

The role of context in intuitive decision-making

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Abstract

Few writers have examined the contextual determinants of intuitive decision-making and none has examined the differential contribution to explaining intuition made by different perspectives on context. This study seeks to supply what is absent by examining the overall impact of combinations of variables representing three different perspectives (decision, environment and firm) on the use of intuition when making strategic decisions. The results indicate that the characteristics specific to the firm and to the environment appear to be more significant to intuition than does the nature of the decision; and that the impact of the contextual variables varies from one dimension to another. The research limitations are discussed and suggestions for future research are also offered.

Keywords: intuition, strategic decision-making, context, Egypt, integrative model

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INTRODUCTION

The need for more context-rich research has been increasingly emphasized in various management subdisciplines (Galvin, 2014), including research on strategic decision-making (Papadakis, Thanos, & Barwise, 2010). Because of the globalization of markets, rapid changes in technology and the increase in economic and political turbulence, few strategic decisions have the advantage of relevant and timely information and hence intuition is increasingly seen as an authentic approach in today's business environment. For example, in certain scenarios, such as those of ambiguous and time pressured problems, decision-makers require flexible and speedy approaches to decision-making, such as intuition.

Some scholars suggest that in making decisions many executives use more intuition than formal analysis (e.g., Burke & Miller, 1999). In a similar vein, Emmanuel, Harris, and Komakech (2010) claim that decision-makers in large UK manufacturing companies are experienced executives who implement intuition, judgment and power in their strategic investment decision-making practices, and are not merely technocrats involved in financial analysis as an aspect of routine rationality. Intuition may be one of the cognitive processes that enable experienced entrepreneurs to leverage their massive knowledge and complex mental frameworks to enhance their ability to identify relevant opportunities (Baldacchino, 2013). Woiceshyn (2009) concludes that experienced decision-makers in various fields use intuition to supplement, or even to replace rational/formal analysis.

Although the number of studies investigating the role of intuition in the strategic decision-making process (SDMP) in the last decade has increased, they are still insufficient and have some inadequacies.

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For example, Sayegh, Anthony, and Perrewe (2004) propose a conceptual model of an intuitive decision process in crisis conditions, but this model is as yet untested and includes only one antecedent, namely, emotions. Moreover, many authors have suggested that top executives use intuition in strategic decision-making, but few of them explicitly examine the contextual variables that may influence its use. As argued by Sonenshein (2007), the source and determinants of intuition are not well understood. This paper addresses the less empirically researched but important process of intuitive decision-making, in the hope of providing a more realistic view of the contextual variables which affect it.

We argue that intuition in the SDMP cannot properly be understood unless its context is examined (Shepherd & Rudd, 2014). Hence, intuitive decision-making is influenced by the analysis of the situation at hand, which in turn depends on the context. This implies that a proper identification of the current situation engenders an appropriate decision. In this case, decision-making is interpreted as a purely intuitive process (Pomeroy, 2003). In their study of the importance of having contextual information available in decision-making, Sharps and Martin (2002) argue that, for a decision to be effective, information must be present in the proximate context. Such information may help in stimulating additional intellectual methods to apply to the given problem or offer active links to other relevant evidence already in mind (Sharps & Martin, 2002). Hence, considering the contextual influences within research helps decision-makers to pay attention to relationships, which in turn helps them understand why and how certain behaviors occur in different organizational settings (Johns, 2001). Considering context in research can provoke innovative perceptions and offer answers to existing questions by proposing different explanations and new insights (Johns, 2006; Härtel & O'Connor, 2014). The term 'context,' in this study, refers to the decision-specific characteristics, the features of the external environment and the character of the firm itself. Because the contextual factors are expected to influence the use of intuition in several ways, any examination of intuitive decision-making without keeping these in mind is likely to provide an incomplete and potentially inaccurate picture. Nonetheless, the strategic decision-making literature still lacks enough examination of the way in which decision-makers actually make this evaluation; moreover, few studies consider how the context influences this process (Griffin, 2007; Harrington & Ottenbacher, 2009; Härtel & O'Connor, 2014).

Several researchers have pointed to the problem of identifying key influences on the SDMP (e.g., Dean & Sharfman, 1993; Wally & Baum, 1994). Hutzschenreuter and Kleindienst (2006) stress the need to integrate multiple perspectives to ensure a complete understanding of the antecedents of a strategy process. Hitt and Tyler (1991) