opportunity is a relative concept and that its analysis is influenced by individual differences in perception (e.g., Palich & Bagby, 1995; Ray, 1994; Ruhnka & Young, 1991; Stevenson & Jarillo, 1990). The assessment of an opportunity varies among individuals because it involves differences in perceptions of risk (Ray, 1994; Ruhnka & Young, 1991; Stevenson & Jarillo, 1990). Sarasvathy, Simon, and Lave (1998) found that successful entrepreneurs see opportunities in situations in which other people see only risks.

Risk perceptions may influence the analysis of information in two ways: Relative importance given to information concerning potential gains and potential losses, and considerations of the probability of adverse events (e.g., Ray, 1994; Ruhnka & Young, 1991; Sarasvathy et al., 1998). An opportunity is characterized by a prospect of potential

gain and success, as well as a prospect of potential loss or failure (Ray, 1994; Ruhnka & Young, 1991). More risk-tolerant individuals tend to weigh potential gains over potential losses and, therefore, are more prone to assess a given situation as an opportunity. More risk-adverse individuals tend to weigh potential losses over potential gains and are less prone to assess a given situation as an opportunity (Ruhnka & Young, 1991; Sarasvathy et al., 1998). Furthermore, when a given situation has been categorized as an opportunity, new information congruent with the possibility of gains is more likely to be attended to than new information regarding potential loss (Dutton & Jackson, 1987), which further biases information analysis.

Lopes (1987) provided further insights in the analysis of information on gain and losses, arguing that individuals differ in the degree to which they are motivated by a desire for security versus a desire for upside potential. Individuals focusing on security are classified as risk-averse and considered to pay more attention to the worst outcomes in gambles. Individuals focusing on upside potential are classified as risk-seeking and they tend to focus on the best outcomes. However, McDougal (1995) found no support for the hypothesis that risk-seeking individuals differ from risk-averse individuals as to the kind of information they attend to most. On the other hand, Kahneman and Lovallo (1994) proposed that entrepreneurs often take actions involving high-risk levels because they do not recognize or accept these risks. This was confirmed by Palich and Bagby's (1995) finding that whereas entrepreneurs and non entrepreneurs did not differ in overall risk-taking propensity, but did differ in their analysis of situations, with entrepreneurs tending to see more strengths, opportunities, and potential for gain than did non-entrepreneurs.

As far as adverse events are concerned, Ray (1994) suggests that entrepreneurs tend to assign lower probabilities to the occurrence of adverse events, attributing less relevance to them when analysing a decision to start a new venture. Empirical research seems to confirm that the probability of adverse events tends to be overlooked by entrepreneurs, who tend to frame information positively (Palich & Bagby, 1995), and to perceive chances of success as much higher than they really are (Baron, 1998; Cooper, Woo, & Dunkelberg, 1988). Individual differences in optimism and confidence levels have also been identified as influencing the analysis of an opportunity (Busenitz & Barney, 1997; Cooper et al., 1988;

Kahneman & Lovallo, 1994; Manimala, 1992; McClelland, 1987; Ray, 1994; Shane & Venkataraman, 2000). According to McClelland (1987), entrepreneurs tend to have an optimistic bias and to evaluate uncertain situations as more favourable than the facts justify. Busenitz and Barney (1997) found that entrepreneurs (new venture founders) manifested more overconfidence (overestimating the probability of success or being right) than managers of large organisations. Bateman and Crant (1993) found that the item "no matter what the odds, if I believe in something I will make it happen" significantly correlated with a scale of proactive behaviour. Pursuing success against the odds was found by McCarthy (2003) as characteristic of visionary entrepreneurs, contrary to pragmatic entrepreneurs who were found to have a more calculated and conservative approach towards risk.

Several explanations of optimism and overconfidence may be found in the literature. Entrepreneurs tend to perceive their own capacities and effort as crucial for success (Baron, 1998), which is one of the reasons why they tend to overestimate the odds that their business will succeed (Cooper et al., 1988; Kahneman & Lovallo, 1994). It has also been suggested that entrepreneurs show a strong tendency for exerting personal control over their outcomes (Shaver & Scott, 1991), and are likely to make riskier (overly optimistic or overconfident) choices when they believe they have some level of influence or control over the outcome of the decision (March & Shapira, 1987; Mullins, Fornali, & Walker, 1999). Other authors relate optimism and overconfidence to self-efficacy and locus of control, traits that are often studied in connection with entrepreneurial behaviour. Self-efficacy reflects people's judgements of their own capabilities and, in turn, influences thought patterns and emotional responses to anticipated and actual transactions with the environment. People with low self-efficacy tend to judge themselves as incapable of coping with environmental demands and to view potential difficulties as greater than they really are. Krueger and Dickson (1993) found that self-efficacy was positively related to perceptions of opportunities and negatively related to perceptions of threats in a given situation. Locus of control posits that people who believe that their own behaviour shapes events and that they have the capacity to change their environment tend to engage more in proactive, innovative, and risky actions than people who believe that environmental events are beyond their control (e.g., Brockhaus, 1982; Miller et al., 1982; Mueller & Thomas, 2001).

Focus on potential gains versus potential losses and level of (over)confidence were used to operationalise positive aspects of the approach towards risk (E5 and E7). Estimating adverse events and level of optimism/pessimism were used for two items addressing negative aspects of that approach (E6 and E8).

Action

It has long been recognized that individuals differ in the time horizon of their decisions, with some focusing more on the long-term, while others focus more on the short-term (e.g., Bonser & Wu, 2001; Das, 1987; Hofstede, 1991; Mowen & Mowen, 1991; Nanus, 1975). Long-term orientation has been found to be positively related to innovation (e.g., Ebert & Piehl, 1973; Kitchell, 1995). Tendency to be proactive and innovative includes the use of longer planning horizons (Miller et al., 1982; Quinn, 1979, 1985). These are a necessary condition for innovation since internal corporate venturing processes may take several years before they reach technical or commercial results (Burgelman, 1984; Quinn, 1985).

The view of long-term orientation being associated with entrepreneurial behaviour has also been questioned. Barringer and Bluedorn (1999) argued that a long-term planning horizon may engender a resistance to deviate from a long-term view of the future in the presence of short-term environmental change, and therefore may inhibit entrepreneurial behaviour. However, these authors found no support for their hypothesis that a negative relationship exists between long-term planning and corporate entrepreneurship activity. It should be noted that "long-term" was operationalised as more than 5 years, which, as the authors also note, may be simplistic. For many firms, a long-term horizon may be in the order of one or two years. Several arguments point to the relevance of both long-term and short-term orientations (Bonser & Wu, 2001; Tushman & Nadler, 1986). Both long-term orientation and short-term orientation may be associated with the pursuit of opportunities and therefore with entrepreneurial behaviour. Shane and Venkataraman (2000) note that managers may pursue two different kinds of opportunities: The creation of a new situation, and the optimisation of an existing situation. The former is more in accordance with a long-term orientation, and the latter with a short-term orientation, but both are clearly associated with entrepreneurial behaviour.

Individual differences related to preferences for creating a new situation or developing an existing situation were posited in Kirton's (1976) adaptors-innovators theory. Kirton noted that innovators have an orientation characterized by "doing things differently", while adaptors focus on "doing things better" (p. 622). Adaptors are more concerned with improving the efficiency of current systems, while innovators are more concerned with generating possibilities for a future system (Kirton, 1976, 1980; Tullett, 1996; Tullett & Kirton, 1995).

Several consequences of these individual differences have been put forward, mainly regarding two interrelated aspects: Type of decision situation that is highlighted, and resistance to change. Executives who focus on improving current situations tend to become immersed in familiar day-to-day problems and consequently fail to anticipate change and may even resist needs for change (Chandler, 1962; Thompson, 1967). As noted by March (1991), pursuing ever-better refinements of existing situations may lead to a competency trap if the world changes. By contrast, individuals who focus on creating new situations are more concerned with development and change than with day-to-day problems, and prefer to delegate routine tasks (Jones, 1988; Kirton, 1976). Building or improving the systems and processes for the short-run may hamper the ability to perceive and pursue emerging opportunities (Rosenbloom & Christensen, 1994; Tushman & Nadler, 1986). Hence, some individuals may be more inclined to pursue long-term perspective than solving short-term problems (Bonser & Wu, 2001).

Focus on current efficiency versus future developments, and short versus long-term orientation were chosen for two items addressing positive aspects of the decisions' time horizon (E9 and E11). Focus on present results versus long-term viability and focus on day-to-day problems were used for two items addressing negative aspects of the decisions' time horizon (E10 and E12).

Table 3.5 *Entrepreneurial domain – Managing information items*

Item	Pragmatic pole	Visionary pole
E1 (+)	I tend to be particularly alert to indicators of present needs to act.	I tend to be particularly alert to indicators of future trends.
E2 (-)	I tend to spend a great deal of time with current problems or situations that could have been avoided by preventive actions in the past.	I tend to spend a great deal of time trying to anticipate potential problems or situations that turn out never to happen.
E3 (+)	I tend to consult only the sources of information that are directly related to my area of work or the organisation's business.	I tend to look for sources of information that are not directly related to my area of work or the organisation's business.
E4 (-)	I tend to make too little use of external sources of information.	I tend to make too little use of internal sources of information.
E5 (+)	I tend to focus on potential problems revealed by information.	I tend to focus on potential gains and opportunities revealed by information.
E6 (-)	I tend to overestimate the possibility of adverse events.	I tend to underestimate the possibility of adverse events.
E7 (+)	I tend to first analyse the situation I face and then establish the goals that can be achieved in that situation.	I tend to first establish the goals I want to achieve and then analyse how contingency factors may affect the achievement of those goals.
E8 (-)	I tend to be too pessimistic about the results of my efforts (my possibility and capacity to succeed).	I tend to be too optimistic about the results of my efforts (my possibility and capacity to succeed).
E9 (+)	Improving the efficiency and coordination of the areas under my responsibility tends to be my major concern.	Being ready to answer new demands and conditions in the business environment tends to be my major concern.
E10 (-)	I tend to minimize the importance of negative or undesirable results in the long-term because I am more concerned with results here and now.	I tend to minimize the importance of negative or undesirable results in the short-term because I am more concerned with long-term viability.
E11 (+)	I am particularly good when it comes to developing and fulfilling short-term projects and objectives.	I am particularly good when it comes to developing and fulfilling long-term projects and objectives.
E12 (-)	I do not like having to make decisions that do not have an immediate application.	I do not like having to make decisions about day-to-day problems.

Managing alternatives

The twelve items developed for managing alternatives in the Entrepreneurial domain are presented in Table 3.6. The following sub-sections present issues in the literature leading to the development of these items.

Awareness

The issues of novelty and practicality in the development of alternatives are often referred to in the literature. Kirton's (1976) adaptors-innovators theory posits that innovators are more likely to propose radically novel alternative solutions to problems than adaptors, who in turn are more timid in ideation, and more likely to propose prudent and practical alternatives (Kirton, 1976, 1980; Tullett, 1996; Tullett & Kirton, 1995). Adaptors produce safe and relevant ideas for immediate application, while innovators produce ideas that are often initially seen as irrelevant, unsound, and risky. In the field of entrepreneurship, McCarthy (2003) found creativity and imagination associated with visionary entrepreneurs, while pragmatic entrepreneurs were more conservative and concerned with what is achievable. Previously, several authors had argued that entrepreneurs typically hold and express deviant ideas or views (e.g., Baumol, 1990; Brenner, 1987; McGrath & MacMillan, 1992; Ohe, Honjo, & MacMillan, 1990; Shane, 1994). For innovation and change, it is also generally held that their driving force are the creative or novel ideas that stem from individuals (e.g., Burgelman, 1983; Kanter, 1983; Morgan; 1986; Smeds, 1997; Van de Ven, 1986).

Another issue regarding the development of alternatives is the effects of considering or ignoring existing structures, processes, rules, and procedures (e.g., Bagozzi & Foxall, 1996; Shane, 1994; Tullett, 1996, 1997). Existing research on idea champions has shown that they tend to take action outside the scope of their current job descriptions, and often undertake activities that imply the breaking of rules and standard operating procedures (e.g., Brazeal, 1993; Burgelman, 1983; Howell & Higgins, 1990ab; Shane, 1994). Similarly, Kirton's (1976) adaptors-innovators theory postulated that habitual innovators often challenge existing structures, rules, and methods when developing solutions, while habitual adaptors prefer to develop solutions within existing structures and rarely challenge rules. Ideas proposed by habitual innovators may often be difficult to implement or even impracticable

under the current circumstances of the organisation, while ideas or solutions proposed by habitual adaptors are easy to implement since they fit into existing paradigms (Bagozzi & Foxall, 1996; Tullett, 1996, 1997). In sum, novelty and deviance from customary behaviour, rules, and procedures, are seen as characteristic of alternatives proposed by innovators, while practicality, facility of implementation, and conformity with current rules and procedures characterize alternatives proposed by adaptors.

The degree of change implied by an alternative has also received much attention by researchers on entrepreneurial behaviour. The degree of change may be classified as incremental, when the proposed change supports existing ways of working, or as radical, when it causes a sharp departure from current ways of working (Dewar & Dutton, 1986; Ettlie, 1983; Ettlie, Bridges, & O'Keefe, 1984; Hage, 1980; Hughes, 1982; Landau, 1982; Smeds, 1997; Sorensen & Stuart, 2000; Tushman & Nadler, 1986; Tushman et al., 1986; Tushman & O'Reilly, 1996). Radical changes are more difficult to implement because the structures, processes, rules, and procedures of the organisation are so interlinked that they allow only compatible changes. Actions requiring more than incremental modifications face multiple and substantial sources of resistance, rooted in the internal cohesion of the system (Kisfalvi, 2000; Miller, 1993, 1994; Tushman & Nadler, 1986; Tushman & O'Reilly, 1996). Although the retention of routines may facilitate smooth and stable organisational functioning, they also interfere with the capacity of the organisation to adjust to changing environments (Nelson & Winter, 1982; Shane, 1994). Because of institutionalised structures and routines, individuals may search for new opportunities close to the organisation's current practices, a behaviour that has been described as "local search" (Nelson & Winter, 1982; Sorensen & Stuart, 2000; Stuart & Podolny, 1996).

As was mentioned in the previous sub-section, according to the Kirton's (1976) adaptors-innovators theory, adaptors usually prefer to work at improving existing methods and practices, suggesting that their proposals involve incremental changes that can be accommodated without upsetting existing systems. By contrast, innovators tend to propose radical change initiatives, which may initially be difficult to accept and even more difficult to implement because of their sharp departure from the existing systems (Kirton, 1976, 1980; Tullett, 1995). McCarthy (2003) makes a similar distinction between visionary and

pragmatic entrepreneurs, with the former being more ambitious and idealistic in their courses of action, and the latter less ambitious and more realistic and down-to-earth.

Focus on practicality versus originality, and preference for incremental versus radical change formed the basis for two items addressing positive aspects of the degree of departure from the current situation (E13 and E15). Respecting the boundary of current job description, and respecting the status quo (current ways of functioning) were operationalised as two items addressing negative aspects (E14 and E16).

Analysis

In the analysis phase, an important issue involves weighing the value and costs of an opportunity against the costs to generate value in other ways (Sorensen & Stuart, 2000). People consider not only the costs of pursuing the opportunity under study, but also the costs resulting from not pursuing alternative courses of action (Amit, Glosten, & Mueller, 1993; Reynolds, 1987). For example, when deciding to start a new organisation the potential founder considers the costs involved in the project and their pay-off conditions, but also the costs of leaving the current job situation, where his/her earnings are certain. In organisational settings, novel or creative alternatives may be forsaken, regardless of their favourable conditions, since habitual actions remain more attractive because of their relative ease, certainty, and low implementation costs (Ford, 1996).

When the analysis of the opportunity occurs in an existing organisation, besides the costs involved in the project, an important issue is the costs of potential disruption of current processes, rules, and procedures (Brenner, 1987; Shane, 1994). Therefore, the analysis of alternatives requires simultaneous attention to dealing with development or perceived need for change, and dealing with continuity when disruption is experienced (Bowen et al., 1992; Shane, 1994). Kirton´s (1976) adaptors-innovators theory posits that adaptors are more concerned with continuity, order, and stability, while innovators treat these issues with little regard since they are more concerned with the pursuit of development goals.

Another issue in the analysis of alternatives is consideration of past experience. Several authors have put forward that consideration of past experience goes against innovation and

change (e.g., Audia, Locke, & Smith, 2000; Boeker, 1997; Brooks, 1994; Greve, 1998; Hambrick, Geletkancycz, & Fredrickson, 1993; Kanter, 1983; Lant, Milliken, & Batra, 1992; Meyer, Goes, & Brooks, 1993; Miller, 1993, 1994; Miller & Chen, 1994; Pettigrew, 1985; Starbuck & Milliken, 1988). The underlying argument is that past success or performance induces complacency and confidence in the status quo, leads to the formation of rigid cause-and-effect beliefs and to a decline in experimentation, and inhibits the recognition that change is necessary (e.g., Audia et al., 2000; Hambrick et al., 1993; Kiesler & Sproull, 1982; Maidique & Zirger, 1985; Miller & Chen, 1994; Pettigrew, 1985; Prahalad & Bettis, 1986; Ranger-Moore, 1997; Sorensen & Stuart, 2000; Starbuck, 1983; Starbuck & Milliken, 1988; Tushman & Nadler, 1986; Whetten, 1987). Individuals tend to persist in functioning in ways they perceive to be responsible for their past success. This hampers their ability to adapt to changes in the environment, and even highly innovative firms can become trapped by their own success (Audia et al., 2000; Miller, 1993, 1994; Prahalad & Bettis, 1986; Sorensen & Stuart, 2000; Tushman & Nadler, 1986). Several studies have found that managers take fewer risks when their companies are performing well (e.g., MacCrimmon et al., 1986; March & Shapira, 1987; Shapira, 1995).

Some contradictory evidence on past success has also been put forward. Mullins et al. (1999) found that managers whose former decisions had been successful and generated additional resources were more likely to engage in risky product innovation projects. As noted by Das and Teng (2001), it is possible that previous winnings had not reached these individual's aspiration levels, which would explain why they are emboldened by their success instead of turning conservative, as found in previous research. In the case of previous poor performance rather than past success, some authors found that troubled firms tend to take more risk, indicating a negative relationship between performance and risk (e.g. Bowman, 1982; Bromiley, 1991). On the other hand, the literature on escalation of commitment mentioned earlier (e.g., Brockner, 1992; Drummond, 1998; Kisfalvi, 2000; Staw, 1981; Staw & Ross, 1987) has provided ample evidence that previous poor performance may lead to maintaining current courses of action, that is, not only past success but also past failures may constrain the analysis against change and innovation. Mowen and Mowen (1991) propose that when a decision is framed from a loss position, decision-makers tend to act in a risk-taking way only when the decision outcomes are short-

term. Thaler and Johnson (1990) go in the same direction, arguing that, in the presence of prior losses, outcomes that offer a chance to break-even in the short-term become especially attractive despite the risk involved. For the special case of new venture creation, Kahneman and Lovallo (1994) argue that entrepreneurs tend to focus on the current situation while largely ignoring the outcomes of previous related situations that might serve to inform their current judgements. Kahneman and Lovallo also infer that not being constrained from consideration of the past underlies entrepreneurial activity.

Concern with disruption versus concern with development, and consideration of past experience led to the formulation of two items addressing positive aspects of ways of weighing the value and costs of an opportunity (E17 and E19). Approach to change and approach to new ideas were used for the construction two items addressing negative aspects on the topic (E18 and E20).

Action

As far as the action phase is concerned, it has often been noted that managers in similar roles may behave in quite different ways, with some frequently launching new initiatives, while others are more concerned with improving the accuracy and efficiency of current activities (e.g., Bateman & Crant, 1993; Van Maanen & Schein, 1979). Decisions to engage in actions involving novelty or new initiatives are generally associated with an orientation towards risk, since they implicate moving away from familiar grounds. Improving current activities is more often associated with an orientation towards maintaining the status quo (Amabile, 1997; Amabile, Conti, Coon, Lasenby, & Herron 1996; Bowen et al., 1992; Hottenstein & Dean, 1992; Kirton, 1976; 1980; Kitchell, 1995; Mintzberg, 1973b; Oldham & Cummings, 1996).

New initiatives, a fundamental issue in entrepreneurial behaviour, need not involve absolute novelty; they may simply involve the introduction of something familiar in one context into another context where it is unfamiliar (Aiken et al., 1980; Damanpour, 1992; Damanpour & Evan, 1984; West & Atlink, 1996; Zaltman et al., 1973). For example, adopting solutions that have been tried by other organisations may constitute a new initiative by a manager in an organisation where those alternatives have never been tried. Benchmarking of other

organisations' solutions has evoked a huge interest in management, and imitation of competitors is often a driving force for innovation and change (Shetty, 1993; Smeds, 1997). Kirton's (1976) adaptors-innovators theory also tackles the issue of new initiatives and risk involved, and posits that adaptors prefer solutions that have already been tried, while innovators are not afraid of solutions that clash with established or accepted views and methods, and are comfortable with risk-taking when making decisions (Kirton, 1976, 1980; Tulllett & Kirton, 1995).

Another issue concerning new initiatives is the nature of the task that is preferred by individuals. Kirton's (1976) theory posits that innovators prefer less structure in their tasks, while adaptors prefer to work within well-established patterns of rules and procedures (Kirton, 1976, 1980; Tullett & Kirton, 1995). Miner, Smith, and Bracker (1989) also argued that entrepreneurs (new venture founders) are less motivated towards working within the constraints of bureaucracy and hierarchy than managers, but found no empirical support for this hypothesis. However, as mentioned earlier, entrepreneurial behaviour is not restricted to new venture creation and may also be found in the activities of managers of long-established organisations, which may explain the results of Miner et al. (1989). Studies of creativity and innovation have shown that freedom or autonomy in deciding what work to do and how to do it are associated with higher creativity and innovation, while the existence of rigid rules and structures, and restricted control over one's work procedures are detrimental for creativity and innovation (e.g., Aiken et al., 1980; Amabile, 1997; Amabile et al., 1996; Hatcher, Ross, & Collins, 1989; Kimberly, 1981; Shalley, Gilson, & Blum, 2000). However, in these studies it remains unclear whether individuals' behaviour was shaped by their working environments or whether entrepreneurial individuals were given the choice of the working environments they preferred.

Several authors argue that working environments shape individual behaviour. The argument is that working on tasks where behaviour is not constrained by formally laid out procedures, hierarchy, and bureaucracy, but can be shaped by the requirements of the situation and the personality of the individual doing the job, is associated with entrepreneurial behaviour (e.g., Miner et al., 1989; Nicholson & West, 1988; Quinn, 1979; Slevin & Covin, 1990). On the other hand, working with previously defined rules and routines can lead to competency

traps. Effective retrieval of rules and routines leads to fewer mistakes and higher efficiency, but also results in lack of novelty and experimentation, and in less learning, which reduces the possibilities for change (e.g., Levitt & March, 1988; March, 1991; Nelson & Winter, 1982; Ranger-Moore, 1997; Sorensen & Stuart, 2000; Tripsas & Gavetti, 2000). Not surprisingly, empowerment is a main principle in the literature on change management (Cotton, Vollrath, Frogatt, Legnick-Hall, & Jennings, 1988; Smeds, 1997). Some evidence also points to the fact that creative individuals prefer to work in less-structured tasks and with more autonomy. Shapira's (1995) study of R&D workers found that the Japanese group that scored higher in results (patents obtained and papers published) also expressed a higher desire to have freedom and autonomy in their work.

Preference for tried solutions and preference for starting up new projects led to two items addressing positive aspects of approaches to new initiatives (E21 and E23). Preference for maintaining the status quo and preference for structured tasks were operationalised as items addressing the negative aspects of approaches to new initiatives (E22 and E24).

Table 3.6 *Entrepreneurial domain – Managing alternatives items*

Item	Pragmatic pole	Visionary pole
E13 (+)	I tend to want to identify solutions or courses of action that are practical and down-to-earth.	I tend to want to identify solutions or courses of action that are original and creative.
E14 (-)	I tend to respect the rules and procedures of the organisation and propose alternatives within the scope of my current function.	I tend to ignore the rules and procedures of the organisation and make proposals that go beyond the scope of my current function.
E15 (+)	When things are not working well or there is a possibility to improve them, I tend to propose alternatives in which change occurs gradually.	When things are not working well or there is a possibility to improve them, I tend to propose alternatives that involve substantial and even radical changes.
E16 (-)	I tend to propose alternatives that do not challenge established ways of doing things but are therefore easy to implement in the organisation at present.	I tend to propose alternatives that challenge established ways of doing things but are difficult to implement in the present circumstances of the organisation.
E17 (+)	I tend to find it more important to verify how much the proposal in hand will disrupt the normal functioning of the organisation or the area concerned.	I tend to find it more important to verify how much the proposal in hand contributes for the development of the organisation or the area concerned.
E18 (-)	I tend to overlook the problems that will arise if the current ways of working are not changed.	I tend to overlook the costs and problems involved in changing the current ways of working.
E19 (+)	I tend to consider the results of past experiences in my analysis, because that knowledge is relevant to foresee the possibility of success of the alternatives in hand.	I tend to try to ensure that my analysis is not influenced by the results of past experiences, because that knowledge will rarely apply to the current situation.
E20 (-)	I tend to be too cautious in regard to new ideas or new developments, sometimes overlooking their merits.	I tend to want to find ways to implement new ideas or new developments, sometimes overlooking their dangers.
E21 (+)	I tend to prefer to implement alternatives that have already proven to work in the organisation.	I tend to prefer to implement decisions that no one else has tried or dared before in the organisation.
E22 (-)	I tend to avoid risk by choosing alternatives that have been tried before or don't go beyond what is usual.	I tend to take too much risk by choosing alternatives that I am not sure can work or be successful.
E23 (+)	I am particularly good at improving or developing existing projects.	I am particularly good at starting up new projects.
E24 (-)	I do not like working in the absence of a predetermined structure (well-defined tasks and rules).	I do not like working with a predetermined structure (well-defined tasks and rules).

Summary

This chapter developed a set of items to operationalise the three decision-making domains - Rational, Political, and Entrepreneurial - identified as basic to the literature. For each domain, 24 items were developed. The sampling process was first led by a distinction of two essential activities in the decision-making process: Managing information and managing alternatives. Secondly, since different phases of the decision-making process may require different repertoires of behaviour, the sampling considered a distinction of three phases in the decision-making process: Awareness, analysis, and action. Finally, since repertoires of behaviour may be adequate in some situations and inadequate in others, each topic identified was at the basis of the formulation of two items, one addressing the positive aspects and the other the negative aspects involved in the topic.

The item construction followed a design matrix with three domains (Rational, Political, and Entrepreneurial), two activities (managing information, and managing alternatives), three phases (awareness, analysis, action), and two modes (positive, negative). With two items in each cell of the matrix, the number of items to be constructed was 3 * 2 * 3 * 2 * 2 = 72. The main aspects were considered to be captured in the 3 * 2 matrix of three decision-making domains and two activities. The three phases and two modes were used as aids in the construction of the questionnaire.

Within each domain, items were formulated with two endpoints. In the Rational domain, the level of comprehensiveness was considered to range from satisficing to maximizing behaviour. In the Political domain, the level of consideration to other people's positions was considered to range from adversarial to consensual behaviour. In the Entrepreneurial domain, the level of concern with environmental adaptation was considered to range from pragmatic to visionary behaviour. For each item, the two endpoints were separated by a 6-point Likert scale, where 1 was to be chosen if respondents thought the statement on the left represented their general tendency clearly better than the one on the right, and 6 was to be chosen if the reverse happened. A random order was attributed to the items.

Chapter 4
Analysis of the decision-making domains with Portuguese participants

With the aim of identifying a comprehensive instrument of decision-making behaviour, we derived from the literature three different domains of decision-making - Rational, Political, and Entrepreneurial (Chapter 2) - and sampled the main aspects pertaining to each of them in order to develop a questionnaire (Chapter 3). This questionnaire, based on literature review, needs to be empirically tested before it can be used for an analysis of managers' characteristics. The present chapter investigates whether and to what extent the representation of decision-making in the questionnaire can be retrieved from responses of Portuguese participants.

We will first analyse the main distinctions that guided the development of the questionnaire: The distinction between the three decision-making domains, and the distinction between the two activities used in decision-making processes - managing information and managing alternatives. Two studies were undertaken. The aim of these two studies is to test the structure of the proposed model and the psychometric properties of the scales developed. On the basis of the results, it will be decided which items and scales can be retained for a definite questionnaire to be used for the analysis of decision-making among Portuguese respondents.

This chapter consists of three sections. The first two sections present, respectively, the methodology and results of study 1 and study 2. The last section provides a summary and discussion of the results obtained.

Study 1: Analysis of self-ratings and of ratings by others

In study 1, we analysed ratings on each of the 72 items of the questionnaire. Three sets of participants were included in this study. In two of these sets, participants were asked to provide self-ratings on the questionnaire items. In the remaining set, participants were asked to provide a self-rating as well as a rating on a colleague of their choice. They were also asked to give the questionnaire to the chosen colleague, who then provided a self-

rating and a rating on the original participant. The original participant and the chosen colleague were matched according to codes included on the first page of the questionnaire copies.

Method

Participants

The total data set consisted of three independent sets of participants. For the first set, Human Resource managers included in a list gathered by Futurível, a Portuguese association of post-graduate students in HR, were contacted and sent information on the study. Those who agreed to participate were asked to distribute the instruments to managers in various departments of their organisations. Each participant contacted by the HR officer was also to give the questionnaire to a colleague, so that ratings by others could also be collected. Having completed the questionnaire, each participant returned it in a pre-paid envelope to the researcher. To obtain this data set, to be called the "Business group", 125 pairs of questionnaires were sent and 51 pairs were returned, for a response rate of 41%.

The second set of respondents consisted of participants attending an Executive MBA course at Universidade Técnica de Lisboa, who were directly given the questionnaire by a lecturer. For this data set, to be called the "MBA group", 200 questionnaires were distributed and 98 received back, for a response rate of 49%. The third set consisted of officers and subaltern officers in a Portuguese Military organisation, as part of an on-going study on organisational culture. These participants were sent the instruments by e-mail and asked to return them in sealed envelopes to the officer in charge of the study. In this data set, labelled as the "Military group", 100 questionnaires were sent and 55 were received back, the response rate being 55%.

Within the total data set (N = 255) obtained for self-reports, 165 of the respondents were male (65%) and 89 female (35%), and the average age of the total sample is 35.4 years. While data on educational level are not available for the Military group, the large majority of participants in the other two groups had a high education level, with 95% having a University degree and 2% a Technical Course (higher education). Therefore, 194

participants had high education levels (University degree or Technical Course), and the field of studies with the highest percentage of participants was Business and Economics (58%), followed by Engineering (21%).

Positions in the organisation's hierarchy were classified as top management (including CEOs and directors), middle management (including middle managers, product managers, project managers, and geographical managers), and first line managers. In the Military group, the assignment to these three hierarchical groups was undertaken on the basis of military rank. In the total sample, 29% of respondents were in top management positions, 27% were in middle management positions, and 42% were in the lowest hierarchy level.

For the Military group, data on functions are not available. For the other two groups, the highest percentage of respondents worked in technical departments (23%), a category that includes engineering experts but also finance and insurance experts. Other categories include finance (22%), marketing (13%), and general management (8%). Lower percentages of respondents were found for personnel (6%), information systems (6%), external consulting (5%), sales (4%), legal (3%), internal consulting (2%), production operations (2%), international (2%), research and development (2%), and purchasing (2%).

Since the distinction between internally-oriented functions and externally-oriented functions should be of interest for decision-making (Gupta & Govindarajan, 1984; Hambrick & Mason, 1984; Hoffman & Hegarty, 1993; Tullett, 1996), this classification was used to group the above-mentioned functions. General management, external consulting, research and development, purchasing, sales, marketing, and international were considered as externally-oriented functions, and the remaining as internally-oriented functions. In the combined Business and MBA group, 37% of the participants were in externally-oriented functions, and 63% in internally-oriented functions.

About half of the participants (49.8%) came from large size organisations (>500 workers), while 61% of participants worked in private-sector organisations. The entire Military group was from a large size and (obviously) state-owned organisation. The main activity of the organisations was classified into five categories: industry, trade, services, military, and

other. The "other" category includes an agriculture organisation, a national ministry, and a university research centre. About half of the participants in the total sample (50%) worked in services organisations, 14% in industrial organisations, 4% in trade organisations, and 9% in the "other" category organisations.

Instruments and procedure

The first version of the decision-making questionnaire was written in English by the author and checked by a native English speaker. A translation into Portuguese was made by the author, whose mother tongue is Portuguese. An independent back translation into English, by a Portuguese-English bilingual British teacher working in Portugal, was then undertaken and compared to the original English version. Only minor differences were detected, and resolved with the help of the Portuguese-English translator. The content of this questionnaire was described in Chapter 2. The total questionnaire consisted of 72 items, 24 for each decision-making domain. A random order was assigned to the items, and that order was the same for all participants.

Participants in the Business group were also given additional questionnaires. They received a set of questionnaires which included the questionnaire described above, with the instruction that it was a self-report, and another version of that questionnaire, with the instruction that it should be answered in terms of a description of a colleague. Every page on the second version started with "My colleague..." to make it clearer. Each set of questionnaires also included a questionnaire on personal values and a questionnaire on stereotypes of Portuguese managers to be used in the culture-comparative studies of the following chapters, where they will be described in more detail.

Missing values

For self-ratings, the complete data set of 255 decision-making questionnaires had only 34 missing values, a percentage of 0.19%. For ratings by others, the data set of 102 questionnaires obtained in the Business group had only 10 missing values, a percentage of 0.14%. Missing values were replaced with the mid-point value of the scale (3.5).

Analysis of self-ratings

The first step in the analysis was a test of the model parameters for each of the three domains using confirmatory factor analysis[1]. Expected item loadings were specified according to the design underlying the construction of the questionnaire, described in Chapter 2. The postulated dimensional structure with two factors, one for managing information and the other for managing alternatives, did not show an adequate fit in any of the three domains. Although there were differences between the domains, even the most positive results, which were found for the Rational domain, failed to meet common standards of fit. This could be due to poor operationalisation (i.e., some items were inadequate for the targeted distinction, and/or poorly formulated) or to the inadequacy of the distinctions made in the literature. In the discussion section of this chapter we shall return to these two options.

Next we conducted a series of less ambitious analyses. Using exploratory factor analysis, with principal axis factoring as the extraction method and direct oblimin as the rotation method, we examined per domain to which extent each of the major distinctions made sense. Tabachnick and Fidel (2001) propose that principal axis factoring should be chosen over principal components analysis when one does not simply want an empirical summary of the data set. When a study has been designed on the basis of underlying constructs that are expected to produce scores on the observed variables, and the researcher is interested in a theoretical solution uncontaminated by unique and error variability, principal axis factoring should be preferred. Principal axis factoring maximizes variance extracted by orthogonal factors and estimates communalities to attempt to eliminate unique and error variance from factors. Direct oblimin was chosen because there was reason to believe that the factors would not be independent (see Chapter 2), and therefore an oblique rotation, where the factors may be correlated, made more sense than an orthogonal rotation.

Thereafter, we analysed the internal consistency of the scales in each of the three decision-making domains. A first analysis was conducted on the correlations between items that were paired in the development of the questionnaire because they were meant to address the

[1] I am indebted to Dr Marcel Croon of Tilburg University, Netherlands, who conducted these analyses.

same issue. The absence of a clearly positive correlation between the items in a pair pertaining to the same issue would mean that one of the items (or perhaps both) was inadequate. A second analysis used Cronbach's alpha (α) to assess whether the items sampled for each decision-making domain formed internally consistent scales. In the event that not all items were retained, exploratory factor analysis was conducted again with the remaining items. In the following we report the results found for the total sample (N = 255); the findings for the three separate groups of respondents were similar, unless noted otherwise.

Rational domain

The two-factor solution presented in Table 4.1 shows that all managing information items had the highest loading on the first factor, and that several had a negative loading on the second factor. Ten of the twelve items of managing alternatives had the highest loading on the second factor. There are two clear exceptions, item R17 (going for the best solution versus going for an expedient solution) and item R18 (analysing too long versus missing the best alternative) had a substantial loading on the first factor. Both items concern the speed-accuracy trade-off when analysing alternatives, which respondents probably related to the speed-accuracy trade-off when analysing information. The scree test suggested that three factors might be extracted. Inspection of the three-factor solution (Eigenvalues = 3.6, 2.3, 1.7) showed that managing information items were divided over two factors, but not in a way that seemed related to secondary distinctions made in Chapter 3. Therefore, we decided to use the distinction between managing information items and managing alternatives items in further analyses.

Since items were constructed in pairs meant to address a similar topic, correlations between these pairs should be positive, even though they were formulated with emphasis on positive and negative aspects of the same topic (see Chapter 3). This was found to be the case; all the correlations were positive and statistically significant (Table 4.2).

Table 4.1 *Exploratory factor analysis of Rational domain items – Self-Reports*

Total Sample (N=255)		
Structure Matrix	**Factor 1**	**Factor 2**
Managing information items		
R1	**.500**	.231
R2	**.383**	.234
R3	**.521**	.216
R4	.224	-.018
R5	.282	-.113
R6	**.532**	-.004
R7	.275	-.171
R8	.344	-.119
R9	**.455**	.102
R10	**.506**	-.021
R11	**.459**	-.120
R12	**.531**	-.167
Managing alternatives items		
R13	-.024	.330
R14	-.029	.323
R15	-.072	**.648**
R16	-.191	.223
R17	**.512**	-.041
R18	**.489**	-.001
R19	-.043	.242
R20	-.077	.145
R21	.104	**.374**
R22	.015	**.608**
R23	-.024	.198
R24	.054	.154
Factor Correlation Matrix	**Factor 1**	**Factor 2**
Factor 1	1	-.048
Factor 2	-.048	1

Table 4.2 *Pearson's correlations of items addressing the same topic in the Rational domain – Self-Reports*

Paired items	Total Sample (N=255)
R1 – R2	..339**
R3 – R4	.171**
R5 – R6	.163**
R7 – R8	.142*
R9 – R10	.312**
R11 – R12	.409**
R13 – R14	.144*
R15 – R16	.172**
R17 – R18	.283**
R19 – R20	.188**
R21 – R22	.229**
R23 – R24	.123*

** p < .01; * p < .05 (1-tailed)

The twelve managing information items had a consistency of α = .72, for managing alternatives items this value was α = .50. Table 4.3 shows that all items had a positive item-test correlation. If the two items of the latter scale with a high loading on the managing information factor are added to the existing 12 items, a 14-item Information scale is available with an acceptable internal consistency of α = .76 (Field, 2005; Nunnally & Bernstein, 1994). For the 10-item scale of managing alternatives, α = .57. This value could be somewhat enhanced, by deleting more items. However, we decided against this strategy of seeking more consistent scales, for three reasons. First, there is some risk of capitalizing on error variance, which cannot be counteracted without psychometric checks on shrinkage effects or cross-validation (Wiggins, 1973). Second, the coverage of a domain would decrease when the number of items was reduced. Third, with the items constructed on the basis of a scheme derived from the literature, moving items around would compromise the theoretical basis for scale construction.

When comparing the results obtained for the three groups, only minor differences in item-test correlations were found, and these did not lead to reconsidering the selection of items for the scales. To examine the relationship between the two scales, we computed the correlation between the most optimal managing information scale (i.e. with 14 items) and the managing alternatives scale (with 10 items). The value was r = -.02.

Table 4.3 *Internal consistency of the items in the Rational domain – Self-Reports*

Managing information items Total sample (N=255)		
Items (12)	**Corrected Item-Total Correlation**	**α if item deleted**
R1	.451	.690
R2	.332	.709
R3	.480	.686
R4	.223	.720
R5	.271	.715
R6	.440	.693
R7	.214	.722
R8	.301	.711
R9	.335	.708
R10	.379	.702
R11	.374	.702
R12	.439	.693
Cronbach's α		.723

Managing alternatives items Total sample (N=255)		
Items (12)	**Corrected Item-Total Correlation**	**α if item deleted**
R13	.286	.452
R14	.318	.450
R15	.314	.438
R16	.141	.492
R17	.009	.534
R18	.064	.513
R19	.158	.490
R20	.090	.503
R21	.351	.434
R22	.411	.430
R23	.080	.514
R24	.164	.487
Cronbach's α		.502

In summary, the analysis of the Rational domain allowed for the identification of a managing information scale, more or less in line with expectations. A possible managing alternatives scale had a low reliability; perhaps further development to improve reliability could lead to a more acceptable scale. Considering the analyses together, the results suggest that managing information items explain most variance in the Rational domain.

Political domain

Exploratory factor analysis on the 24 items in the Political domain showed that a two-factor solution (Eigenvalues = 2.5, 2.0) did not fit the data at all. In Table 4.4 factor loadings are scattered across the two factors and generally are low (< .35). Of the eight items with a loading > .35, three are not on the expected factor. Solutions extracting one factor and three factors (Eigenvalues = 2.5, 2.0, 1.8) did not provide better outcomes.

When correlating the items formulated in a pair (Table 4.5), only five of the twelve values turned out to be significantly positive, pointing to substantial problems in the operationalisation of this domain.

Table 4.4 *Exploratory factor analysis of Political domain items – Self-Reports*

Total Sample (N=255)		
Structure Matrix	**Factor 1**	**Factor 2**
Managing information items		
P1	.144	-.084
P2	.115	-.198
P3	.097	.295
P4	-.043	**.378**
P5	-.009	.077
P6	.040	-.059
P7	.141	.074
P8	.034	.310
P9	**.528**	.163
P10	**.463**	.225
P11	-.022	.199
P12	**.512**	-.146
Managing alternatives items		
P13	-.296	-.214
P14	**.482**	-.403
P15	-.181	-.002
P16	.127	.024
P17	.192	-.047
P18	.220	**.388**
P19	.181	.048
P20	-.033	**.435**
P21	.223	-.216
P22	.273	-.124
P23	.260	-.141
P24	**.399**	-.220
Factor Correlation Matrix	**Factor 1**	**Factor 2**
Factor 1	1	-.056
Factor 2	-.056	1

Table 4.5 *Pearson's correlations of items addressing the same topic in the Political domain – Self-Reports*

Paired items	Total Sample (N=255)
P1 – P2	.219**
P3 – P4	.051
P5 – P6	-.047
P7 – P8	.167**
P9 – P10	.327**
P11 – P12	.024
P13 – P14	-.042
P15 – P16	.112*
P17 – P18	-.018
P19 – P20	.068
P21 – P22	.410**
P23 – P24	.065

** $p < .01$; * $p < .05$ (1-tailed)

The internal consistency of the managing information scale was α = .38; for the managing alternatives scale a value was found of α = .41 (Table 4.6). By successively deleting items, the value of α could not be increased substantially. With only three items left (P9, P10, P12), a value of α = .55 was reached. These three items were all concerned with directness versus indirectness in the communication of information. For the managing alternatives scale, the most consistent subset of three items (P21, P22, P23) showed α = .58. These three items all referred to participation in decision-making. Therefore, for both managing information and managing alternatives, a three-item scale would still show an internal consistency below a minimum acceptable limit (Field, 2005; Nunnally & Bernstein, 1994). Apart from the need for cross-validation, a scale of three items to describe a domain that appears in the literature as complex and varied should be considered inadequate.

Table 4.6 *Internal consistency of the items in the Political domain – Self-Reports*

Managing information items Total sample (N=255)		
Items (12)	**Corrected Item-Total Correlation**	**α** if item **deleted**
P1	.119	.367
P2	.101	.370
P3	.212	.334
P4	.120	.365
P5	.055	.386
P6	.008	.395
P7	.086	.377
P8	.137	.359
P9	.294	.287
P10	.222	.336
P11	.119	.365
P12	.118	.366
Cronbach's α		.380

Managing alternatives items Total sample (N=255)		
Items (12)	**Corrected Item-Total Correlation**	**α** if item **deleted**
P13	.014	.420
P14	.120	.394
P15	.085	.404
P16	.187	.370
P17	.029	.419
P18	.135	.386
P19	.137	.386
P20	.019	.429
P21	.314	.316
P22	.282	.338
P23	.205	.364
P24	.224	.361
Cronbach's α		.405

Analysis of internal consistency for each of the three sets of respondents, showed some differences in the results. When only items with item-total correlations above .20 are considered, items retained for the managing information scale in the Business group are P3, P4, P9, P10, P11, P12, with α = .52; in the MBA group, P9, P10, and P12 are retained with α = .64; in the Military group P3, P4, P5, P8, P11 are retained, with α = .48. For the managing alternatives scale, in the Business group only P21, P22, and P23 are retained, for

α = .66; in the MBA group P14, P18, P21, P22, and P23 are retained for α = .56; and in the Military group P14, P16, P21, P22, P23, and P24 are retained, with α = .68.

The conclusion is inescapable that the Political domain as described in the literature was not captured by the items in the questionnaire. No adequate factorial representation could be found, and even after deletion of most items only small clusters with marginal reliability remained. In the discussion section of this Chapter we shall come back to possible reasons for these findings. Here it is important to note that neither the managing information scale nor the managing alternatives scale meets minimum psychometric conditions for the comparison of individuals or groups of individuals.

Entrepreneurial domain

For the Entrepreneurial domain, the two-factor solution (Eigenvalues = 4.4, 1.9) showed that all managing alternatives items had the highest loading on the same factor, and that the managing information items were scattered between the two factors (see Table 4.7). We also examined the one-factor solution and the three-factor solution (Eigenvalues = 4.4, 1.9, 1.4). In the three-factor solution, each of the managing alternatives items still had the highest loading on the first factor. Managing information items were scattered over the second and third factor, but not in a way that seemed to ease interpretation. Managing alternatives items clearly constitute a dominant factor, suggesting that the Entrepreneurial domain might perhaps be represented adequately by a single scale containing managing alternatives items.

The correlations between the pairs of items addressing related topics were statistically significant for ten of the twelve pairs. Two pairs of managing information items (E1-E2 and E7-E8) were unrelated, suggesting that some items in this domain were not formulated adequately (Table 4.8).

Table 4.7 *Exploratory factor analysis of Entrepreneurial domain items – Self-Reports*

Total Sample (N=255)		
Structure Matrix	**Factor 1**	**Factor 2**
Managing information items		
E1	**.496**	-.228
E2	.094	-.108
E3	.306	.025
E4	.233	-.025
E5	**.387**	.355
E6	.080	**.450**
E7	.144	-.092
E8	.139	**.536**
E9	**.445**	-.124
E10	.310	-.081
E11	.310	-.247
E12	.303	**-.481**
Managing alternatives items		
E13	**.409**	-.080
E14	**.553**	-.079
E15	**.401**	.067
E16	**.617**	.054
E17	**.381**	-.080
E18	.185	-.043
E19	.193	.092
E20	**.675**	.203
E21	**.560**	.117
E22	**.561**	.031
E23	**.423**	.163
E24	**.349**	.110
Factor Correlation Matrix	**Factor 1**	**Factor 2**
Factor 1	1	-.029
Factor 2	-.029	1

Table 4.8 *Pearson's correlations of items addressing the same topic in the Entrepreneurial domain – Self-Reports*

Paired items	Total Sample (N=255)
E1 – E2	-.031
E3 – E4	.129*
E5 – E6	.212**
E7 – E8	-.047
E9 – E10	.156**
E11 – E12	.208**
E13 – E14	.179**
E15 – E16	.309**
E17 – E18	.218**
E19 – E20	.205**
E21 – E22	.441**
E23 – E24	.239**

** $p < .01$; * $p < .05$ (1-tailed)

The twelve items in the managing alternatives scale all showed a positive item-test correlation. The internal consistency reached a value of α = .75. This is considered to be a satisfactory value (Field, 2005; Nunnally & Bernstein, 1994). The twelve managing information items had a consistency of α = .51. When items with low item-total correlations in Table 4.9 were successively removed, α increased only slightly; with four items deleted (E2, E6, E7, E8) internal consistency reached a value of α = .58 and was close to its maximum value. A 9-item scale (deleting E2, E6 and E8) would provide the best balance between reliability (α = .57) and width of coverage of the domain. When comparing the results obtained for the three separate samples, no variations in item-test correlations were found that gave reason to reconsider the reported findings.

Table 4.9 *Internal consistency of the items in the Entrepreneurial domain – Self-Reports*

Managing information items Total sample (N=255)		
Items (12)	**Corrected Item-Total Correlation**	**α** if item **deleted**
E1	.409	.432
E2	-.042	.542
E3	.224	.483
E4	.232	.486
E5	.239	.479
E6	.075	.520
E7	.124	.513
E8	.117	.511
E9	.337	.448
E10	.284	.469
E11	.268	.470
E12	.130	.506
Cronbach's α		.512

Managing alternatives items Total sample (N=255)		
Items (12)	**Corrected Item-Total Correlation**	**α** if item **deleted**
E13	.365	.740
E14	.415	.733
E15	.401	.735
E16	.556	.717
E17	.305	.745
E18	.151	.758
E19	.199	.755
E20	.600	.715
E21	.509	.721
E22	.511	.723
E23	.364	.740
E24	.300	.748
Cronbach's α		.753

It was noted that the three managing information items with a substantial (> .35) loading on the first factor in Table 4.7 (E1, E5, E9) showed positive item-total correlations. In order to decide whether the Entrepreneurial domain should be covered by one or by two scales, we correlated the scores of the 9-item managing alternatives scale and the 12-item managing information scale. This correlation was r = .52, reaching a value of r = .82 after correction for attenuation (e.g., Cronbach, 1984). This implies that there is an overlap of the two scales for approximately 2/3 of the non-error variance, leaving a proportion of 1/3 non-

shared variance. When items of the two scales were combined, a reliability of approximately $\alpha = .80$ could be reached, only slightly better than the value of $\alpha = .75$ found for the original managing alternatives scale. Reasons for keeping the original two scales are the same as mentioned for the results of the Rational domain. Moreover, there was little to be gained from a combination. The substantial intercorrelation and the higher reliability points to the use of the managing alternatives scale as the better instrument to assess Entrepreneurial aspects of decision-making. At the same time, the high correlation has implications for the definition of this domain (see discussion section).

Exploratory analysis of the decision-making domains combined

To examine the relationships between the domains, an exploratory factor analysis was conducted with all 72 items of the questionnaire, again using principal axis factoring as the extraction method and direct oblimin for the rotation. The two factor-solution (Eigenvalues = 6.1, 4.4) showed two major sets of high factor loadings, with managing information items mainly from the Rational domain determining one factor, and managing alternatives items mainly from the Entrepreneurial domain determining the other factor. All items in the Political domain had factor loadings under .35, except for P11 (loaded in the managing information factor) and P14 (loaded in the managing alternatives factor). There were no items with loadings > .35 on both factors simultaneously.

These results are in line with those found in the analysis of the decision-making domains separately: Managing information is the main aspect of the Rational domain, managing alternatives is the main aspect of the Entrepreneurial domain, and the Political domain does not significantly contribute to the representation of decision-making behaviour as reflected in the self-report data.

It was noted that items R4, R5 and R7 in the Rational domain, and items E18 and E19 in the Entrepreneurial domain had factor loadings under .35, which raised some doubts as to the adequacy of these items to represent, respectively, managing information in the Rational domain and managing alternatives in the Entrepreneurial domain. To further investigate this, factor analysis was conducted with just the 12 items of managing information in the Rational domain and the 12 items of managing alternatives in the

Entrepreneurial domain (Table 4.10). Results continue to indicate that the items in question have factor loadings under .35. We considered that there was no sufficient evidence to delete these items from the scales, particularly if the item-total correlations are considered (Table 4.3 and Table 4.9).

Taken together the findings indicate that most of the reliable differences in scores can be captured with two scales, a managing information scale in the Rational domain and a managing alternatives scale in the Entrepreneurial domain. The correlation of these scales (with 12 items each) is $r = -.19$ ($p < .01$, 1-tailed).

Table 4.10 *Factor analysis of the 12 items for managing information in the Rational domain and the 12 items for managing alternatives in the Entrepreneurial domain – Self-Reports*

Total Sample (N=255)		
Structure Matrix	**Factor 1**	**Factor 2**
Rational domain items		
R1	.021	**.610**
R2	.080	**.431**
R3	.045	**.626**
R4	-.191	.288
R5	-.150	.311
R6	-.095	**.551**
R7	-.095	.225
R8	-.137	.313
R9	-.088	**.379**
R10	-.148	**.412**
R11	-.116	**.399**
R12	-.284	**.455**
Entrepreneurial domain items		
E13	**.421**	-.007
E14	**.491**	-.199
E15	**.452**	-.109
E16	**.612**	-.111
E17	.337	-.131
E18	.195	.080
E19	.221	-.127
E20	**.699**	-.316
E21	**.610**	-.035
E22	**.595**	-.181
E23	**.444**	-.129
E24	.343	-.086
Factor Correlation Matrix	**Factor 1**	**Factor 2**
Factor 1	1	-.202
Factor 2	-.202	1

Analysis of ratings by others

As mentioned before, participants in the Business group were asked to hand the questionnaire to a colleague and provide a set of ratings for this person. The colleague in turn rated himself/herself and also rated the original participant. In this section we examine the "ratings by others", provided by the 102 participants in the Business group.

The analysis followed the same steps undertaken for self-reports. We started by using exploratory factor analysis to assess the independence of managing information and managing alternatives in each decision-making domain, with principal axis factoring as the extraction method and direct oblimin as the rotation method (Table 4.11).

As was the case for self-reports, the Political domain has scattered item factor loadings, showing that the two-factor solution does not fit the data. The two main scales, managing information in the Rational domain and managing alternatives in the Entrepreneurial domain, tend to show slightly higher item loadings than Tables 4.1 and 4.7, supporting the decision to retain all 12 items originally formulated for each of these scales. The structural equivalence of self-reports and reports by others was determined for all items by means of Tucker's phi (φ), values of $\varphi > .90$ are seen as evidence that factors can be taken to be same (Van de Vijver & Leung, 1997). The first factor in the Rational domain (managing information items) and the first factor in the Entrepreneurial domain (managing alternatives items) met this criterion for equivalence, but not the second factor in either of the two domains (Table 4.12). Moreover, taking $\varphi = .90$ as a lower bound, lack of equivalence was found for both factors in the Political domain. These findings, undertaken with just self-reports and other-reports in the Business group, were much the same when computed for the self-reports of the total sample and other-reports in the Business group (Table 4.12).

Table 4.11 *Exploratory factor analysis of managing information and managing alternatives in the three domains - Ratings by others*

Rational Domain		
Business Group (N=102)		
Structure Matrix	**F. 1**	**F. 2**
Managing information		
R1	**.636**	.079
R2	**.594**	-.136
R3	**.675**	-.004
R4	**.456**	-.117
R5	.296	-.157
R6	**.564**	-.101
R7	**.427**	-.300
R8	**.506**	.019
R9	**.562**	.145
R10	**.494**	.041
R11	**.572**	.017
R12	**.507**	.006
Managing alternatives		
R13	.260	**.422**
R14	-.095	**.676**
R15	-.335	**.402**
R16	-.183	.182
R17	**.377**	.273
R18	**.568**	.124
R19	-.069	**.496**
R20	.057	**.544**
R21	.136	**.498**
R22	-.198	**.441**
R23	**.429**	.045
R24	.095	**.375**
Factor Correlation Matrix	**F. 1**	**F. 2**
Factor 1	1	-0.30
Factor 2	-.030	1

Political Domain		
Business Group (N=102)		
Structure Matrix	**F. 1**	**F. 2**
Managing information		
P1	.310	-.154
P2	.162	.257
P3	.073	-.194
P4	-.026	-.125
P5	**.459**	.216
P6	.066	.249
P7	.286	**-.387**
P8	.094	-.236
P9	**.485**	-.055
P10	.321	**-.402**
P11	.048	**-.402**
P12	**.527**	-.044
Managing alternatives		
P13	.002	**.430**
P14	**.593**	.369
P15	.170	.227
P16	.215	.134
P17	**.407**	-.024
P18	.213	**-.632**
P19	**.348**	-.153
P20	-.097	**-.408**
P21	**.491**	.032
P22	.358	**-.390**
P23	**.421**	-.020
P24	**.519**	-.072
Factor Correlation Matrix	**F. 1**	**F. 2**
Factor 1	**1**	**-.029**
Factor 2	**-.029**	**1**

Entrepreneurial Domain		
Business Group (N=102)		
Structure Matrix	**F. 1**	**F. 2**
Managing information		
E1	**.500**	.231
E2	-.013	**.498**
E3	**.392**	.136
E4	.237	-.019
E5	.149	**-.493**
E6	-.032	**-.575**
E7	.005	-.029
E8	.158	-.235
E9	**.388**	.194
E10	.278	**.422**
E11	.337	**.379**
E12	.102	.036
Managing alternatives		
E13	**.527**	-.016
E14	**.655**	-.052
E15	**.650**	.040
E16	**.526**	-.127
E17	**.441**	-.089
E18	**.359**	-.074
E19	**.349**	.050
E20	**.783**	-.182
E21	**.539**	-.257
E22	**.479**	-.277
E23	**.584**	-.144
E24	**.477**	.022
Factor Correlation Matrix	**F. 1**	**F. 2**
Factor 1	**1**	**-.014**
Factor 2	**-.014**	**1**

Table 4.12 *Tucker's φ for ratings by others and ratings by self in each of the three domains*

Ratings by others Business Sample (N=120) compared with:	**Rational**	
	Factor 1	**Factor 2**
Self-Reports Business Sample (N=120)	**.91**	.45
Self-Reports Total Sample (N=255)	**.93**	.76

Political	
Factor 1	**Factor 2**
.71	.63
.86	.77

Entrepreneurial	
Factor 1	**Factor 2**
.95	.72
.96	.69

An exploratory factor analysis was also conducted with all 72 items of the questionnaire, using principal axis factoring as the extraction method and direct oblimin for the rotation. Again, the two factor-solution (Eigenvalues = 7.7, 7.2) showed two major sets of high factor loadings, with managing information items mainly from the Rational domain determining one factor and managing alternatives items mainly from the Entrepreneurial domain determining the other factor. Items in the Political domain continued to have factor loadings under .35, except for P11 (loading on the managing information factor) and P3, P9, P12, and P14 (loading on the managing alternatives factor).

These findings continue to indicate that most of the reliable differences in scores can be captured with two scales, the managing information scale in the Rational domain and the managing alternatives scale in the Entrepreneurial domain. We conducted exploratory factor analysis on the 12 items of each scale (Table 4.13), for comparison with results obtained for self-reports (Table 4.10). The two-factor solution (Eigenvalues 4.9, 3.8) tend to show slightly higher item loadings than those of self-reports, with only items R5 and E19 having factor loadings (slightly) lower than .35. The structural equivalence of self-reports and ratings by others on these two factors was analysed by means of Tucker's φ. For the first factor, φ = .97 and for the second φ=.95, establishing the structural equivalence of these factors in the self-ratings and ratings by others analyses.

When we computed Cronbach's α for the reports by others, somewhat higher values were found, α = .82 for the scale including managing information items in the Rational domain, and α = .83 for the scale including managing alternatives items in the Entrepreneurial domain. This supports the somewhat higher consistencies suggested by the factor analysis.

Table 4.13 *Factor analysis of the 12 items for managing information in the Rational domain and the 12 items for managing alternatives in the Entrepreneurial domain – Ratings by others*

Business group (N=102)		
Structure Matrix	**Factor 1**	**Factor 2**
Rational domain items		
R1	.038	**.643**
R2	-.032	**.616**
R3	.068	**.679**
R4	-.055	**.494**
R5	-.230	.257
R6	-.007	**.560**
R7	-.217	**.476**
R8	-.220	**.511**
R9	.037	**.497**
R10	-.095	**.475**
R11	-.132	**.588**
R12	-.201	**.480**
Entrepreneurial domain items		
E13	**.512**	-.055
E14	**.651**	-.053
E15	**.639**	-.053
E16	**.586**	-.008
E17	**.453**	-.095
E18	**.349**	.002
E19	.323	-.025
E20	**.824**	-.171
E21	**.580**	-.164
E22	**.518**	-.296
E23	**.577**	.022
E24	**.484**	-.139
Factor Correlation Matrix	**Factor 1**	**Factor 2**
Factor 1	1	-.144
Factor 2	-.144	1

When evaluating these findings it has to be considered that there is some confounding between self-reports and reports by others, since the same participants provided both kinds of ratings. Nevertheless, the reports by others corroborate the structural make-up of the questionnaire as derived from the self-report data: The scales for the Political domain are weak at best, managing information and managing alternatives items in the Entrepreneurial domain assess an overlapping aspect of decision-making, namely the use of alternatives, and in the Rational domain most of the variance accounted for can be explained in terms of managing information. All in all, the results for the reports-by-others mode of rating do not give reason to change the decision about using two scales for further analysis, the 12-item

scale for managing information in the Rational domain and the 12-item scale for managing alternatives in the Entrepreneurial domain.

Study 2: Item categorization task

In study 2, the cognitive structure of the items in each of the three decision-making domains was further investigated by means of a free sorting task. Participants were asked to sort the 24 items of a domain in categories, placing items that addressed similar issues in the same category and items that did not belong together in different categories.

Method

Participants

Participants were Portuguese undergraduate students in their final year of Management studies at Universidade Técnica de Lisboa. Data was collected in six classes of Human Resource Management, by three different lecturers. Two classes (N=41) were given the Rational domain items, two classes (N=66) were given the Political domain items, and two classes (N=69) were given the Entrepreneurial domain items. The total number of participants was 176, of which 54% were male and 46% were female. The age of participants ranged from 20 to 30 years, the mean being 22.2 years and the standard deviation 1.9 years. Most participants (85%) had less than one year working experience and more than half (64%) had no working experience at all.

Instruments, procedure, and missing values

The 24 items in each domain were numbered randomly. Each participant was given the printed items and asked to sort them in categories of similar items. It was specified that the number of categories could range from 1 (all items belonged in the same category) to 24 (no items belonged in the same category). In front of each printed item was a blank space, were participants were to write a number (from 1 to 24). Participants were asked to assign the same number to all items which in their opinion belonged to the same category. No missing values were found in the answers received.

Analysis of item categorization

The similarity between two items was scored as the number of times the items were placed in the same category. Clusters of similarity ratings were calculated and inspected. For further analysis, use was made of a representation of the distances between all items in the form of the dissimilarity scores, i.e., the number of times two items were not placed in the same category. The dimensional structure was recovered by means of Nonmetrical Dimensional Scaling (NMDS) using PROC MDS in SAS[2], which provides an estimate of the location of each item on each dimension extracted, as well as estimates of the explained variance per extracted dimension and the lack of fit (stress) of a solution.

Visual examination of the similarity matrix (i.e., the number of times each pair of items was placed in the same category) showed that there were smaller clusters of items rated together by a majority of the respondents. The clearest cluster for the Rational domain included R1, R2, R3, R4, and R6, with R5, R7, and R8 as a possible extension. For the Political domain, high scores were found for some pairs (for P13-P15 corresponding to 91% sortings in the same category, and for P3-P4 to 83%). A more extensive but fuzzier cluster included P1-7. In the Entrepreneurial domain, the clearest cluster included E13, E15, E16, E21, E22, and E23. However, there was no evidence in any domain of an overall structure covering a substantial part of the items in that domain. This was borne out by the score distributions for the numbers of categories used by participants, summarized in Table 4.14. The mean number of categories was as high as 7.11 for the Political domain. This was significantly higher than for the Rational domain ($p < .05$), though not for the Entrepreneurial domain.

Table 4.14 *Distributions of numbers of clusters in each domain found with the sorting task*

	N	Smallest n of categories	Largest n of categories	Mean	Std
Rational	41	2	14	5.66	2.99
Political	66	3	17	7.11	3.40
Entrepreneurial	69	2	13	6.13	2.56

[2] I appreciate the help of Dr Johnny Fontaine, University of Gent, Belgium, in carrying out these analyses

NMDS solutions did not show a clear dimensional structure for any of the domains. To obtain a stress measure of less than .10, as many as four or five dimensions were needed per domain. This is a relatively large number for 24 items. In Table 4.15 it can be observed that the stress measure is gradually decreasing in each of the three domains. Hence, this measure could not be used as a scree test to decide on an optimal number of dimensions.

Table 4.15 *Stress for various numbers of dimensions*

Dimension	Rational	Political	Entrepreneurial
1	.310	.297	.471
2	.186	.196	.252
3	.142	.122	.169
4	.104	.087	.123

The category data (based on an item by item matrix) could not be compared directly with the self-report and reports-by-others (each based on a person by item matrix). However, the findings lead largely to the same conclusions. First, there is not a clear and simple structure in any domain. Second, the Political domain appears as the most chaotic of the three domains. Third, the most distinct clusters are found with managing information items in the Rational domain and managing alternatives items in the Entrepreneurial domain.

Summary and discussion

The construction of the decision-making questionnaire was derived from a literature review and was based on a design matrix with three domains (Rational, Political, Entrepreneurial), two activities (managing information and managing alternatives), three phases (awareness, analysis, and action), and two formulations of item content (positive aspects and negative aspects). As mentioned in Chapter 3, the main distinctions were captured in a 3*2 matrix of the three decision-making domains and the two activities of managing information and managing alternatives. The distinctions of the three phases and of the two formulations were used as aids in the construction of the questionnaire.

The core findings of this chapter can be summarized as follows: Two dimensions of decision-making in management context were identified. We found differences between

individuals in the use of information in the Rational domain, and differences in the use of alternatives in the Entrepreneurial domain. The Political domain failed to show consistency between items for both managing information items and managing alternatives items.

From the analysis of self-ratings and other-ratings in study 1, as well as from analysis of the item categorization in study 2, it became apparent that only two of the three domains (Rational and Entrepreneurial) could be consistently retrieved from the responses of participants. Results also revealed a distinction between items related to managing information and items related to managing alternatives, but not as a separate scale within a domain. In the Rational domain, items related to managing information formed a scale of which the reliability reached an acceptable level, but the reliability of items related to managing alternatives was poor. The reverse happened in the Entrepreneurial domain, where the reliability of items related to managing alternatives was satisfactory, but the reliability of items related to managing information was poor.

There are several possible reasons why only the Rational and the Entrepreneurial domains were retrieved, while the Political domain was not captured by the items in the questionnaire. First, the items may have been formulated in such a way that they were poorly understood by participants, or understood in another way as intended. This possibility hardly appears to apply for the Rational and the Entrepreneurial domains. Item pairs which were addressing the same topic, where one item was formulated to address positive aspects and the other to address negative aspects of that topic, turned out to be correlated positively with only two exceptions in 24 pairs of items. Hence, it is all the more striking that such correlations with few exceptions were absent for the Political domain. Although less than optimal formulation cannot be entirely excluded, it does not make sense that items for two domains were largely formulated so that they were understood as intended, but that that for the third domain the formulation of the items dismally failed. We like to argue that there must be one or more additional reasons for the absence of results in the Political domain expected on the basis of the literature.

A second possible reason for not retrieving the Political domain is that the distinctions suggested by the literature may not function at the individual level as general styles or traits

of decision-making. As reviewed in Chapter 2, the literature from which the three domains of decision-making were derived consists mainly of theoretical views on ways to group existing empirical studies. While many empirical studies pertaining to each separate domain can be found, we were only able to find two empirical studies in which the three domains were identified: Kirton (1976) and Miller (1987).

Kirton's (1976) empirical study clearly identified three factors of decision-making ("Weberian", "Mertonian", and "Originality"), closely related to the three domains specified in the present study. Subsequent research has shown stability of the three-factor solution (e.g., Bagozzi & Foxall, 1996). However, an inspection of the items pertaining to each factor in Kirton's work shows that items usually considered as political behaviour in the literature are not always in the Mertonian (Political) factor. For example, "can stand out in disagreement against the group" is included in the Originality (Entrepreneurial) factor. Also, the Mertonian factor includes items that are identified in the literature as pertaining to the Rational domain (e.g., "works without deviation in a prescribed way") and the Entrepreneurial domain (e.g., "never seeks to bend or break the rules"). In other words, Kirton's study also suggests inconsistencies in the Political domain.

Miller's (1987) empirical study, which also identified three factors ("rationality", "interaction", and "assertiveness"), was conducted at the organisational level of analysis and there may not be isomorphism of dimensions across organisational and individual levels of analysis (Bliese, Chan, & Ployhart, 2007; Kozlowski & Klein, 2000; Van de Vijver, Van Hemert, & Poortinga, 2008). At the risk of suggesting an invalid post-hoc interpretation, we like to mention that some evidence from the literature points to the fact that the political domain might be more profitably operationalised above the individual level (e.g., Darr & Johns, 2004; Maslyn & Fedor, 1998).

The literature points to a third potential explanation, namely that political behaviour tends to be context-specific, that is, more dependent on the situation than on the individual. In their review of definitions of political behaviour, Drory and Romm (1990) found that situational characteristics (e.g., conflict and uncertainty) were often considered as a defining element of political behaviour. Several authors have also referred to the fact that

individual political behaviour, both in its degree and in its specific expression, varies according to the perceived level of organisation politicization (e.g., Gresov & Stephens, 1993; Harrell-Cook et al., 1999).

As mentioned earlier, the distinction between managing information and managing alternatives in the 3*2 matrix was only partially retrieved. In the Entrepreneurial domain the distinction between managing information and alternatives appears to have limited use, suggested by a correlation of .82 between the two scales (after correction for attenuation). In contrast, the correlation between alternatives and information in the Rational domain was essentially zero ($r = -.02$).

The fact that Driver et al. (1993) retrieved information and alternatives in their model seems to indicate that a different operationalisation of the managing alternatives scale in the Rational domain is necessary. These authors' model analyses the preferred degree of comprehensiveness when using information and when using alternatives, and is therefore closely related to the Rational domain in the present study. However, the methodology used consisted of decision-making scenarios, where the responses could be due to the characteristics of the decision situation and not to individual characteristics or decision-making styles. Therefore, it remains uncertain whether the fact that the present study does not cross-validate Driver et al.'s findings is due to the use of a different methodology or to the fact that managing information covers the essential aspects of the Rational domain.

Beyond the main 3*2 matrix, we also analysed the distinction between the three phases of decision-making used in the development of the questionnaire. This distinction was considered useful for the construction of the questionnaire because previous studies had revealed that each phase requires different skills and therefore produces different repertoires of behaviour (e.g., Harrison, 1995). While the distinctions between the phases helped as a tool to cover the three domains of decision-making systematically during the construction of the questionnaire, it is not surprising that the phases could not serve to organise individual differences. Several studies have shown that the phases can come in any order, can be repeated, and can be intermingled (e.g., Hickson et al., 1986; McCall & Kaplan, 1990; Mintzberg et al., 1976; Nutt, 1984; O'Reilly, 1983; Poole, 1983). In any

case, the three phases were not prominent in the patterning of the responses of the present study. Three-factor solutions did not lead to an identifiable pattern of factor loadings in any of the three domains. We inspected the factor loadings with the distinction between awareness, analysis, and action in mind, but did not find any indication that this influenced the patterning either in self-reports or in other-reports.

The distinction between the positive and negative aspects for each item topic was considered useful because it allowed for a check on consistency in participants' answers. Since the adequacy of a decision-making behaviour depends on the type of decision, any decision-making behaviour can have both positive and negative implications, depending on the situation/decision at hand (e.g., Driver et al., 1996; Starbuck & Milliken, 1998). If individual characteristics are reflected, participants' answers on positive and negative aspects on the same item topic should be positively correlated. This was the case for all pairs of items in the Rational domain, and for 10 of the 12 pairs in the Entrepreneurial domain. The two pairs that were not significantly correlated in the Entrepreneurial domain concerned managing information issues, that is, all 6 pairs of items concerning managing alternatives issues were significantly and positively correlated. For the Political domain, only 5 of the 12 pairs were significantly correlated (of which 3 were related to information issues and 2 to alternatives issues).

Taken together, the findings indicated that most of the reliable differences in scores can be captured with two scales. The first scale includes the 12 items related to managing information in the Rational domain, and the second scale includes the 12 items related to managing alternatives in the Entrepreneurial domain. In following chapters, they will be labelled, respectively, as the Managing Rational Information (MRI) scale and the Managing Entrepreneurial Alternatives (MEA) scale. The reliability of these two scales can be considered as adequate, in both cases Cronbach's $\alpha > .70$ for self-reports and Cronbach's $\alpha > .80$ for other-reports. The two scales are correlated, but factor analysis shows that the items in the two scales form two distinguishable factors. Results were similar in the self-reports of three independent sets of Portuguese respondents, indicating that the findings for these scales very likely will stand up to replication, at least within this country.

Chapter 5
Analysis of decision-making correlates with Portuguese participants

Findings from the previous chapter indicate that individual differences in decision-making domains, as retrieved from responses of Portuguese participants, are reflected in two scales, one including items on managing information in the Rational domain, and the other including items on managing alternatives in the Entrepreneurial domain. The first scale, labelled Managing Rational Information (MRI), ranges from satisficing to maximizing behaviour; the second scale, labelled Managing Entrepreneurial Alternatives (MEA), ranges from pragmatic to visionary behaviour.

The literature identifies several variables that can account for sources of variance in decision-making behaviour, and empirical studies have provided some evidence on associations that can be expected between those variables and scores on the two decision-making scales under study. If predictions based on literature review are supported, this may be interpreted as a form of construct validity (e.g., Campbell & Fiske, 1959). This chapter will review the literature on associations between the two decision-making scales and demographic and organisational variables. Values are also included in the study since correlations between values and decision-making are well-established (e.g., Hofstede, 1980, 1991; Jackofsky & Slocum, 1988). Thereafter, we will analyse whether correlations derived from the literature are found with the Portuguese sample mentioned in the previous chapter.

This chapter consists of four sections. The first section presents possible predictions for decision-making correlates derived from the literature. The second and third sections present, respectively, the methodology and results of the study. The last section provides a summary and discussion of the results obtained.

Predictions and explorations

From the extensive literature on decision-making correlates, we observed that in many instances evidence was insufficient for the formulation of predictions. Contradictory findings were often reported, and it was unclear whether or not this was due to different methodologies being used. Nevertheless, for some correlates it was possible to identify a pattern of agreement among authors. For four variables - age, position in the hierarchy, experience, and tenure in the organisation, correlations with the MRI and MEA scales could be reasonably anticipated. For two variables - type of function and level of managerial education, an association with the MEA scale could be predicted but not with the MRI scale. One more demographic variable - gender - and two organisational variables - size and sector - were included in the study. For these three variables we considered the evidence insufficient to generate predictions. The following sub-sections present a review of the associations found earlier between decision-making and demographic and organisational variables, as well results that are expected. Thereafter, we present predictions of associations between decision-making and values, based on Schwartz's (1992) model.

Age, experience, and hierarchical position

These three variables are usually highly inter-correlated. The older a manager, the more likely it is that he/she has a longer managerial experience and a higher position in the hierarchy. Therefore, predictions made for associations between these three variables and the two decision-making scales will be similar in direction.

As far as the MRI scale is concerned, older adults have been found to possess more well-developed knowledge structures, scripts, and action plans, which allows them a more selective (or satisficing) use of information (e.g., Baltes & Baltes, 1990; Baltes & Smith, 1990; Berg & Sternberg, 1985; Salthouse, 1991). Older adults have also been found to use more heuristics, which allows them to use less information (e.g. Johnson, 1990). Similarly, several studies found evidence that experience leads to greater development of and dependence on schematic knowledge structure and mental models, which expedites information searches required by decision-making situations (Bonner, 1990; Endsley, 1995; Ericsson & Straszewiski, 1989; Frederick, 1991; Isenberg, 1986).

Managers higher in the hierarchy tend to be less thorough in information searches and use more intuitive processes in information analysis (e.g. Agor, 1984; Clarke & Mackaness, 2001). For example, Clarke and Mackaness found that chief executives, when compared with executives in lower-level functions, relied more on intuition, used a higher proportion of non-factual information, and focused more on the key elements of a decision. On the other hand, Taylor (1975a) found that older managers sought more information. Lyles and Mitroff (1980) found that managers higher in the hierarchy agreed more with questionnaire items favouring a rational approach to problem solving, that is, the use of scientific and mathematical techniques, rather than the use of intuition and emotions. Also, no significant results were found in the study of Lyles and Mitroff (1980) regarding the influence of experience on agreement with the rational approach.

Despite these contradictory results (Taylor, 1975a; Lyles & Mitroff, 1980), it appears that a wider depth of experiences, associated with older age and higher hierarchical positions, allows managers to rely more in intuition, to need less information, and, consequently, to arrive more quickly at a decision. Therefore, we expect that older managers, with longer experience, and in higher positions will describe themselves as more satisficing (or less maximizing) on the MRI scale.

As far as the MEA scale is concerned, age is considered by several authors as an important variable for entrepreneurial behaviour (e.g., Gartner, 1985; Liles, 1974; Thorne & Ball, 1981). Younger managers are more prone to attempt novel or untried solutions and to take risks, while older managers are more conservative towards novelty and risk, and more committed to the status quo (Hambrick et al., 1993; Hambrick & Mason, 1984; Hitt & Tyler, 1991; Mostafa, 2005; Mostafa & El-Masry, 2008; Stevens, Beyer, & Trice, 1978).

Hierarchy level is sometimes put forward as an explanation for resisting change and for commitment to current ways of functioning (e.g., Hambrick et al., 1993; Vancil, 1987; Wanous, 1980). Individuals acquire higher posts in the organisational hierarchy when their abilities are judged to be appropriate. Therefore, as individuals move up the hierarchy they tend to become convinced of the correctness or importance of current organisational ways, since they have gained from them and risk loss of current position if they are changed.

Several studies have noted that top managers, in particular, have great difficulty formulating and executing change even in crisis situations (Miller & Friesen, 1980; Starbuck, Greve, & Hedberg, 1978).

There appears to be a consensus in the literature that older managers and in higher hierarchical positions tend to be prefer more conservative and less novel alternatives. We were unable to find studies relating length of professional experience to entrepreneurial behaviour but, as mentioned earlier, it seems likely that this variable is related to age and hierarchy. Therefore, we expect that older managers, with longer experience, and in higher hierarchical positions will describe themselves as less visionary (or more pragmatic) on the MEA scale.

Tenure

Tushman and Romanelli (1985) argued that the longer individuals have been with the organisation, the more likely it is that "habit becomes a substitute for thought" (p. 193). According to Fredrickson and Iaquinto (1989), habits are socializing effects of tenure and lead to a reliance on established decision-making practices, which may limit several aspects of comprehensiveness such as information search and the range of alternatives considered. Miller (1991) found that CEOs who had been in their jobs for a longer time limited the sources of information that they considered useful, ultimately relying on a very restricted number of sources. Wally and Baum (1994) found a significant positive correlation between previous experience with a decision situation and the pace of decision-making. Tenure may lead to less comprehensive and therefore faster information search and analysis. We expect that managers with longer tenure will describe themselves as more satisficing (or less maximizing) on the MRI scale.

Several authors argue that tenure in the organisation explains why some managers are not open-minded towards change (Finkelstein & Hambrick, 1990; Hambrick et al., 1993; Hambrick & Mason, 1984; Hofer, 1980; Katz, 1982; Miller, 1991). The longer executives stay in an organisation, the more they develop habits and routines towards information sources and responses to internal and external issues which, in turn, may limit their ability to consider alternative ways of functioning. Empirical studies have shown that tenure is

associated with lower levels of strategic change, as well as with preference for stability strategies and preference for efficiency strategies over riskier differentiation alternatives (Boeker, 1997; Chaganti & Sambharya, 1987; Finkelstein & Hambrick, 1990). Therefore, we expect managers with longer tenure to describe themselves as more pragmatic (or less visionary) on the MEA scale.

Type of Function

The early work of Dearborn and Simon (1958) is often cited as evidence of the influence of function on selective perception and lack of comprehensiveness in information processing. Hambrick and Mason (1984) believed that top managers with large experience in peripheral-functions (internally-oriented functions, not integrally involved with the organisation's core activities) might practice more thorough and detailed decision-making, in an attempt to compensate for their relatively low level of practical experience. However, they did not conduct an empirical test of this proposition.

As far as the relationship between function and entrepreneurial behaviour is concerned, Gupta and Govindarajan (1984) focused on previous functions held and found that managers with greater marketing and/or sales experience tended to be more successful at implementing new strategies. Hoffman and Hegarty (1993) found that top managers with experience in externally-oriented functions (marketing, and research and development) had more influence on product-market innovations. Therefore, we expect that managers in externally-oriented functions will describe themselves as more visionary (or less pragmatic) on the MEA scale.

Education

Some studies have related education levels to more extensive (Dollinger, 1984) and to more detailed (Bantel, 1994) information search; other studies relating this variable to comprehensive decision-making found no significant associations (Lyles & Mitroff, 1980; Wally & Baum, 1994).

Education level has been found to be positively related to innovative behaviour and receptivity to the adoption of innovations (e.g., Bantel & Jackson, 1989; Becker, 1970;

Ekvall, 1996; Kimberly & Evanisko, 1981; Mostafa, 2005; Rogers & Schoemaker, 1971). Since our sample, as mentioned in the previous chapter, is mainly composed of managers holding a University degree, we will not be able to carry out a good test. However, since one group of the sample is composed of MBA students, it is reasonable to suppose that this group will on average have a higher education level. We expect that managers with higher education levels in management (MBA students) will describe themselves as more visionary (or less pragmatic) on the MEA scale.

Another discussed subject is type of formal education. Hambrick and Mason (1984) proposed that a substantial level of managerial education may lead to more thorough and detailed decisions. However, we found no empirical studies testing this. Kimberly and Evanisko (1981) examined type of formal education (management versus non-management) and found no associations with the adoption of organisational innovations.

Gender

Meyers-Levy (1989) proposed the selectivity hypothesis, according to which males are less comprehensive in information processing, use more simplifying heuristics, are less sensitive to details, tend to rely on a subset of available cues, and are less likely than females to process cues that are inconsistent with the ones perceived as most salient. Conversely, females are considered to be more comprehensive, effortful and detail-oriented, and less likely to use heuristics as surrogates for detail processing. Several empirical studies have provided evidence for the selectivity hypothesis (e.g., Benyamini, Leventhal, & Leventhal, 2000; Chung & Monroe, 1998, 2001; Darley & Smith, 1995; Meyers-Levy & Maheswaran, 1991). However, the selectivity hypothesis also suggests that gender differences in information processing are only found in specific circumstances (Meyers-Levy, 1989), and empirical research has shown that gender differences are not present in situations with low degree of incongruity among information cues (Meyers-Levy & Sternthal, 1991).

Studies on gender differences on indecisiveness, a concept associated with amount of information gathered and with time taken to make a decision (e.g., Frost & Shows, 1993; Rassin et al., 2007), have produced contradictory results. While some studies have found

that females score higher than males on indecisiveness (e.g., Rassin & Murris, 2005) and lower in decisiveness (e.g., Bouckenooghe, Vanderheyden, Mestdagh, & Van Laethem, 2007), other studies found no such differences (e.g., Patalano & Wengrovitz, 2006; Sari, 2007). Overall, the literature suggests that gender differences are only found in specific circumstances.

As far as the MEA scale is concerned, various empirical studies have researched differences in male and female entrepreneurs. A review of these studies reveals that few consistent differences have been documented and it is often argued that existing differences are irrelevant to females' capacity to initiate and manage a new venture (e.g., Ahl, 2002; Bonnett & Furnham, 1991; Chrisman, Carsrud, DeCastro, & Herron, 1990; Fischer, Reuber, & Dyke, 1993; Kalleberg & Leicht, 1991; Sexton & Bowman-Upton, 1990). With regard to innovation, contradictory results have also been found. Several authors argue that women are strong in generating ideas and innovation, and more likely to disrupt traditional structures oppressing creativity (e.g., Colgan & Ledwith, 1996; Helgesen, 1990; Rosener, 1995). On the other hand, some empirical studies have shown that male managers have significantly more favourable attitudes towards innovation, and also report higher discomfort towards organisational barriers to creativity (e.g., Harris & Gibson, 2008; Mostafa, 2005; Mostafa & El-Masry, 2008); others report no gender differences in the adoption of innovation strategies (e.g., Sonfield, Lussier, Corman, & McKinney, 2001).

Size

While some authors (e.g., Mintzberg, 1973a, Mintzberg & Waters, 1982) have argued that larger organisations encourage features of rational decision-making, such as more analytic and more systematic information gathering and analysis, other authors (e.g., Hambrick & Finkelstein, 1987) consider that size is accompanied by inertia and bureaucratic tendencies that limit the processes of information gathering and processing by individuals. Fredrickson and Iaquinto (1989) found that an increase in size (measured by number of employees) was accompanied by increasingly comprehensive decision processes; a decline in size was accompanied by a decline in comprehensiveness. Wally and Baum (1994) found that size (with both measures of number of employees and volume of sales) was negatively correlated with the pace of decision-making, which also suggests that larger size is

accompanied by more comprehensive decision processes. However, Dean and Sharfman (1993a) found no significant relationship between size (number of employees) and procedural rationality, operationalised as comprehensive decision-making. Thus, it seems that that size can both increase of decrease information comprehensiveness, depending on other organisational characteristics such as centralization and formalization (e.g., Mintzberg & Waters, 1982; Ranganathan & Sethi, 2002; Wally & Baum, 1994).

The effects of size on entrepreneurial behaviour have also been subject to much debate. Several authors argue that large organisations tend to accumulate inertia and bureaucracy, and consequently become less receptive to innovation and change (e.g., Cornwall & Pearlman, 1990; Hage, 1980; Hannan & Freeman, 1989; Knight, 1987; Rogers, 1983; Utterback, 1974), while others argue that large organisational size offers a number of advantages (more financial resources, more research facilities) that facilitate innovation and change (e.g., Blau & McKinley, 1979; Dewar & Dutton, 1986; Ettlie et al., 1984; Haveman, 1993; Kimberly & Evanisko, 1981; Kitchell, 1995; Pavitt, 1991). Damanpour (1992) conducted a meta-analysis of 20 published studies on the relationship between organisational size and innovation, and found a positive correlation. More recent studies (Barker & Bass, 2002; Boeker, 1997; Dass, 2000; Fuentelsaz, Gomez, & Polo, 2002; Ranger-Moore 1997) found evidence of size facilitating change and environmental adaptation. However, in a study of 169 manufacturing firms in the US, Barringer and Bluedorn (1999) found a significant negative correlation between size and corporate entrepreneurship intensity. Similarly to what happened with rational behaviour, several other organisational variables may influence the relationship between size and individual entrepreneurial behaviour. These variables include age (Baum, 1996; Hannan, 1998; Ranger-Moore, 1997; Singh & Lumsden, 1990; Sorensen & Stuart, 2000), centralization (Covin & Slevin, 1991; Hage, 1980; Kimberly & Evanisko, 1981; Moon, 1999; Nohria & Gulati, 1996), formalization (Covin & Slevin, 1991; Dean et al., 1991; Ekvall, 1996; Hage & Aiken, 1970; Mintzberg & Waters, 1982; Moon, 1999; Nohria & Gulati, 1996), and organisational culture (Kitchell, 1995; Morgan, 1986; Nystrom, 1990).

Sector

In one of few studies on this topic, Boeker (1997) found that private organisations were more associated with strategy change. More research has been undertaken on related aspects, namely external control, stable versus unstable environments, and high versus low competitive environments. When compared with managers from private organisations, managers in the public sector (state-owned organisations) usually face a stronger external control from government policies and appointed officers. In the past, public sector managers also operated in a more stable and less competitive environment. Nowadays, several state-owned organisations have to face private competition and unstable environments. Nevertheless, it is generally assumed that their environment is still more stable and less competitive.

Dean and Sharfman (1993a) found a negative relationship between external control and procedural rationality. An explanation may be that when external forces are powerful the decision is simply dictated to managers; hence they may see no point in engaging in comprehensive analytic processes (Mintzberg, 1983). However, the authors also studied competitive threat and environmental uncertainty, and found that these variables were negatively related with procedural rationality. Some other studies have replicated Dean and Sharfman's finding of negative associations with comprehensive information gathering (Fredrickson & Iaquinto, 1989; Wally & Baum, 1994), while other studies found positive associations (e.g., Khandwalla, 1976; Zaheer & Zaheer, 1997).

The intensity of competition tends to be positively associated with corporate venturing activities and innovation (e.g., Covin & Slevin, 1989; Khandvalla, 1977; Miller & Friesen, 1983; Nohria & Gulati, 1996; Zahra 1993). Environmental uncertainty, instability, and unpredictability, were also found to be positively associated with new business creation and innovation, as well as with corporate venturing activities (Barringer & Bluedorn, 1999; Khandwalla, 1987; Kimberly, 1981; Miller, Droge, & Toulouse, 1988; Naman & Slevin, 1993; Nohria & Gulati, 1996; Zahra, 1993). Since, as mentioned before, managers from the public sector tend to face lower competition and more stable environments, it is likely that their entrepreneurial behaviour is lower. However, given the absence of specific empirical studies on sector and the fact that studies on related variables were mainly undertaken at the

organisational level, no prediction is made for the effect of sector on the scores of the MEA scale.

Values

The widely tested values questionnaire of Schwartz (1992), the SVS, was administered to the respondents, next to the decision-making questionnaire. Schwartz's results (1992, 2006), showed that the 55 separate items in the SVS can be grouped into 10 types of values, distinguished by the motivational goal served: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. According to Schwartz (1994), value types are preferable to single values because the reliability of single values is quite low, and therefore chance may play a considerable role in the emergence or non emergence of significant associations. Also, associations found with single values lead to a piecemeal accumulation of bits of information that seldom lead to coherent interpretations.

Schwartz and Sagie (2000) postulated specific associations between each of the ten value types and modernization, a concept close to the use of Entrepreneurial alternatives. Values that emphasize independent thought, innovation, and change, such as stimulation and self-direction, are positively associated with modernization; values that are oriented to the past, maintaining the status quo, and distant for new experiences and ideas, such as tradition, conformity, and security, should be negatively associated with modernization. In the present study, scores on the MEA scale should be positively associated with stimulation and self-direction, and negatively associated with tradition, conformity, and security.

Benevolence and universalism are also considered by Schwartz and Sagie (2000) to be positively associated with modernization, since modernization theorists postulate that structural modernization produces increased emphasis on concern for dignity of the individual and equality of all, which are central to benevolence and universalism values. While this may be true for society in general, in today's organisations strategy and structure changes to modernize the company are often accompanied by lay-offs and/or worse working conditions (e.g., precarious contracts, unstable income) for those who do not possess the skills that are necessary under the new state of affairs. Therefore, dignity of the

individual and equality of all may not be associated by participants of this study with the MEA scale. For this reason, no prediction is made for associations between benevolence and universalism and scores in the MEA scale.

Similarly, Schwartz and Sagie (2000) consider that hedonism is positively associated with modernization, for the opportunities created for pleasure seeking and self-indulgence. While creating novel solutions and experiencing the benefits of change is a reality for some people in organisations, it has repeatedly been argued in the literature that many people do not face novelty and change as a pleasurable experience, given the effort involved in breaking with habitual conditions, insecurity feelings, or fear of the unknown (Bedeian, 1980; Hannan & Freeman, 1989; Katz & Kahn, 1978; Kotter & Schlesinger, 1979; Nadler, 1983; Stanislao & Stanislao, 1983; Van de Ven, 1986; Venkataraman et al., 1992; Zaltman & Duncan, 1977). Therefore, no prediction is made for the relationship between hedonism and scores on the MEA scale. Power is considered by Schwartz and Sagie (2000) to be negatively associated with modernization because unequal distributions of power are gradually rejected with modernization. In the context of organisations, it has been pointed out that changes and innovations to modernize the company lead to different distributions of power, but not necessarily to more equal distributions of power (Robbins & Judge, 2009). In a specific change context, managers may associate novelty and change with increased or decreased equality in distributions of power. Therefore, no prediction is made for the relationship between power and scores on the MEA scale.

Schwartz and Sagie (2000) do not offer a directional hypothesis for achievement, since the content definition of this value primarily emphasizes success according to social standards and not to personal standards, and social standards may be altered with modernization. In organisations the same may happen, with change and innovations bringing new performance evaluation criteria. Therefore, we also make no prediction on the direction of the association between achievement and scores on the MEA scale.

While predictions from Schwartz (1992) theory have not been, to our knowledge, formulated or tested to concepts related to Rational decision-making, some predictions can be inferred. The definition of the security value type seems appears to be closely connected

with accuracy concerns in the Rational domain (see Chapter 2), leading to an inferred positive association with maximizing behaviour, where more information is collected to overcome the uncertainty of not reaching accurate decisions. Since the theory postulates that variables tend to be associated similarly with value types that are adjacent in the value structure, positive associations are also expected between maximizing behaviour and the tradition and conformity value types. The definitional content of universalism appears to be connected with the broadmindedness concern of the Rational domain, and positive associations are expected between maximizing behaviour and universalism, as well as with its adjacent value type of benevolence.

For hedonism, stimulation, and self-direction value types, the theory does not allow for specific hypotheses on associations with scores on the MRI scale. While some people may find it stimulating and enjoyable to be more broadly informed and to know about different possibilities and states of affaires that larger amounts of information bring, others find it tedious and even annoying to be informed on issues they don't see any interest in (Driver et al., 1993, 1996). Similarly, while the motivational goal of self-direction is independent thought of action, this goal may be accomplished through obtaining or through ignoring information on others' points of view. Consequently, self-direction may be associated with larger or lower comprehensiveness when dealing with information.

The definitional content of power and achievement value types does not lead to specific hypotheses on associations with scores on the MRI scale. The motivational goals of achieving status, prestige dominance, and success, may entail that people focus on information that is necessary to achieve these goals and not to all available information (e.g., Boiney et al., 1997; Russo et al., 1996). On the other hand, information is often equated with power (e.g., Caldwell & O'Reilly, 1982; Cialdini & Richardson, 1980; Feldman, 1988; Mowday, 1978; O'Reilly, 1978; Pettigrew, 1973; Plott & Levine, 1978; Quinn, 1980; Schilit & Locke, 1982), and therefore individuals who value power may be interested in obtaining as much information as possible.

Method

Participants

This study includes two of the three samples of study 1 in the previous chapter, namely 102 participants for which data was collected through contacts with Human Resource Managers in Portuguese organisations (the "Business group"), and 98 participants who attended a MBA course at Universidade Técnica de Lisboa (the "MBA group").
(Participants from the "Military group" were not included because they did not fill out the SVS and, at the request of the organisation, data on functions and education was not gathered.)

In the sample of 200 participants from the Business group and MBA group, 59% are male and the average age is 35.2 years. Almost all participants (95%) have a University degree. The average experience of participants is 12.5 years and the average tenure is 8.4 years. As far as managerial positions are concerned, 64% of participants work in internally-oriented functions, and the distribution by hierarchy level is 31% top managers, 25% middle managers, and 44% first line managers. About ¾ of participants work in the private sector, and 63% work in organisations with less than 500 employees.

Instruments and procedure

The total set of questionnaires included a first page with questions on demographic and organisational variables, the 72-item decision-making questionnaire described in Chapter 3, and the 55-item Schwartz Value Survey (SVS).

The Portuguese version of the SVS was obtained directly from the author[3]. While the original questionnaire consisted of 56 items, only 55 items were included in all samples (38 countries) of Schwartz's study. The present study also includes these 55 items.

[3] I would like to thank Professor Schwartz for his kind and quick reply

Missing values

The 24 items of the two decision-making scales had 10 missing values in the total data set of 200 participants (0.21%). As mentioned in the previous chapter, missing values were replaced by the mid-point of the scale (3.5). On the SVS, missing values were also low (0.62%) and were placed by the total sample average. For demographic and organisational variables, missing values were always below 5% and respondents with missing answers were excluded from the analysis on that variable.

Results

Demographic and organisational variables

Since the sample was composed of two independent sets of respondents (Business group and MBA group), we analysed whether significant differences existed between the two groups. After establishing with the Kolmogorov-Smirnov test that the distributions of scores on the MRI and MEA scales did not deviate much from normal distributions (Field, 2005), scales means and standard deviations were computed and analysis of variance (one way ANOVA) was undertaken (Table 5.1).

The proportion of variance in the scales that could be attributed to group effects was calculated with eta squared (η^2). Results showed that differences in means between the groups were not significant for the MRI Information scale. They were significant for the MEA scale, even if the proportion of variance explained by the intergroup differences is rather small (η^2 = .022). For this scale, the MBA group had the highest average score, suggesting a more visionary orientation. Since MBA participants have higher levels of managerial education, predicted to correlate positively with scores in the MEA scale, it is possible that this variable underlies the differences found, as discussed later.

Table 5.1 *Analysis of differences in the sample groups (Business and MBA)*

	MRI scale					MEA scale				
	Descriptive		ANOVA			Descriptive		ANOVA		
Group	Mean	Std	F	Sig	η^2	Mean	Std	F	Sig	η^2
Business (N=102)	3.70	.68	.467	.495	.002	3.45	.60	4.418	**.037**	.022
MBA (N=98)	3.64	.59				3.62	.55			

Significant negative correlations are found between the MRI scale and age, hierarchy level, experience, and sector (Table 5.2). These correlations imply that managers who are older, more experienced, work in higher hierarchy positions and in the private sector describe themselves as more satisficing (or less maximizing). For the MEA scale, significant negative correlations are found for age, function, and time in the organisation, implying that managers who are older, work in internally-oriented-functions, and have stayed longer in the organisation tend to describe themselves as more pragmatic (or less visionary). A significant positive correlation was also found between the MEA scale and sample group (Business and MBA), implying that managers with a higher level of business education describe themselves as more visionary (or less pragmatic).

Table 5.2 *Pearson's correlations between the decision-making scales and demographic and organisational variables*

Demographic and organisational variables	MRI scale (12 items)	MEA scale (12 items)
Gender (N=200) 1=Female; 2=Male	-.102	.013
Age (N=195)	-.142*	-.146*
Hierarchy level (N=196) 1=Low; 2=Middle; 3=Top	-.246**	-.028
Experience (N=193)	-146*	-.075
Field of studies (N=200) 1=Management; 2=Non management	.030	.033
Level of management education (N=200) 1=Non MBA; 2=MBA	-.049	.148*
Time in the organisation (N=192)	-.018	-.140*
Function (N=195) 1=External orient.; 2=Internal orient.	.105	-.199**
Size (N=190) (Number of employees)	-.079	.064
Sector (N=197) 1=State owned; 2=Private	-.125*	-.019

** p < .01; * p < .05 (1-tailed)

Values

The 55 items in the SVS were grouped according to their value types by computing the average score of the items included in each of the 10 value types. Subsequently, we analysed whether significant differences existed between the Business group and the MBA groups in the 10 value types. The only significant difference was in the stimulation value

type, where the MBA group scored significantly higher than the Business group, with η^2= .10.

When correlating the ten value types with the two decision-making scales (Table 5.3), we found significant positive correlations between the MRI scale and the value types of universalism, benevolence, tradition, conformity, and security. These correlations imply that the higher the score on these values, the more maximizing is the individual's self-report on the scale. For the MEA scale, significant positive correlations were found with the value types of achievement, stimulation, and self-direction, meaning that the higher the score on these value types the more visionary is the individual's self-report on the scale. Significant negative correlations were found with the value types tradition, conformity, and security, meaning that the higher the score on these value types, the more pragmatic is the individual's self-report on the scale.

Table 5.3 *Pearson's correlations between the decision-making scales and Schwartz's (1992) value types*

Values	MRI scale (12 items)	MEA scale (12 items)
Universalism	.147*	.061
Benevolence	.203**	-.010
Tradition	.192**	-.285**
Conformity	.146*	-.154*
Security	.178**	-.133*
Power	-.020	-.034
Achievement	.002	.139*
Hedonism	-.017	.084
Stimulation	-.043	.294**
Self-Direction	.022	.269**

** $p < .01$; * $p < .05$ (1-tailed)

Explaining individual differences in the decision-making scales

In order to analyse which of the variables under study were more important to explain individual differences in the scales, two separate stepwise regression analyses were conducted, one with the MRI scale as the dependent variable, and the other with the MEA scale as the dependent variable. The independent variables in each regression were the variables for which significant correlations had been found (see previous sub-sections).

The regression having the MRI scale as the dependent variable included as the independent variables: age, hierarchy level, experience, sector, and the value types universalism, benevolence, tradition, conformity, and security. Results show that hierarchy level has the highest predictive power to explain individual differences in the MRI scale, followed by the benevolence value type (Table 5.4). Taken together, these two variables account for 8.9% of the variance (Adjusted R^2).

Table 5.4 *Stepwise regression for the MRI scale*

Model	Variables Included	Model summary			Standardized coefficients
		R^2	Adjusted R^2	Std error of the estimate	Beta
1	Hierarchy level	.059	.054	.614	-.242
2	Hierarchy level Benevolence	.099	.089	.603	-250 .200

The regression having the MEA scale as the dependent variable included as independent variables: age, type of function, tenure, level of education in management, and the value types of tradition, conformity, security, achievement, stimulation, and self-direction. Results show that the stimulation value type has the highest predictive power for scores in this scale (Table 5.5). The model also retains two more value types - tradition and self-direction - and the demographic variable of function. Taken together, these four variables account for 22.6% of the variance (Adjusted R^2).

Table 5.5 *Stepwise regression for the MEA scale*

Model	Variables Included	Model summary			Standardized Coefficients
		R^2	Adjusted R^2	Std error of the estimate	Beta
1	Stimulation	.090	.085	.551	.300
2	Stimulation Tradition	.186	.177	.522	.314 -.310
3	Stimulation Tradition Self-Direction	.224	.212	.511	.198 -.351 .233
4	Stimulation Tradition Self-Direction Function	.242	.226	.507	.197 -.332 .221 -.134

Summary and discussion

The findings of this chapter can be summarized as follows:

1) The MRI scale is significantly correlated with the demographic variables of age, experience, and hierarchy level, as well as with sector. Managers who are older, more experienced, work in higher hierarchical positions and in the private sector describe themselves as more satisficing (or less maximizing). The scale is also significantly correlated with Schwartz's (1992) value types of universalism, benevolence, tradition, conformity, and security. The higher the score on these values, the more maximizing are scores on the MRI scale.

2) The MEA scale is significantly correlated with the demographic variables of age, type of function, tenure in the organisation, and level of managerial education. Managers who are younger, work in externally-oriented functions, have a shorter tenure in the organisation, and a higher level of managerial education, describe themselves as more visionary (or less pragmatic). Significant correlations with Schwartz's (1992) value types revealed that lower scores in tradition, conformity, and security, and higher scores in achievement, self-direction, and stimulation, are associated with higher scores in visionary behaviour.

3) By means of stepwise regression analysis, results showed that hierarchical level and the benevolence value were the most important predictors for the MRI scale, explaining 8.9% of the variance. For the MEA scale, the most important predictors were stimulation, tradition, and self-direction values, and type of function, explaining 22.6% of the variance.

The main purpose of this chapter was to investigate whether predictions based on literature review were found in the results of this study, so that inferences could be made about the construct validity of the two scales under study. Table 5.6 summarizes the predictions and the result obtained.

Table 5.6 *Summary of predictions and results for correlates of the decision-making scales*

	Rational Information Scale		Entrepreneurial Alternatives scale	
	Predicted direction of association	Result	Predicted direction of association	Result
Demographic and organisational variables				
Age	-	-	-	-
Experience	-	-	-	0
Hierarchy level	-	-	-	0
Tenure	-	0	-	-
Function	No prediction	0	-	-
Level of managerial education	No prediction	0	+	+
Type of education	No prediction	0	No prediction	0
Gender	No prediction	0	No prediction	0
Size	No prediction	0	No prediction	0
Sector	No prediction	-	No prediction	0
Schwartz (1992) value types				
Universalism	+	+	No prediction	0
Benevolence	+	+	No prediction	0
Tradition	+	+	-	-
Conformity	+	+	-	-
Security	+	+	-	-
Power	No prediction	0	No prediction	0
Achievement	No prediction	0	No prediction	+
Hedonism	No prediction	0	No prediction	0
Stimulation	No prediction	0	+	+
Self-Direction	No prediction	0	+	+

For the MRI scale, the only demographic variable for which the predicted correlation was not found was tenure in the organisation. The prediction was based on the argument put forward by some authors (e.g., Fredrickson & Iaquinto, 1989; Miller, 1991) that longer tenure leads to a reliance on established decision-making practices, which may limit several aspects of comprehensiveness in decision-making, but no previous empirical studies were found to test this argument in depth. An unexpected correlation was found for sector, for which no prediction was made, given the absence of previous empirical studies on sector and the confounding results obtained by studies on related variables. Managers from the private sector describe themselves as more satisficing, which may be due to more turbulent environments and more intense competition leading to the need for faster decisions.

For the MEA scale, while predictions of a negative association were made for age, experience, and hierarchical level, results were only according to prediction for age. The prediction for age was based on previous studies, but for experience no previous empirical studies were found. Furthermore, authors' views were based on type of experience (previous functions held) rather than on length of experience (e.g., Fischer et al., 1993; Gupta & Govindarajan, 1984; Hoffman & Hegarty, 1993). Therefore, it is possible that type of functions held in the past (internally or externally-oriented) is more important than length of experience. As far as hierarchy level is concerned, some authors have argued and provided evidence that tenure in the organisation may have a stronger effect on entrepreneurial behaviour and resistance to change than hierarchical level (e.g., Aiken et al., 1980; Finkelstein & Hambrick, 1990; Hofer, 1980; Katz, 1982; Miller, 1991; Rogers & Shoemaker, 1971). Therefore, managers who are in higher hierarchical positions may have higher scores in the MEA scale if their tenure is short. Similarly, managers who are in lower hierarchical positions may have low scores in the Entrepreneurial Alternatives scale if their tenure is lengthy.

As far as predictions for the value types of Schwartz (1992) are concerned, results met all expected predictions for both the MRI scale and the MEA scale. For the MEA scale, no prediction had been made for achievement, for which a significant positive association was found. The overall results on correlates of the two scales point to evidence of construct validity, since significant correlations were found between the scales' scores and variables that they were theoretically predicted to correlate with. However, non-significant correlations were found where significant correlations were to be expected. This was the case for the association of the MRI scale with tenure, and for the association of the MEA scale with experience and hierarchical level. A replication of the study would be useful to differentiate the joint effects of hierarchical level and tenure, as well as the joint effects of type of function and experience.

The analysis of which of the variables under study were more important to explain individual differences revealed that for the MRI scale the demographic variable of hierarchy level was the first retained by stepwise regression, explaining 5.4% of the variance. A higher hierarchical position is associated with self-reports higher in satisficing,

which could be due either to the fact that broader range of responsibilities forces managers in higher hierarchy levels to focus on the key aspects of a decision, or it may be a result of a wider depth of previous experiences (Clarke & Mackaness, 2001). The next variable retained was benevolence, for which higher scores are associated with self-reports higher in maximizing behaviour. The motivational goal of benevolence is preservation and enhancement of the welfare of people with whom one is in frequent contact (Schwartz, 1992). This can be interpreted as Portuguese managers associating the preservation and enhancement of the welfare of people working in the organisation with making sure that they make the correct decision by collecting and analysing substantial amounts of information. Taken together, these two variables account for 8.9% of the variance of individual scores on the MRI scale. This reflects a moderate amount of variance; a more definite verdict on the importance of the findings will have to await replication of the findings. With several variables, each being analysed separately, cross-validation is needed.

For the MEA scale, four variables were retained, of which three were values (stimulation, tradition, and self-direction), the fourth being type of function. The motivation goal of tradition is respect, commitment, and acceptance of customs and ideas that one's culture imposes on the individual (Schwartz, 1992). Therefore, higher importance placed on tradition is coherently associated with self-reports lower on visionary behaviour, which includes novel solutions and departure from usual ways of doing things. Since the motivation goal of self-direction is independent thought and action, and the motivation goal of stimulation is excitement, novelty, and challenge in life, higher scores on these value types are associated with self-reports higher on visionary behaviour, which includes departure from the status quo and the consideration of novel/original alternatives. The fact that managers in externally-oriented functions are more visionary may be interpreted as the function requiring higher levels of environmental adaptation, a central issue in the Entrepreneurial domain (see Chapter 2). Taken together, these four variables account for 22.6% of the variance of individual scores on the MEA scale, which is considered as a substantial proportion of the total variance.

These results represent two important contributions to the current state of the art on decision-making correlates. Firstly, while previous studies have focused mainly on single

correlations between demographic, organisational, and social variables, by using multiple regression it was possible to identify not only which variables are associated with decision-making behaviour but also to gain some impression as to which of these variables have a higher predictive power. Secondly, to the best of our knowledge analysis of decision-making correlates has not been researched in the Portuguese managerial context. The results obtained allow for a comparison with theories and empirical results developed in other contexts. Of course, a replication of the study would be useful to cross-validate the amount of variance explained by the variables that were found by stepwise regression to be predictive of individual scores on the two scales.

Chapter 6
A cross-cultural analysis of the decision-making questionnaire

In Chapter 4 we tested a decision-making instrument with Portuguese participants and found that managerial decision-making could be captured with two scales, labeled as Managing Rational Information (MRI) and Managing Entrepreneurial Alternatives (MEA). In this chapter we will analyse whether these findings are replicated with a sample of managers from another European country - The Netherlands.

We will start by analysing whether the theoretical distinctions that guided the development of the questionnaire can be found with the Dutch sample. This analysis will allow us to verify whether the structural representation of managerial decision-making is the same for Portuguese and Dutch managers. On the basis of results, it will be decided which scales can be retained to compare Portuguese and Dutch managerial decision-making. We will proceed to analyse to what extent these scales can be considered as equivalent in the two cultures.

This chapter has four sections. The first section presents previous studies on the relationship between culture and decision-making bearing on differences and similarities in decision-making between Portugal and The Netherlands. The second section presents the methodology of the study, including the description of the samples, instruments, procedure, and treatment of missing values. The third section presents the results, including the analysis on the structural representation of decision-making in the Dutch sample, the analysis of the equivalence of the scales in the Dutch and Portuguese samples, and differences and similarities in score levels. The last section provides a summary and discussion of the results.

Culture and decision-making

Most studies on cross-cultural differences in decision-making refer to Hofstede's (1980) four dimensions of individualism-collectivism, uncertainty avoidance, power distance, and masculinity-femininity. According to Hofstede's results, Portugal scored lower than the Netherlands in individualism, and higher in power distance and uncertainty avoidance. Portugal also scored higher in masculinity, but the score is not so far from the one of the Netherlands as in the other dimensions. However, findings from research associating these dimensions with decision-making have not been conclusive, and in some cases contradictory evidence can be found.

For the MRI scale, the most widely researched dimension is that of individualism-collectivism. Mann et al. (1998) found no significant differences between samples of university students from collectivistic and individualistic countries in their "vigilance" factor, a pattern of thorough and careful information search considered as a comprehensive, elaborate, and engaged decision style (Bouckenooghe et al., 2007). Patalano and Wengrovitz (2006) also found no significant differences between university students from collectivistic and individualistic countries in their indecisiveness score, an issue that is much connected with the amount of information gathered (Rassin et al., 2007). However, other authors using the same methodology as Mann et al. (e.g., Brew, Hesketh, & Taylor, 2001; Radford, Mann, Ohta, & Nakane, 1991, 1993) found that students from collectivistic countries were less likely to adopt the "vigilance" style of decision-making. In other words, collectivism appeared to be more associated with satisficing or lower levels of information gathering, a result that was also found with authors using different methodologies (e.g., Strohschneider & Gus, 1998; Tse et al., 1988). By contrast, other authors have reported findings where collectivism appears to be related with higher levels of information gathering (e.g., Abramson, Lane, Nagai, & Takagi, 1993; Sullivan & Nonaka, 1986), preference for systematic analysis (e.g., Ali, 1993), and preference for factual data (e.g., Abramson et al., 1993). Whereas most studies mentioned so far included a limited number of countries, the study of Zaheer and Zaheer (1997) included 25 countries. This large number implies a sufficient variation in other cultural dimensions so that alternative cultural dimension explanations can be ruled out. The study found that higher levels of

collectivism were associated with higher levels of information seeking. Therefore, we are inclined to assume that higher levels of collectivism are associated with more maximizing behaviours towards information.

Hofstede (1980, 1991) also presents arguments towards the association of comprehensiveness in information with high uncertainty avoidance, low power distance, and high masculinity. For uncertainty avoidance, Hofstede's argument is in accordance with other authors who consider that the amount of information deemed necessary is positively related to needs of confidence and uncertainty reduction (e.g., Feldman & March, 1981; O'Reilly, 1980). However, previous empirical research has lead to different findings, with Builtjens and Noorderhaven (1996) finding no significant differences between high and low uncertainty avoidance countries as far as effort made to collect information from different sources of information is concerned, and Zaheer and Zaheer (1997) finding that countries lower on uncertainty avoidance exhibit higher levels of information seeking.

For power distance, while findings from Dawar, Parker, & Price (1996) suggest that high power distance is associated with less factual information analysis, Schramm-Nielsen's (2001) results showed that higher power distance was associated with analysing information in a more systematic, lengthier, and detailed way. For the last cultural dimension, masculinity-femininity, while some authors suggest that masculinity is associated with less comprehensive information processing, and with wider use of heuristics instead of detailed information processing (MacDonald & MacDonald, 1999; MacDonald & Madrigal, 1998), we were unable to find empirical research relating masculinity-femininity to information use in decision-making.

As far as the MEA scale is concerned, several studies have attempted to associate cultural dimensions with issues retated to entrepreneurial behaviour. The individualism-collectivism dimension, in particular, has received substantial attention, with individualism being associated with innovativeness and rates of innovation (Mueller & Thomas, 2001; Shane, 1993), new product introduction (Morris et al., 1994; Tse et al., 1988), originality (Loo & Shiomi, 1997), new venture creation (McGrath et al., 1992; Ray & Turpin, 1990), willingness to break norms (Stewart. 1985; Verma, 1985), need for autonomy (Baum et al.,

1993), preference for radical change over incremental change (Beldona, Inkpen, & Phatak, 1998; Morris et al., 1994; Tiessen, 1997), and risk-taking decisions (Morris et al., 1994; Weber & Hsee, 1998; Weber, Hsee, & Sokolowska. 1998).

Low uncertainty avoidance has been found to be associated with national innovation rates (Shane. 1993), favouring new ideas (Yates et al.. 1989), new venture creation (McGrath et al., 1992), willingness to break norms (Shane, Venkataraman, & MacMillan, 1995), and preference for radical high-risk innovations over incremental low-risk innovations (Beldona et al., 1998; Shane et al., 1995). However, Mueller and Thomas (2001) found no significant correlations between innovativeness and uncertainty avoidance. Low power distance has been associated with innovation productivity (Kedia, Keller, & Julian, 1992), and national rates of innovation (Shane, 1993). By contrast, McGrath et al. (1992) found that new venture creation was associated with high power distance. Masculinity has been associated with innovation productivity (Kedia et al., 1992), and new venture creation (McGrath et al., 1992). However, Shane (1993) found that masculinity has no explanatory power in national rates of innovation.

Method

Participants

To obtain a Dutch sample, lists of managers from Dutch Chambers of Commerce and personal contacts of colleagues at Tilburg University were used. Executives whose e-mails had been obtained were sent information on the study. Those who agreed to participate were sent the instruments by mail, with pre-paid return envelopes. Of the 300 questionnaires sent, only 67 were returned, for a response rate of 22%. The Portuguese sample used in this chapter is the Business group described in Chapter 4. This group was chosen over the two other groups used in the analysis of Chapter 4 because the administration procedures were more similar to those followed for the Dutch sample.

The large majority of Dutch participants are male (78%), and only 15 participants (22%) are female. In the Portuguese sample the distribution of gender is more homogeneous, about half of the respondents are male (49%) and half female (51%). The Dutch sample has

a slightly higher age average (40.9 years) than the Portuguese sample (38.3 years). This is also reflected in managers' working experience, where the average working experience for the Dutch is 18 years, while for the Portuguese it is 15.5 years.

In both samples the large majority of participants have high education levels: In the Dutch sample 33% of participants has a University degree and 48% have followed a Hogere Beroeps Opleiding degree (HBO, i.e., a tertiary level education in a professional field); in the Portuguese sample 90% of participants have a University degree and 4% completed a Technical Course. The distribution by field of studies for participants who achieved higher education degrees (University, Technical Course, and HBO) is similar in the two samples. Business Studies is the category with the highest percentage of participants, accounting for almost half of the participants in both the Dutch (46%) and Portuguese (49%) samples. Engineering is the next category with the highest percentage of participants, accounting for about ¼ of participants in both the Dutch (26%) and the Portuguese (22%) samples. Whereas Law represents 15% of participants in the Portuguese sample, no participant in the Dutch sample has a degree in Law. Social Sciences, Mathematics, Humanities, and Natural Sciences are categories with few participants in both samples.

Positions in the organisation's hierarchy were classified as top management (including CEOs and Directors), middle management (including middle managers, product managers, project managers, and geographical managers) and first line managers. There is a similar percentage of participants in top management positions in the Dutch sample (27%) and in the Portuguese sample (30%). However, more than half of Dutch participants (61%) are in middle management positions, whereas only 27% of Portuguese participants are in this category. This also entails a difference between the two samples for first line managers, which represents 42% of the Portuguese sample and only 10% of the Dutch sample. The distribution of the sample by externally versus internally-oriented functions (see Chapter 4) also shows noticeable differences. In the Dutch sample little more than half of the participants (52%) are in internally-oriented functions, whereas in the Portuguese sample about ¾ of the participants (76%) are in this function category.

The Dutch sample is almost entirely composed of participants working in private sector organisations (96%); in the Portuguese sample, almost ¼ of participants (24%) work in state-owned (public) organisations. The distribution of participants by organisational size was similar in the two samples, with the majority of participants working in medium to large size organisations. Only 14% of Portuguese participants and 16% of Dutch participants worked in small size organisations (<100 employees). In both samples, the large majority of participants worked in third-sector (services) organisations, which includes 63% of Dutch participants and 75% of Portuguese participants. Industry is the category with the next higher percentage of participants in both samples, including 28% of Dutch participants and 28% of Portuguese participants. Five percent of Portuguese participants worked in trade, whereas in the Dutch sample this category includes no participants. The remaining participants (5% of the Portuguese sample and 3% of the Dutch sample) work in primary sector (agriculture and fishing) organisations. There were no noticeable differences in length of stay in the same organisation, which was on average 11 years for both the Dutch and the Portuguese samples.

Instruments and procedure

The total set of questionnaires given to the Dutch sample included a first page with questions on demographic and organisational variables, the 72-item decision-making questionnaire described in Chapter 3, and a 48-item questionnaire on stereotypes, to be tested for use in the following chapter (see Appendix 1). Additional questionnaires, namely the 55-item Schwartz Value Survey and the other-description of the decision-making questionnaire completed by the Portuguese sample, were not included. In the Dutch sample, the completed forms were mailed out directly to participants, accompanied by pre-paid envelopes.

Missing values

The 72 items of the decision-making questionnaire used for comparison in the data set of 169 protocols had 20 missing values, for a percentage of 0.16%. As mentioned in the previous chapter, missing values were replaced by the mid-point of the scale (3.5). A few missing values (< 1.5%) on demographic and organisational variables were not replaced;

respondents with a missing score on a variable were excluded from analysis on that variable.

Results

The analysis of the Dutch sample's structural representation of managerial decision-making followed the same steps as described for the Portuguese sample in Chapter 4, except that the initial attempt to test the postulated structure with confirmatory factor analysis was not undertaken. On the basis of results, it will be decided which scales can be retained to compare Portuguese and Dutch managerial decision-making. We will proceed to analyse to what extent these scales can be considered as equivalent in the two cultures.

Equivalence, or the absence of bias, is a major concern of researchers to enhance the validity of their studies and the interpretability of the results. Three main types of bias are usually identified in the literature (e.g., Van de Vijver & Leung, 1997). The first type is construct bias, occurring when the construct as measured is not identical across cultural groups. This type of bias often has to do with the (in)appropriateness across cultures of behaviours attributed to a construct. The second type of bias, method bias, arises from factors such as sampling and administration procedures, i.e., issues that are usually described in the method section of a study. Also included are response tendencies, such as acquiescence (the tendency to agree or disagree) and extremity response set (the tendency to use extreme response categories), which may differ across cultural samples. This type of bias results in unwanted quantitative differences (not relevant for the construct under study), on all or most items of an instrument. The third type of bias, item bias, refers to differential functioning across cultures in individual items of the instrument. This type of bias is often due to incorrect translations or incidental differences in familiarity with item content.

In the present study, construct bias is analysed by testing for the equality of reliability coefficients in the groups, and by estimating agreement in factor loadings of items across samples using Tucker's φ (Van de Vijver & Leung, 1997). Item bias is analysed for each item separately, through conditional analysis of variance. For this analysis, the total scores

of participants in each scale are divided into categories (e.g., high, medium, and low), and these categories are score levels used in the design specification as an independent variable (Van de Vijver & Leung, 1997).

To avoid method bias, several precautions were undertaken, namely translation and back-translation of the instruments, and similar data collection procedures. Another aspect related to the avoidance of method bias is the selection of matched samples. In order to enhance the equivalence of results participants in the two countries should be similar in terms of relevant demographic characteristics (Adler, 1983; Nasif et al., 1991; Sekaran, 1983; Van de Vijver & Leung, 1997). However, it has been argued that this condition is very difficult to achieve, since matching samples on one variable almost always results on the mismatching on other variables (Berry et al., 2002). Van de Vijjver and Leung (1997) propose the use of covariates to analyse the impact of variables in which the samples differ. The present study will follow this approach, i.e., demographic variables will be measured and treated as covariates in some of the analyses.

Structural representation of decision-making in the Dutch sample

Exploratory factor analysis for the Rational domain showed a two-test solution with all managing information items having the highest loading on the first factor, but the loading for item R5 was negative and the loading for item R4 was very low. Similarly to what had happened with the Portuguese sample, items R17 and R18 also had a substantial positive loading on the first factor. For the remaining Alternatives items, only R23 and R24 had loadings on the second factor >.30. It was also noted that item R15 had a substantial negative loading on the first factor.

The twelve items for managing information in the Rational domain had a consistency of α = .65, but item R5 had a negative item-total correlation. After deletion of this item, α = .75, which can be considered an acceptable level. The twelve items for managing alternatives had a consistency of α = .27, and, similarly to the Portuguese sample, items R17 and R18 were the two items with poorer item-total correlations. If these two items are deleted, a value of α = .40 was found, below the value obtained in the Portuguese sample (α = .57). The highest consistency of the scale would be obtained with 6 items (R13, R14, R15, R16,

R19, R21), but in this case $\alpha = .48$, still below acceptable levels. In summary, results for the Rational domain are very similar to those obtained for the Portuguese sample: A Managing Rational Information scale with an acceptable level of internal consistency can be identified, but a possible Managing Rational Alternatives scale has a poor reliability.

Exploratory factor analysis for items in the Political domain showed factor loadings scattered across two factors. Only 12 out of 24 items have a loading >.35, of which three were not on the expected factor. For the twelve managing information items the reliability was dismally low ($\alpha = .14$), and for the twelve managing alternatives items it was poor ($\alpha = .41$). When only items with item-total correlations above .20 are considered, items retained for managing information are P2, P6, P9, P10, P12, with $\alpha = .64$. For managing alternatives, items P14, P17, P19, P21, P22, P23, and P24 are retained, with $\alpha = .54$. Also the (poor) results for the Political domain were similar to those reported for the Portuguese sample.

For the Entrepreneurial domain, the two-factor solution showed that only 12 items had factor loadings >.35. Of these, 4 were managing information items (E1, E10, E11, and E12), which all loaded in the second factor, and 8 were managing alternatives items (E13, E14, E15, E16, E20, E21, E22, and E24), which all loaded in the first factor. Items with low factor loadings were scattered between the two factors.

The twelve managing information items in the Entrepreneurial domain had a consistency of $\alpha = .54$. By deleting items with total item-test correlation below .20 (E4, E5, E6, and E9), for the remaining 8-item scale $\alpha = .60$. The twelve managing alternatives items had a consistency of $\alpha = .68$. Item E17 was found to have a negative item-total correlation and, after deleting this item, $\alpha = .71$. Also the results for the Entrepreneurial domain were similar to those of the Portuguese sample, with the reliability of a Managing Entrepreneurial Alternatives scale reaching acceptable levels, and the reliability of a possible Managing Entrepreneurial Information scale being poor.

Examination of the three decision-making domains simultaneously, i.e., with all 72-items of the decision-making questionnaire, showed that a two factor solution emerged. Managing

information items from the Rational domain mainly formed one factor, and managing alternatives items from the Entrepreneurial domain formed the other. All items from the Political domain had factor loadings under .35 except for five – P2, P6, P9, P11, and P23. These five items all loaded in the second factor, but P11 had factor loadings >.35 on both factors simultaneously. Only one item from managing alternatives in the Rational domain, R17, had a factor loading above .35, and loaded in the same factor as managing information items from that domain. All managing information items from the Entrepreneurial domain had factor loadings under .35. Similarly to what happened in the analysis of the Portuguese sample, some managing information items from the Rational domain (R4 and R10), and some managing alternatives items from the Entrepreneurial domain (E18, E19, and E23) had factor loadings under .35. When conducting the two-factor analysis with only the 24 items of these two scales, factor loadings continued to be low, raising the doubt that these items would not be adequate to cover their respective domains.

Taken together, the findings indicate that the Dutch sample corroborates the previous result that reliable differences in the questionnaire can be captured with a scale including information items from the Rational domain (the MRI scale), and alternatives' items from the Entrepreneurial domain (the MEA scale). Moreover, the Political domain does not contribute to the representation of decision-making behaviour in a reliable or coherent way.

Equivalence of the scales in the Portuguese and Dutch samples

Analysis of structural equivalence

In the Dutch sample, items R5 and E17 had negative correlations with their total scales and had factor loadings with a reverse sign from that obtained in the Portuguese sample, indicating construct equivalence problems. A decision was then made to pursue the analysis without these two items, i.e., with 11-item scales for both Managing Rational Information and Managing Entrepreneurial Alternatives.

There were no apparent differences in item-total correlations between the samples in neither of the two 11-item scales. The reliability coefficients for the MRI scale were $\alpha = .75$ for the Dutch sample, and $\alpha = .78$ for the Portuguese sample (Table 6.1). The statistic to test

the equality of the two coefficients was $(1- \alpha_{Dutch})/(1- \alpha_{Portuguese}) = 1.11$, for which $p = .31$, showing that the difference was not significant.

Table 6.1 *Internal consistency of the MRI scale– Portuguese and Dutch samples*

	Dutch sample (N=67)		Portuguese sample (N=102)	
Items (11)	**Corrected Item-Total Correlation**	**α if item deleted**	**Corrected Item-Total Correlation**	**α if item deleted**
R1	.487	.725	.484	.756
R2	.385	.741	.410	.765
R3	.462	.728	.556	.746
R4	.103	.771	.263	.779
R6	.495	.728	.515	.751
R7	.307	.747	.224	.784
R8	.449	.730	.366	.769
R9	.488	.725	.320	.775
R10	.293	.750	.515	.752
R11	.511	.721	.513	.752
R12	.474	.727	.575	.745
	Cronbach's α = .754		Cronbach's α = .779	

The reliability coefficients for the MEA scale were $\alpha = .71$ for the Dutch sample, and $\alpha = .78$ for the Portuguese sample (Table 6.2). The statistic to test the equality of the two coefficients had a value of 1.31, for which $p = .11$, showing that the difference was not significant.

Table 6.2 *Internal consistency of the MEA scale– Portuguese and Dutch samples*

	Dutch sample (N=67)		Portuguese sample (N=102)	
Items (12)	**Corrected Item-Total Correlation**	**α if item deleted**	**Corrected Item-Total Correlation**	**α if item deleted**
E13	.415	.682	.447	.761
E14	.459	.673	.439	.762
E15	.371	.689	.543	.749
E16	.411	.685	.523	.754
E18	.092	.720	.159	.786
E19	.217	.708	.259	.781
E20	.426	.683	.560	.751
E21	.377	.688	.488	.756
E22	.389	.688	.577	.749
E23	.250	.710	.451	.761
E24	.489	.667	.337	.777
	Cronbach's α = .711		Cronbach's α = .780	

Exploratory factor analysis was then conducted on the 22 items, with principal axis factoring as the extraction method and direct oblimin as the rotation method. A scree plot led to the extraction of two factors. In both samples, all items of the MRI scale loaded on one factor and all items of the MEA scale loaded on the other factor (Table 6.3). When analysing the structural equivalence of the two factors obtained for the Dutch sample and for the Portuguese sample, we found $\varphi = .92$ for the factor including the MRI scale items, and $\varphi = .94$ for the factor including the MEA scale items. Since $\varphi > .90$, both factors were taken as structurally equivalent (Van de Vijver & Leung, 1997).

Table 6.3 *Factor analysis of the MRI scale and the MEA scale– Portuguese and Dutch samples*

Dutch sample (N=67)			**Portuguese sample** (N=102)		
Structure Matrix	**Factor 1**	**Factor 2**	**Structure Matrix**	**Factor 1**	**Factor 2**
R1	**.663**	.034	R1	.118	**.656**
R2	**.439**	.097	R2	.096	**.523**
R3	**.577**	-.012	R3	.046	**.713**
R4	.083	.081	R4	-.256	.308
R6	**.544**	-.014	R6	-.058	**.623**
R7	**.351**	-.054	R7	-.132	.240
R8	**.472**	-.126	R8	-.339	**.349**
R9	**.536**	-.168	R9	-.192	**.365**
R10	.270	-.101	R10	-.337	**.503**
R11	**.527**	-.317	R11	-.191	**.523**
R12	**.564**	-.339	R12	-.477	**.556**
E13	.221	**.567**	E13	**.509**	.004
E14	-.184	**.487**	E14	**.512**	-.162
E15	-.197	**.453**	E15	**.584**	-.087
E16	-.186	**.421**	E16	**.540**	.018
E18	.052	.112	E18	.225	.174
E19	.178	.262	E19	.261	-.126
E20	-.198	**.518**	E20	**.620**	-.319
E21	.251	**.516**	E21	**.612**	.041
E22	-.226	**.432**	E22	**.646**	-.261
E23	-.136	**.335**	E23	**.490**	-.045
E24	-.315	**.576**	E24	**.404**	-.114
Factor Correlation Matrix	**Factor 1**	**Factor 2**	**Factor Correlation Matrix**	**Factor 1**	**Factor 2**
Factor 1	1	-.083	Factor 1	1	-.165
Factor 2	-.083	1	Factor 2	-.165	1

Analysis of differential item functioning (DIF)

To analyse differential functioning of individual items across the two samples, two score levels were distinguished for each of the two scales retained: low (below or equal to median), and high (above median). Conditional analysis of variance was then carried out with the aim of verifying whether a main effect of country was present (evidence of uniform bias), and whether an effect of the interaction of country and score level was present (evidence of nonuniform bias). There was evidence of uniform bias for three items of the MRI scale (R7, R8, and R12) and for six items of the MEA scale (E14, E16, E20, E21, E22, and E24). However, partial eta squared (η^2) were always below .060 except for E16, where partial η^2 was .187. Therefore, when effect sizes are considered, there is only one item with substantial DIF, and a decision was made to remove E16 from the MEA scale.

Analysis of differences and similarities between the Dutch and the Portuguese sample

On the 11-item MRI scale, a significant difference was found, with the Portuguese on average reporting more to the maximizing side and the Dutch to the satisficing side of the scale. On the 10-item MEA scale, there is no significant difference between the Portuguese and the Dutch, both countries on average reporting more to the pragmatic side of the scale.

Table 6.4 *Analysis of differences in the two decision-making scales*

	MRI scale					MEA scale				
	Descriptive		ANOVA			Descriptive		ANOVA		
Group	Mean	Std	F	Sig	η^2	Mean	Std	F	Sig	η^2
Dutch (N=67)	3.27	.64	20.594	**.000**	.110	3.34	.57	.091	.763	.001
Portuguese (N=102)	3.75	.70				3.37	.63			

The correlation between the two scales was analysed in the two samples. In the Dutch sample r = -.194 and was close to being significant (p = .058). In the Portuguese sample, a significant negative correlation was found with r = -.238 (p<.001). A significance test for the difference in correlations was undertaken using the statistic $(z'_{Portuguese}-z'_{Dutch}) / {}^{\sigma}z'_{Portuguese}-z'_{Dutch}$, where z' is Fisher's transformation of r (Edwards, 1960). This test showed that the difference between the r's in the two samples was not significant (z = .29, p = .614).

It was explored whether demographic and organisational variables on which the samples were not matched could provide some explanation for the differences. Variables retained for analysis were gender, age, length of experience, hierarchy level, field of studies (managerial and non managerial), function (externally-oriented and internally-oriented), tenure in the organisation, sector (private and state-owned), and size. ANOVA revealed significant differences between the samples on the variables gender, hierarchy level, function, sector, and size.

Analysis of variance for the MRI scale only revealed a significant effect for one of these variables, namely hierarchy level. On this variable, managers from higher positions described themselves as more satisficing. When hierarchy level is introduced as a covariate, the differences between the two countries became slightly smaller but remained significant. The estimated marginal means were 3.74 for the Portuguese group and 3.30 for the Dutch group, and the Portuguese group still scored significantly higher in maximizing.

For the MEA scale, the only variable with a significant effect was function, with managers from externally-oriented functions describing themselves as more visionary than managers from internally-oriented functions. When this variable is introduced as a covariate, the difference between the countries remains non significant. The estimated marginal means are 3.38 for the Portuguese group and 3.32 for the Dutch group, both groups scoring on average below the mid-point of the scale (i.e., slightly more pragmatic than visionary).

Summary and discussion

The Dutch sample replicated the pattern found for the Portuguese samples in respect to which scales best capture individual decision-making in managerial context. Distinctions in the questionnaire that were not found with Portuguese participants in Chapter 4 also could not be recuperated with Dutch participants. More specifically, all items in the Political domain, alternatives' items in the Rational domain, and information items in the Entrepreneurial domain did not significantly contribute to the representation of decision-making as retrieved from responses of Dutch participants. The two scales previously found to best capture individual decision-making with Portuguese participants - Managing Rational Information and Managing Entrepreneurial Alternatives - also had acceptable levels of reliability in the Dutch sample.

Empirical evidence was obtained for the equivalence of the MRI scale and MEA scale in the Dutch and Portuguese samples. With one item deleted in each scale, Tucker's φ showed that the factors on the two scales could be taken as structurally equivalent. Also, tests for the equality of the reliability coefficients of the scales showed that they were not significantly different in the two samples. Analysis of DIF revealed that one item in the MEA scale was substantially biased. After deletion of this item, both the 10-item MEA scale and the 11-item MRI scale can be considered as having an equivalent functioning in the two samples.

ANOVA revealed a significant difference between the samples in the scores on the MRI scale. This could not be explained by demographic and organisational variables in which the samples were not matched. Portuguese managers' scores were significantly higher on maximizing. The difference between the samples in the scores on the MEA scale was not significant, with both samples scoring higher on pragmatic than on visionary behaviour.

Another finding of the current study was that, similarly to the previous chapter, hierarchy level was found to have significant effects on MRI scores, and type of function (externally and internally-oriented) was found to have significant effects on MEA scores. These results suggest that the MRI scale and the MEA scale may offer routes for further research on their

association with performance and satisfaction variables in jobs across different hierarchy positions and organisational functions.

No hypotheses were formulated in respect to cross-cultural differences in the scales since previous research did not provide sound grounds for this. The results that were found suggested a higher mean for the Portuguese sample on the MRI scale, but no significant difference was observed for the MEA scale.

In summary, the results indicated that the MRI scale and the MEA scale after minor adaptations were equivalent in the Portuguese and Dutch managerial contexts. Although application in other countries requires further testing, the results of this chapter suggest that managerial decision-making across culture lends itself to comparative analysis.

Chapter 7
Analysis of score levels with Portuguese managers and expatriate managers in Portugal

In previous chapters we identified two scales that contributed to a representation of decision-making in managerial context, and analysed issues related to the structure, reliability, validity, and cross-cultural comparability of these scales. An important additional question for the use of any scale is the interpretation of quantitative differences in score levels. In this chapter we will investigate the extent to which score levels provide meaningful information on managers' decision-making behaviour.

For this purpose, we will compare score levels provided by self-reports with score levels provided by other-reports. We will start by analysing data collected for the Business group (described in Chapter 4), which included self-ratings and other-ratings for each participant. In this data set, both sources of scores are obtained with Portuguese managers, and it is possible that they are influenced by their Portuguese "cultural lenses". Therefore, a sample of foreign managers was used as an additional source of information. We will investigate whether and to what extent the description of Portuguese managers made by foreign managers working in Portugal match the self-descriptions of Portuguese managers.

An additional question is whether score levels obtained in single-culture context are significantly different from those obtained in intercultural contexts. It has been recognized that people may behave differently with members of their culture than with members of other cultures (e.g., Adler, Brahm, & Graham, 1992; Adler & Graham, 1989; Ang & Teo, 1997; Graham, 1985; Marshall & Boush, 2001; Oetzel, 1995; Ohbuchi et al., 1999; Rao & Schmidt, 1998; Thompson, 1996; Tinsley, 1998). By comparing score levels of Portuguese managers' self-reports in the Business group (single-culture interactions) with score levels of Portuguese managers working with expatriate managers in Portugal (intercultural interactions), we will analyse whether significant differences emerge.

To analyse potential sources of biases on foreign managers' other-reports, additional variables were included in the research design, the choice of which was guided by the

literature on intercultural interactions. One of the most widely researched topics is the effects of stereotypes (e.g., Campbell, 1967; McCrae & Terraciano, 2006). Therefore, a measure of stereotyping was included. A new scale was constructed, with items that were closely related to decision-making. The design followed the method of positive and negative trait adjectives (e.g., Peabody, 1985), and sixteen items were developed for each of the three decision-making domains (Rational, Political, and Entrepreneurial). The instrument and the analysis for a Portuguese and a Dutch sample can be found in Appendix 1. The final scale consisted of 36-items, for which $\alpha = .93$ in the Portuguese sample, and $\alpha = .90$ in the Dutch sample. That scale was used in the present study but in the instructions it was specified that it should be answered in terms of images held on managers from the nationality of the colleague they were interacting with (e.g., Portuguese managers for Dutch participants, and Dutch managers for Portuguese participants).

Another perspective on bias in perceptions of cultural groups is at the basis of the contact hypothesis, or intergroup contact theory (e.g. Allport, 1954; Pettigrew & Tropp, 2000). Allport (1954) argued that, under appropriate conditions, intergroup contact is an effective way of reducing prejudice, discrimination, and conflict. To analyse the effects of contact on other-ratings, data on the length and frequency of the relationship were collected. For foreign managers data on the time they had been in Portugal was also collected.

The similarity-attraction paradigm (e.g., Byrne, 1971; Riordan, 2000) also guided the choice of variables. According to this paradigm, perceived intergroup similarity is positively associated with attraction and readiness for social contact. Several authors have identified demographic factors (gender, age, race, religion, ethnicity, education, occupation, wealth, and so forth) that become salient cues for the perception of similarity (e.g., Hamilton & Trolier, 1986; Smith & Bond, 1993), and subsequently influence perceptions of others. In this study, we collected data on gender, age, education level, length of experience, function, hierarchy level, and tenure in the organisation for each participant, so that similarity could be analysed

This chapter consists of three sections. In the first section, we will present the methodology of the study, including the description of the samples, instruments and procedures, and the

treatment of missing values. The second section presents the results of the study, and the last section provides a summary and discussion of these results.

Method

Participants

Two sets of data were used: The first consists of self-ratings and other-ratings by Portuguese managers and by a foreign colleague working in Portugal. The second set includes data gathered in a single-culture context, where both participants are Portuguese. From now on the first sample will be labelled as the F-P group and the second as the P-P group. The P-P group consists of 51 pairs of protocols from the Business group in Chapter 4, where data collection procedures were already described.

To obtain the F-P group, foreign managers working in Portugal were identified through lists of the British, Dutch, French, and German Chambers of Commerce in Portugal. An e-mail was sent to all members of the list who had that information available, inviting them to participate in the study and providing a brief description on its content and instructions. It was specified that in order to participate they had to choose a Portuguese colleague and that the colleague would also be involved in the study. Those who agreed to participate were sent the questionnaires by post, together with a pre-paid return envelope. For the remainder the procedure was similar to that of the P-P group. When participants finished answering their sets of questionnaires, they put them in the pre-paid envelope and sent it to the researcher. The two members - original participant and chosen colleague - were linked by a code printed on the first page of the questionnaire. Of the 150 pairs of questionnaires sent, only 29 were received back, for a response rate of 19%. The received questionnaires include 11 Dutch managers, 7 British managers, 6 German managers, and 5 French managers.

Within the F-P group, a large majority of foreign participants were male (N=25). The Portuguese members of this group are also mainly male (N=17), but with a higher number of women (N=12). The average age of foreigners was 44.5 years, higher than their Portuguese counterparts (41.2 years). The distribution of education levels was similar for

the foreigners and the Portuguese. In both cases, 6 participants only completed High School, 6 completed a Technical Course, and the majority (N=17) had a University degree. The latter most frequently had a degree in Business Studies (8 foreigners and 6 Portuguese), followed by Engineering (7 of foreigners and 8 Portuguese).

Foreign managers were mainly in top management positions (N=25), and only 4 were middle managers. For the Portuguese, top management and middle management positions had the same number of participants (N=13), and 3 participants were first line managers. About half of the foreign managers were general managers (N=14), while 6 worked in marketing, 5 in production, and there was one manager working in each of four other functions (consulting, technical services, personnel, and finance). There was a lower number of Portuguese managers working in general management (N=5), with similar numbers working in marketing and production (6). There were 3 Portuguese managers for each of the remaining functions (consulting, technical services, personnel, and finance). The average tenure in the organisation was 10 years for foreign managers and 9 years for Portuguese managers.

Since foreign managers working in Portugal are usually appointed by the organisation's headquarters, they tend to have higher power and status than their Portuguese counterparts. In order to enhance comparisons between the F-P group and the P-P group, we decided to divide P-P group in members A and B, respectively the person with higher and lower hierarchy position in the matched pairs. The identification of relative power position was asked to participants in the questionnaire.

In the F-P group, the average age difference was 8.1 years, the average experience difference was 8.8 years, and the average tenure difference was 7.4 years. The 29 linked participants were similar in terms of gender and hierarchy position in 17 cases. In terms of education level they were similar in 12 cases, and in terms of function they were similar in 13 cases. In the P-P group, the average age difference was 7.3 years, the average experience difference was 8 years, and the average tenure difference was 7.9 years. The 51 linked participants were similar in terms of gender, hierarchy level, education level, and function in, respectively, 35, 33, 41, and 36 cases.

As far as contact is concerned, foreign managers had on average been working in Portugal for 8 years, only 4 of them were in Portugal for less than 2 years. Participants in the F-P group had been working together for 4 years on average, and only in 3 cases (10%) they had been working together for less than 1 year. In the large majority of the cases (N=27) they worked together on a daily basis, and in 2 cases they worked together on a weekly basis. In the P-P group participants had been working together for 5.8 years on average, the large majority of participants (81%) also worked together on a daily basis.

Instruments and procedure

The total set of questionnaires given to the F-P group included a first page with questions on demographic and organisational variables, the 72-item decision-making questionnaire to be answered as self-reports, and a 48-item questionnaire on stereotypes. Following the stereotypes questionnaire there was one page with questions about the chosen colleague (e.g., relative hierarchical position, frequency, and length of the relationship), and then a version of the 72-item decision-making questionnaire to be answered in terms of a description of the colleague. Questionnaires given to the P-P group were already described in Chapter 4. As mentioned in that chapter, the original version was written in English. The process for obtaining a translation into Dutch was described in Chapter 6. Translations into German and French followed a process identical to the Dutch version.

In the F-P group the completed forms were mailed out directly to foreign participants, accompanied by pre-paid return envelopes. Foreign participants were asked to pass the Portuguese version of the questionnaire to a Portuguese colleague. Further details of the procedure were the same as described previously (Chapter 4).

Missing values

In the F-P sample, the percentage of missing values in the 21-item decision-making questionnaire was 1.8% in the self-description part, and 1.6% in the partner-description part. All these missing values were replaced by the mid-point of the scale (3.5). For the stereotypes questionnaire, 3 respondents (two foreigners and, one Portuguese) missed one page of the questionnaire. It was decided not to include these subjects in analysis concerning stereotypes. In the remaining protocols, the 0.2% missing values were replaced

with the sample mean. Very few missing values were found for demographic variables (2 for experience, and 1 for age and education), and these were not replaced.

In the P-P group, the percentage of missing values for decision-making items was 0.2% in self-descriptions, and 0.1% in other-descriptions. All these missing values were replaced by the mid-point of the scale (3.5). For the stereotypes questionnaire, the percentage was 0.1%, replaced by the sample mean. Very few missing values were found for demographic variables (one for both age and experience) and these were not replaced.

Results

Each participant in the study provided a report on his/her decision-making practices (self-report) and a report on the practices of a colleague (other-report). For each participant, two further scores were computed: differentiation, i.e., the absolute difference between self-report and other-report; and discrepancy, i.e., the absolute difference between each participant's other-report and the self-report of the colleague. Differentiation shows to what extent participants accentuate differences between self and other, while discrepancy shows to what extent participants' other-reports are accurate when the self-report of the colleague is taken as the reference point. Table 7.1 summarizes the scores of the two groups of participants in these four variables for both the MRI scale and the MEA scale.

Table 7.1 *Scores of participants in intercultural and single-culture interaction*

	Foreigners-Portuguese group				**Portuguese-Portuguese group**			
MRI scale	**Foreigners** (N=29)		**Portuguese** (N=29)		**Higher power** (N=51)		**Lower power** (N=51)	
	Mean	**Std**	**Mean**	**Std**	**Mean**	**Std**	**Mean**	**Std**
Self-Reports	3.32	.69	3.58	.58	3.86	.68	3.65	.72
Other-Reports	3.72	.69	3.50	.96	3.97	.64	3.81	.81
Differentiation	.99	.66	.70	.66	.59	.49	.76	.73
Discrepancy	.80	.54	.76	.52	.66	.56	.58	.42
MEA scale	**Foreigners** (N=29)		**Portuguese** (N=29)		**Higher power** (N=51)		**Lower power** (N=51)	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Self-Reports	3.43	.48	3.27	.53	3.40	.62	3.33	.63
Other-Reports	2.91	.64	3.42	.64	3.25	.52	3.35	.80
Differentiation	.82	.49	.62	.49	.61	.47	.72	.73
Discrepancy	.54	.48	.65	.39	.50	.43	.50	.39

The following sub-sections compare, within each data set, score levels obtained in self-reports with score levels obtained in other-reports. For each scale we start by analysing the correlation between the two sources of information on each participant. We also analyse whether significant differences are found between the two sources of information.

Analysis of score levels in the single-culture data set (P-P group)

MRI scale

For the MRI scale, self-descriptions were significantly correlated with other-descriptions, For higher power participants, the correlation between their self-ratings and the other-ratings provided by colleagues was $r = .541$ ($p < .01$); for lower power participants this correlation was $r = .302$ ($p = .016$).

Paired samples t-test showed that there were no significant difference between how higher power members describe themselves and how their subordinates describe them. However, there was a significant difference between how lower power members describe themselves and how their superiors describe them.

Discrepancy scores of higher power participants were significantly positively correlated with age difference, experience difference, tenure difference, and gender difference (Table 7.2); the higher these variables, the higher the discrepancy score. In stepwise regression analysis, with discrepancy as the dependent variable, the only independent variable retained as significant was age difference, with Adjusted $R^2 = .138$. Thus, a difference in age seems to play a role in the discrepancy found between how higher power members describe their subordinates and how the latter describe themselves. This finding is in line with the similarity-attraction theory.

Table 7.2 *Correlates of discrepancy in the P-P group – MRI scale*

Correlates of discrepancy	Higher Power participants (N=51)	Lower Power participants (N=51)
Age difference	.402**	.122
Experience difference	.377**	.116
Tenure difference	.291*	.282*
Gender difference	.280*	.210
Hierarchy level difference	.164	-.102
Education level difference	-.017	.082
Function difference	.068	.065
Length of the relationship	-.160	.222
Frequency of the relationship	-.068	.153
Stereotypes	-.168	-.086

** $p < .01$; * $p < .05$ (1-tailed)

MEA scale

For the MEA scale, self-descriptions are significantly correlated with other-descriptions provided by colleagues. For higher power participants, the correlation between their self-ratings and other-ratings was $r = .627$ ($p < .01$); for lower power participants this correlation was $r = .342$ ($p < .01$). Paired samples t-test shows that there are no significant differences between the mean scores for self-reports and other-reports provided by colleagues, neither for participants higher in power, nor for participants lower in power. Thus, for the MEA scale there was no evidence of bias in the ratings.

Analysis of correlates (Table 7.3) showed that gender differences were positively related to discrepancy scores of both higher power participants and lower power participants; with more discrepancy when the two participants are of a different gender. For lower power members, discrepancy was also associated with their stereotypes on Portuguese managers; the more positive the stereotypical image, the lower the discrepancy score.

Table 7.3 *Correlates of discrepancy in the P-P group – MEA scale*

Correlates of discrepancy	Higher Power participants (N=51)	Lower Power participants (N=51)
Age difference	-.115	-.102
Experience difference	-.120	-.091
Tenure difference	-.008	-.020
Gender difference	.321*	.300*
Hierarchy level difference	-.094	-.119
Education level difference	-.155	-.061
Function difference	.013	.087
Length of the relationship	.030	-.016
Frequency of the relationship	.002	-.091
Stereotypes	-.085	-.257*

** $p < .01$; * $p < .05$ (1-tailed)

Analysis of score levels of participants in the intercultural data set (F-P group)

MRI scale

For the MRI scale, two findings were noted. Foreigners' reports on Portuguese managers were not significantly correlated with the self-reports of Portuguese managers ($r = -.137$, $p=.240$). A paired samples t-test showed no significant difference between other-reports of foreign managers and self-reports of Portuguese managers.

Analysis of correlates (Table 7.4) showed that foreign managers' discrepancy scores were significantly negatively correlated with difference in level of education, duration of the relationship, and time the foreigner had been in Portugal; the lower these variables, the higher the discrepancy score. Stepwise regression analysis, with these variables as independent variables and discrepancy of foreigners as the dependent variable, showed that the only variable retained to explain discrepancy between foreign managers other-ratings and Portuguese managers self-ratings was the time the foreign managers had been working in Portugal, with an Adjusted $R^2 = .251$. This finding is in line with the contact hypothesis.

Table 7.4 *Correlates of discrepancy in the F-P group – MRI scale*

Correlates of discrepancy	Foreign managers (N=29)	Portuguese managers (N=29)
Age difference	-.302	.120
Experience difference	.041	.103
Tenure difference	.059	-.062
Gender difference	-.001	-.129
Hierarchy level difference	-.013	-.027
Education level difference	-.352*	.149
Function difference	-.055	-.155
Length of the relationship	-.404*	-.375*
Frequency of the relationship	-.035	.008
Stereotypes	.004	-.109
Time in Portugal (foreigner)	-.538**	-.454**

** p < .01; * p < .05 (1-tailed)

MEA scale

Analysis of correlations revealed that there was a significant correlation between Portuguese managers' self-reports and foreign managers reports' on Portuguese managers ($r = .428$, $p = .010$). However, a paired samples t-test showed a significant difference between the two sources of reports on Portuguese managers.

Difference in the length of tenure was the only variable significantly correlated with discrepancy between self and other-ratings (Table 7.5). In stepwise regression analysis, this explained 17.3% of the variance in foreign managers' ratings of Portuguese managers (Adjusted R^2). Apparently, different length of stay in the organisation leads to different interpretations of what is seen as pragmatic or visionary behaviour.

Table 7.5 *Correlates of discrepancy in the F-P group – MEA scale*

Correlates of discrepancy	Foreign managers (N=29)	Portuguese managers (N=29)
Age difference	.024	-.289
Experience difference	-.051	-.285
Tenure difference	.452**	.348*
Gender difference	.027	-.195
Hierarchy level difference	.064	-.095
Education level difference	-.089	-.146
Function difference	.061	.220
Length of the relationship	.026	.116
Frequency of the relationship	.091	-.231
Stereotypes	.142	-178
Time in Portugal (foreigner)	-.112	.066

** p < .01; * p < .05 (1-tailed)

Comparison of score levels in the single-culture and the intercultural data sets

We analysed whether self-scores of Portuguese managers in the F-P data set were significantly different from those of the Portuguese managers in P-P data set. For self-descriptions, differentiation, and discrepancy ANOVA revealed no significant differences between the score levels of Portuguese participants in the intercultural condition and the score levels of Portuguese participants in the single-culture condition.

For the MRI scale, a significant difference was found between other-reports of Portuguese participants in the P-P group and the other-reports of Portuguese participants in the F-P group. Portuguese managers' other-descriptions of Portuguese are higher in maximizing behaviour than Portuguese managers' other-descriptions of foreign managers. Independent samples t-test showed that foreign managers' self-reports are significantly different from those of Portuguese participants in the single-culture condition (P-P group), both for those in higher power position ($p < .01$) and those in lower power position ($p = .048$). These results are in line with findings in the previous chapter; where a cross-cultural difference was found for the MRI scale, with the Portuguese self-reports being more maximizing than the Dutch self-reports. However, self-reports of foreign managers were not significantly different from those of Portuguese managers working with them (P-F group).

For the MEA scale, there were no significant differences between other-reports of Portuguese participants in the P-P group and other-reports of Portuguese participants in the F-P group Also, there were no significant differences between the self-reports of foreign managers and the self-reports of Portuguese managers (for both the F-P group and the P-P group). In Chapter 6 also no significant differences where found for the MEA scale.

We also analysed whether the differentiation and the discrepancy scores of foreign managers were substantially different from those scores of Portuguese participants. ANOVA revealed no significant differences, neither with Portuguese managers in the intercultural data set, or with Portuguese managers in the single-culture data set. Apparently, foreign managers and Portuguese managers did not differ in their degree of bias when describing a colleague they work with on a frequent basis.

Finally, we analysed correlates of differentiation scores. Some significant differences were found, most of which were not retained as significant in regression analyses. All in all, the observed pattern of findings did not differ in an interpretable way from a pattern that might result from a random set of scores.

Summary and Discussion

Overall, findings from this chapter support the use of the two decision-making scales as a tool for assessing Portuguese managers' decision-making styles. In the single-culture condition, self-reports of Portuguese managers were correlated with other-reports for both scales. In the intercultural condition, self-reports of Portuguese managers were correlated with other-reports of foreign managers for the MEA scale, but not for the MRI scale. For this scale, other-reports of foreign managers were influenced by the length of time he or she had been working in Portugal, which explained 25.1% of variance in the discrepancy score of foreign managers (Adjusted R^2).

For the MRI scale, foreign managers' self-reports were significantly different from those of Portuguese participants in the single-culture condition. Results are in line with the finding in Chapter 6 that Portuguese managers have a somewhat more maximizing tendency towards information than other international managers. For the MEA scale, no differences were found, which is also in accordance with results from the previous chapter.

For both the MRI scale and the MEA scale, self-ratings of Portuguese managers working in an intercultural context did not significantly differ from self-ratings of Portuguese participants working in a single-culture context. Portuguese managers do not seem to alter their ratings when working with individuals from other cultures. Expatriate managers' ratings do not appear to be more biased than Portuguese managers when describing a Portuguese colleague they frequently work with. ANOVA revealed no differences between discrepancy and differentiation scores of foreign managers and the same scores of Portuguese managers. It is noteworthy that stereotypes did not play a role in explaining discrepancy or differentiation scores of foreign managers.

A few findings were in line with the contact hypothesis or the similarity-attraction paradigm. Time in Portugal emerged as a more powerful predictor than length of the relationship with the colleague in the discrepancy scores of foreign managers on the MRI scale. The similarity-attraction paradigm could explain discrepancy scores on the MRI scale in the P-P group (age difference), as well as on the MEA scale also in the P-P group (gender differences), and on the MEA scale in the P-F group (tenure difference). It should be appreciated that these findings are tentative. They reflect a few effects that emerged as significant, but are in need of replication.

In summary, the weight of evidence has to be considered in the light of the small size of the samples, particularly that of the intercultural condition. Also, in both the single-culture and the intercultural data-sets, self-ratings and ratings by others were confounded, since the same participants provided both kinds of ratings.

Chapter 8
Conclusion

The recognition of decision-making as a core activity in management has led to a vast body of literature, including contributions from several disciplines and perspectives. In addition to being eclectic, the current state of the art on decision-making tends to be fragmented, since many studies focus on one particular aspect of decision-making, as a result of the emphasis given by the authors to specific approaches (Dean et al., 1991; Harrison, 1995).

The present study attempted to integrate aspects of decision-making drawn from different perspectives, and to derive a set of dimensions that could serve as a basis for the construction of a comprehensive instrument for assessing individual decision-making in managerial context. Based on literature review, a 72-item instrument was developed including three decision-making domains (Rational, Political, and Entrepreneurial), two kinds of activities in decision-making (managing information and managing alternatives), three decision-making phases (awareness, analysis, and action), and two formulations for the content of each topic (positive and negative).

The main distinctions were captured in a 3*2 matrix of three decision-making domains and two activities. The Rational domain refers to cognitive aspects, and was defined as the level of comprehensiveness pursued in decision-making activities. The Political domain refers to social interaction aspects, and was defined as the level to which search for agreement or support orients decision-making activities. The Entrepreneurial domain refers to aspects of environmental adaptation, and was defined as the level to which the discovery and pursuit of new opportunities and threats in the environment orients decision-making activities (Chapter 2).

The distinction between managing information and managing alternatives was based on conceptualizations of decision-making, where these two elements are said to be always present (see Chapter 3). An analysis of empirical studies aimed at improving decision processes also revealed that these studies either focus on understanding and improving the use of information (e.g., Chervany & Dickson, 1974; Feldman & March, 1981; Long &

Ziller, 1965; O'Reilly, 1980, 1983; Wright, 1980; Zaheer & Zaheer, 1997), or on understanding and improving the development and choice of alternatives (e.g., Aiken et al., 1980; Alexander, 1979; Keeney, 1994; Nutt, 1998, 2000).

The distinction between three phases was used as an aid in the construction of the questionnaire. It has often been argued that each phase requires different skills and therefore produces different repertoires of behaviour (e.g., Harrison, 1995; Mintzberg et al., 1976; Simon, 1977). By systematically covering the various phases a more representative coverage of the decision-making domain was likely to result. However, several studies have shown that the phases can come in any order, can be repeated, and can be intermingled (e.g., Hickson et al., 1986; McCall & Kaplan, 1990; Mintzberg et al., 1976; Nutt, 1984; O'Reilly, 1983; Poole, 1983). Therefore, it could not be expected that the phases could serve to organise individual differences.

The use of positive and negative formulations was based on the consideration that any decision-making behaviour can have both positive and negative implications, depending on the situation/decision at hand (e.g., Driver et al., 1996; Starbuck & Milliken, 1988). Items in the instrument were formulated in pairs addressing the same topic, with one item addressing positive aspects, and the other item addressing the negative aspects. For example, "I tend to want all available information, so that important aspects are not overlooked" was formulated in combination with "I tend to collect a lot of information that turns out to be irrelevant". If individual characteristics are reflected, participants' answers on the two items formulated for the same topic should be positively correlated.

To examine the psychometric qualities of the instrument, several studies were undertaken. The structure (main distinctions), reliability, and validity of scales were tested through self-ratings of three samples of Portuguese managers. Of these three samples, one was also asked to provide ratings on someone else (other-ratings), which were used for further examination of the instrument structure, and of the reliability and validity of the scales.

An additional analysis of the cognitive structure of the 24 items in each of the three decision-making domains was carried through an item categorization task with a sample of

Portuguese students in their final year of Management studies. The cross-cultural equivalence of the two scales found to be capturing decision-making in managerial context was tested with a sample of Dutch managers. A further study aimed at validity analysis and interpretation of score levels compared self-ratings of Portuguese managers with other-ratings by foreign colleagues.

Summary of results

The postulated structure of the 3*2 matrix with three decision-making domains and two activities could only be retrieved partially. Of the three decision domains, only the Rational and the Entrepreneurial were found consistently, while the Political domain failed to emerge as coherent. The distinction between managing information and managing alternatives was found, although not within each domain separately. In the Rational domain, the consistency of managing information items was acceptable, but the consistency of items related to managing alternatives was poor. The reverse happened in the Entrepreneurial domain, where the consistency of the latter sub-domain was satisfactory, but the consistency of managing information items was poor. This pattern of results for the 3*2 matrix was found in all four data sets analysed – self-ratings and other-ratings of the samples of Portuguese managers, and self-ratings of Dutch managers.

There are two possible reasons why the Political domain was not captured by the items in the questionnaire: Either the differentiation suggested in the literature cannot be maintained at the individual level as a general style or trait, or the operationalisation of this domain was totally inadequate. Although less than optimal formulation of items cannot be ruled out, this latter possibility would entail a striking contrast between items for the Political domain and items in the two other domains. We cannot think of a reason for such a discrepancy. In particular, item pairs on the same topic but formulated to address positive and negative aspects showed expected positive correlations, with only two exceptions in 24 pairs of items developed for the Rational and the Entrepreneurial domains. Such correlations were largely absent for the Political domain. Also, in the item categorization study, the Political domain appeared as the most chaotic.

With the advantage of hindsight, the literature was re-examined. This raised other doubts about the inclusion of the Political domain in individual decision-making. Firstly, the distinction between the three domains of decision-making was derived mainly from theoretical views on ways to group existing empirical studies. While numerous empirical studies can be found pertaining to each separate domain, we only found two empirical studies in which the three domains were identified simultaneously: Kirton (1976) and Miller (1987). The psychometric qualities of Kirton's study have been widely endorsed (e.g., Bagozzi & Foxall, 1996; Beene & Zelhart, 1988; Loo & Shiomi, 1997; Rickards & Gaston, 1995), but the items in each factor did not all represent the domain content and also showed inconsistencies in the Political domain (see Chapter 4). Miller's study was conducted at the organisational level and there may be no isomorphism in number of dimensions at different levels of analysis (Bliese et al., 2007; Kozlowski & Klein, 2000; Van de Vijver et al., 2008). In sum, theoretical distinctions found in the literature were not all grounded on empirical research. Secondly, the distinctions between levels are in line with evidence suggesting that the Political domain might be more profitably operationalised at a supra-individual level, that is, at group level or at organisational level (e.g., Darr & Johns, 2004; Maslyn & Fedor, 1998). Finally, several authors have argued that political behaviour tends to be context-specific, that is, more dependent on the situation than on the individual. It has been found, for example, that individual political behaviour, both in its degree and in its specific expression, varies according to the perceived level of organisation politicization (e.g., Gresov & Stephens, 1993; Harrell-Cook et al., 1999).

The distinction between managing information and managing alternatives was retrieved across domains but not for each domain separately. One possible explanation is that this distinction has limited use within a domain, with presumably only the most central aspects emerging in the responses. Managing information appears to constitute the core of the Rational domain. The volume and detail of information considered adequate for managers' decisions, given the requirements of different decision situations (e.g. cost-benefit and speed-accuracy trade-offs) are often mentioned in the literature as a criterion for assessing managers effectiveness and efficiency in decision-making (e.g., Driver et al., 1993; Fredrickson & Mitchell, 1984). Perhaps consideration of alternatives does not emerge separately in the Rational domain because it is not common for managers to be appraised

by how comprehensive they are in the development of alternatives but by the extent to which those alternatives are in line with challenges in the organisation's environment and therefore contribute to organisational performance (e.g., Baer & Frese, 2003; Barringer & Bluedorn, 1999; Covin & Slevin, 1989; Kilduff & Dougherty, 2000; Knight, 1997; Sorensen & Stuart, 2000; Tushman & Nadler, 1986). In other words, criteria of environmental adaptation may be viewed as more important than criteria of comprehensiveness as far as alternatives are concerned, which would also explain why managing alternatives emerges as the central aspect for the coverage of the Entrepreneurial domain.

The fact that Driver et al. (1993) retrieved both managing information and managing alternatives in their model, which is conceptually close to the Rational domain, may imply that results depend on the mode of operationalisation. The methodology used by Driver et al. consisted of decision-making scenarios, where responses may be more affected by characteristics of the decision situation and less by individual characteristics or decision-making styles. Therefore, it remains uncertain whether the fact that this study does not cross-validate Driver et al.'s findings is due to the use of a different methodology or to the fact that managing information covers the most essential aspects of the Rational domain.

Beyond the 3*2 matrix, we also analysed the distinction of the three decisions making phases - awareness, analysis, and action. No indication was found that this distinction influenced the patterning of responses, either in self-reports or in other-reports. For reasons already mentioned, we did not expect a clear differentiation, so results do not bear on the theoretical or construct validity of the findings.

The results suggested that individual differences in managers' decision-making can be captured by two scales: The first scale includes items related to managing information in the Rational domain, and the second scale includes items related to managing alternatives in the Entrepreneurial domain. These scales were labelled, respectively, as the Managing Rational Information (MRI) scale and the Managing Entrepreneurial Alternatives (MEA) scale. Responses of the three samples of Portuguese participants show that the 12-item MRI scale and the 12-item MEA scale reached good reliability, with Cronbach's $\alpha > .7$ in self-

reports and $\alpha > .8$ in other-reports. The two scales are correlated, but factor analysis showed that items in the two scales form two distinguishable factors.

The cross-cultural analysis of equivalence undertaken with a sample of Dutch managers revealed that one item in the MRI scale and two items in the MEA scale showed evidence of differential functioning in the Dutch sample. After deletion of these items, both the 11-item MRI scale and the 10-item MEA scale could be considered as equivalent for the Dutch and the Portuguese samples. Reliability of these reduced scales continued to reach acceptable levels, with $\alpha > .7$ in the Dutch and Portuguese samples. Items of the two scales form two distinguishable factors in the Dutch sample. Moreover, these factors could be considered as structurally equivalent to those obtained in the Portuguese sample, since Tucker's $\varphi > .9$ for both factors (Van de Vijver & Leung, 1997).

Validity was examined further by exploring theoretically expected correlations for the MRI scale and the MEA scale. Schwartz (1992) value theory, which postulates specific correlates for 10 different value types, provided a theoretical base for deriving predictions concerning correlations between value types and scores on the decision-making scales (see Chapter 5). For the MRI scale, the theory led us to predict a positive association with the values of tradition, conformity, security, universalism, and benevolence. For the MEA scale, both the original 1992 distinctions and those of Schwartz and Sagie (2000) led us to predict a positive association with the values of stimulation and self-direction, and a negative association with the values of tradition, conformity and security. The widely tested SVS (Schwartz Value Survey) was applied to two of the three samples of Portuguese managers. Results for the 10 predictions were all according to expectation. This strongly indicates construct validity of the scales, and it would be interesting to cross-validate these findings using samples of managers from other nationalities.

Other correlates of decision-making found in the literature include demographic and organisational variables. For the MRI scale, previous studies led us to predict a negative association with age, experience, hierarchy level, and tenure in the organisation. For the MEA scale, a positive association was expected with level of education in management, and negative associations were expected with age, experience, hierarchy level, tenure in the

organisation, and type of function. Results obtained with the three samples of Portuguese managers showed that of the 10 predictions none led to significant results contrary to expectations and only three (correlation between the MRI scale and tenure, and correlations between the MEA scale and experience and hierarchy level) did not meet expected results due to lack of significance. Overall, results on the scales' correlates for demographic and organisational variables were in line with predictions, providing further indications of construct validity of the scales.

An additional aspect of the validity of an instrument is the interpretation of quantitative differences in score levels. In the present study, this question was addressed for differences in score levels across cultural groups. Some information was provided by the comparison of Portuguese and Dutch managers (Chapter 6), and by the comparison of Portuguese managers and expatriate managers working in Portugal (Chapter 7).

Results of the Portuguese-Dutch comparison showed that Portuguese managers scored significantly higher on the MRI scale, but no significant difference was found for the MEA scale. Analyses of expatriate managers working in Portugal also indicated that Portuguese managers scored higher on the MRI scale but not on the MEA. For the MRI scale, although no significant differences were found between self-reports of foreign managers and self-reports of Portuguese managers they worked with, significant differences were found between self-reports of foreign managers and self-reports of Portuguese managers working in "Portuguese-only" contexts. At face value, these results point to a higher level of comprehensiveness in information use as a characteristic of Portuguese managers. However, at this stage it may be premature to rule out the alternative explanation that Portuguese participants may use different response tendencies (e.g., use of scale extremes). Anecdotal evidence gathered by the author during intercultural training courses for German and French managers working in Portugal supports higher emphasis on information comprehensiveness by Portuguese managers. Too lengthy explanations and irrelevant details were often mentioned as sources of irritation by course participants. One German

manager humorously mentioned that when he asked a simple question he had to "hear a detailed review of related issues dating back to King Afonso Henriques"[4].

When correlating self-reports of Portuguese managers with other-reports provided by colleagues, for the MRI scale significant positive correlations were found between self-reports of Portuguese managers with other-reports provided by their Portuguese colleagues. However, correlations between self-reports of Portuguese managers and other-reports provided by their foreign colleagues were non-significant. For the MEA scale, significant correlations were found between self-reports of Portuguese managers and other-reports, both in the case when other-reports are provided by Portuguese colleagues and in the case they are provided by foreign colleagues. The lack of correlations between self-reports of Portuguese managers and other-reports of foreign managers for the MRI scale was further examined, and two noticeable facts emerged. Firstly, paired samples t-tests showed that the difference between foreign managers' other-reports and Portuguese managers' self-reports was non-significant; this argues against doubts on the correctness of self-reports of Portuguese managers when foreign managers' reports are taken as the reference point. Secondly, the variable that best explained the discrepancy between foreign managers' reports on Portuguese managers and Portuguese managers' self-reports was the length of time the foreigner had been working in Portugal, indicating that familiarity with the Portuguese culture is an important factor for perception accuracy. Of course, the evidence from these latter samples is limited, as they were small and, given the low response rate, may not be entirely representative of the population of expatriate managers in Portugal.

Contributions

The vast body of literature on managers' decision-making includes multiple models and numerous instruments testing different aspects of managers' decision-making. However, particular aspects tend to be studied in isolation, as a result of authors' chosen perspectives or foci of analysis. To the best of our knowledge, no previous attempt has been undertaken to integrate different perspectives in a single instrument trying to cover the entire domain of managerial decision-making.

[4] The first King of Portugal, in the 12th century

By covering different perspectives on managers' decision-making, results of the current study suggest that aspects of managers' decision-making can be captured with two scales: MRI (Managing Rational Information) scale and MEA (Managing Entrepreneurial Alternatives) scale. Although limitations of the study do not allow us to assert these findings as final, there is consistency in the findings which, in our opinion, provides a good indication of the scales covering important aspects of decision-making. The results also suggest that the Political domain is of a different order than the other two domains.

The MRI scale ranges from satisficing to maximizing behaviour when dealing with information. High scores on the scale indicate a tendency to gather all available information and to consult all sources possible, to analyse information in a detailed and systematic way, to focus on accuracy versus speed, and to prefer decision situations requiring a detailed and careful planning. Low scores on the scale indicate a tendency to limit the amount of information gathered and the number of sources consulted, to analyse information according to a holistic approach (seeing the big picture) and without predetermined procedures, to focus on speed over accuracy, and to prefer decision-situations requiring immediate action or on-the-spot responses.

The MEA scale ranges from pragmatic to visionary behaviour when dealing with alternatives. High scores on the scale indicate a tendency to look for novel or untried alternatives, to be comfortable with alternatives involving radical change, to focus on potential gains and to ignore past experience when analyzing alternatives, to prefer situations involving new ventures or projects and freedom from established patterns of rules and procedures, and to be comfortable working in unstructured tasks. Low scores on the scale indicate a tendency to look for prudent or tested alternatives, to prefer alternatives involving incremental change, to focus on problems and costs and to consider past experience when analysing alternatives, to prefer situations where developments of efficiency or accuracy are necessary, to prefer to work within well-established patters of rules and procedures and where tasks are well structured.

The analysis of correlates of decision-making entails some further contributions. Firstly, the literature is unclear to the effects of several demographic variables on decision-making and

most previous studies focused mainly on single correlations between demographic variables and decision-making. The use of multiple regression made it possible to distinguish between variables with higher and lower predictive power. A managers' position in the hierarchy was the variable that contributed most to explaining scores on the MRI scale. The value of stimulation was the variable contributing most to the explanation of scores on the MEA scale, while the only demographic variable retained in the regression was type of function (internally and externally-oriented). It seems plausible that scores on the MRI scale will be related to performance and satisfaction in different hierarchy levels; scores on the MEA scale should be related to performance and satisfaction in different types of functions. Such relationships are relevant for practical applications in organisational settings, notably for the selection, placement, and training of managers. Secondly, to the best of our knowledge, analysis of decision-making correlates has not been researched in the Portuguese managerial context. The results obtained allow for a comparison of theories and empirical results developed in other contexts.

In the present study, all social-oriented value types (Schwartz, 1992, 2006), were found to be positively related to scores on the MRI scale. A significant difference was found between Dutch managers (from a country rated as individualistic) and Portuguese managers (from a country rated as collectivistic) in the MRI scale, although the amount of variance explained is small. No significant cross-cultural differences were found for the MEA scale. Scores on this scale were significantly positively correlated to all value types which according to Schwartz (1992) reflect openness to change, and significantly negatively correlated to all values reflecting conservation. Associations between the two decision-making scales and Schwartz groupings of values provide interesting avenues for future research.

Results of further cross-cultural studies on differences and similarities in the two decision-making scales could have practical applications in the design of training programs for managers preparing for international assignments. An interesting contribution of this study was that stereotypes, often one of the major foci of intercultural training programs, did not significantly affect perceptions of managers of different nationalities having a frequent working relationship.

Limitations

The instrument developed by the current study attempted to analyse general tendencies of decision-making behaviour. However, managers have to face multiple types of decisions and may choose to differentiate their repertoires of behaviour according to the requirements of the situation they have at hand (e.g., Driver et al., 1996; Starbuck & Milliken, 1998). A different methodology (e.g., using scenarios) may provide further insights on the results obtained here.

Although findings suggesting that the Political domain is not coherent were consistent, and the arguments for absence of consistent individual differences in this domain may be plausible, the evidence should not be seen as final. Also, the fact that the distinction between managing information and managing alternatives was not retrieved within domains, as suggested on the basis of the literature, will need further confirmation before it can be seen as definite.

The cross-cultural equivalence of the scales was only tested with Portuguese and Dutch participants. Although equivalence was established for these two groups, the inclusion of more cultural groups is necessary before the scales can be considered to assess culture-general aspects of managerial decision-making. It should also be noted that the study of expatriate managers in Portugal included nationalities for which equivalent functioning in the scales had not been tested but was assumed. Correlates of the scales that were in line with theoretical predictions (e.g. Schwartz's value theory) were limited to the Portuguese sample; again, the generalization of results to other cultural settings remains open.

Directions for future research

A scientific study is a step on a path. Given the results obtained in this study, the evident next step is further research on the MRI and MEA scales. One area of research would be a more thorough analysis of relationships between these scales and demographic and organisational variables. As mentioned earlier, relationships with type of function and type of industry, and their consequences for satisfaction and performance in specific job contexts, could provide useful information for the recruitment and placement of managers.

Given the growing importance of inter-departmental projects in organisations (Robbins & Judge, 2009), it is more and more common that managers with different organisational functions, and potentially different decision-making styles, have to work together. The MEA scale, for which differences were found by type of function, might be used to analyse whether different scores are a source of problems or are related to level of conflict found in cross-functional teams. The MRI scale, for which differences were found by hierarchy level, might be used to analyse whether leadership effectiveness is related to similarity in leader-member scores in the scale.

The evidence on cross-cultural equivalence suggests further analysis in practical applications for international managers. As mentioned in Chapter 6, the literature on the effects of cultural context on decision-making is full of contradictory empirical findings. The two scales may help clarify this issue. Cross-cultural differences and similarities can also be used to analyse sources of problems and conflicts in intercultural situations, with study designs like that of Chapter 7. These further investigations on cross-cultural and intercultural issues related to the two decision-making scales are likely to be of relevance for the design of training courses for international managers.

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Appendix 1
Stereotypes questionnaire

Method

Participants

Two sets of respondents were included: Portuguese managers from the Business group described in Chapter 4 (N=102), and Dutch managers from the sample described in Chapter 6 (N=67)

Instrument

The design followed the method of positive and negative trait adjectives (e.g., Peabody, 1985). Sixteen items were developed in connection with each of the three decision-making domains (Table 1). Each item had a positive and a negative pole, separated by a 6-point Likert scale, where 1 was to be chosen if respondents thought that the left word represented their general image on managers from their country clearly better than the right word, and 6 was to be chosen if the reverse happened. To avoid having the positive pole always on the same side of the scale, half of the items were reversed, and a random order was then attributed to the 48 items. Before analysis items were re-coded so that all scores ranged from negative to positive.

The stereotypes questionnaire was written in English and the procedure for translating it into Portuguese was the same as for the decision-making questionnaire, described in Chapter 4. Subsequently, stereotypes questionnaire was translated from Portuguese into Dutch by a Dutch teacher working at Universidade Clássica de Lisboa. An independent back translation into Portuguese was undertaken by a Portuguese PhD student working at Tilburg University and compared to the original Portuguese version. Only minor differences were detected and these were resolved with the help of the two translators.

Table A.1 *Trait adjectives developed in connection with the three decision making dimensions*

Rational domain		Political domain		Entrepreneurial domain	
Positive	**Negative**	**Positive**	**Negative**	**Positive**	**Negative**
Thorough *	Superficial	Communicative *	Non communicative	Preventive *	Non preventive
Selective *	Undiscerning	Reserved	Chatterers	Endowed with a spirit of initiative*	Devoid of a spirit of initiative
Methodical	Disorganized	Non secretive	Secretive	Optimistic	Pessimistic
Quick	Slow	Discreet	Indiscreet	Sceptical	Gullible
Thoughtful *	Hasty	Frank	Devious	Endowed with a sense of vision *	Devoid of a sense of vision
Decisive	Indecisive	Diplomatic *	Tactless	Autonomous	Dependent
Objective	Subjective	Ethical *	Unscrupulous	Long-term oriented	Short-term oriented
Intuitive *	Without intuition	Worldly-wise	Naïve	Active *	Contemplative
Broad-minded *	Narrow-minded	Team spirited *	Not team-spirited	Creative *	Non creative
Practical	Theoretical	Competitive *	Non competitive	Down to Earth *	Utopian
Versatile *	Limited	Respectful	Insubordinate	Progressive	Conservative
Specialists	Generalists	Non subservient	Subservient	Orthodox *	Anarchical
Open-minded *	Dogmatic	Consensus oriented	Obstinate	Challengers	Conformists
Consistent	Unsteady	Firm *	Yielding	Dutiful	Slackers
Flexible	Rigid	Democratic *	Autocratic	Adventurous	Wary
Persevering *	Wavering	Self-confident *	Lacking self confidence	Prudent *	Rash

* Reversed item

Missing values

The 48 items of the stereotypes questionnaire had 57 missing values (0,7%), replaced by the average score of the respondents' sample (Dutch or Portuguese).

Results

A preliminary factor analysis of the 48 items in the stereotypes questionnaire was undertaken with the Portuguese sample, using principal axis factoring as the extraction method and direct oblimin as the rotation method. Results showed that a single factor explained 25% of variance. A scree-plot also suggested the extraction of one factor, which can be interpreted as the items providing a global image managers hold on colleagues from their own country.

When analysing the reliability of the 48-item scale, 7 items were found to have negative correlations with the total scale (Selective, Reserved, Preventive, Sceptical, Active, Orthodox, and Prudent). After deleting these items, for the remaining 41-item scale, $\alpha = .93$ and the one-factor solution explains 27% of variance.

Analysis of reliability showed that this scale was also internally consistent in the Dutch sample, where no more items were found to have negative correlations with the total scale. However, analysis of differential item functioning showed that for 5 items (Methodical, Intuitive, Non-secretive, Non-subservient, and Down to Earth) there was evidence of uniform bias ($(\eta^2 > .08)$).

After deleting these items, for the remaining 36-item scale $\alpha = .93$ in the Portuguese sample, and $\alpha = .90$ in the Dutch sample. The one-factor solution explains 30% of variance in the Portuguese sample and 24% in the Dutch sample. When analysing the structural equivalence of the factor obtained for Portuguese sample and the factor obtained for the Dutch sample, we found $\varphi = .93$, and therefore the factors can be considered as equivalent.

Summary

The present study attempts to integrate aspects of individual decision-making in organisations, drawn from different theoretical perspectives. This forms the basis for an instrument aiming at a comprehensive assessment of decision-making. The 72-item instrument covers three domains (Rational, Political, and Entrepreneurial) and two essential activities in decision-making (managing information and managing alternatives). Three decision-making phases (awareness, analysis, and action), and two formulations per item topic (positive aspects and negative aspects) were also used as guides in the development of the instrument. (Three domains by two activities, by three phases, by two formulations provided a matrix with 36 cells for each of which two items were written.)

The factorial structure, reliability, and validity of scales drawn from the instrument were examined through self-ratings and other-ratings of samples of Portuguese managers. To examine the cognitive structure of the 24 items in each of the three decision-making domains an item categorization task was undertaken with a sample of Portuguese students of Management. Validity was analysed further with various external variables (values and demographic variables). The cross-cultural equivalence of the scales was tested with a sample of Dutch managers. An additional study aimed at validity analysis and interpretation of score levels was undertaken by comparing self- and other-ratings in a small sample of Portuguese managers with those of foreign colleagues working in Portugal.

Analysis of the structure of the answers revealed that the main distinctions included in the questionnaire could only be retrieved partially. Of the three decision domains, only the Rational and the Entrepreneurial were found consistently, while the Political items failed to emerge as a coherent domain. The distinction between managing information and managing alternatives was retrieved, although not within each domain separately. Results suggested that individual differences in managers' decision-making can be captured by two scales: one including items on managing information in the Rational domain, and the other including items on managing alternatives in the Entrepreneurial domain. This pattern of results was found in all data sets analysed – self-ratings and other-ratings of the samples of Portuguese managers, self-ratings of Dutch managers, and the item categorization of

Portuguese students. The scales were labelled, respectively, Managing Rational Information (MRI) and Managing Entrepreneurial Alternatives (MEA).

Findings on the correlates of these two scales, for Schwartz's (1992) value types as well as for demographic variables, were in line with literature-based predictions, providing evidence for construct validity. A cross-cultural analysis of equivalence undertaken with a sample of Dutch managers revealed that one item in the MRI scale and two items in the MEA scale showed evidence of differential functioning in the Dutch sample. After deletion of these items, both the 11-item MRI scale and the 10-item MEA scale could be taken as structurally equivalent for the Dutch and the Portuguese samples. Further evidence on validity was derived from the finding that their expatriate colleagues showed few systematic differences in score levels with Portuguese managers.

Respondents' hierarchical position in the organisation was the variable that explained most variance in the MRI scale, while type of function was the demographic variable contributing most to explaining scores on the MEA scale. Therefore, it seems plausible that scores on the MRI scale can be related to performance and satisfaction in different hierarchy levels, and scores on the MEA scale can be related to performance and satisfaction in different types of functions. These findings point to practical applications of the scales in organisational settings, notably for selection and placement of managers, and for training purposes.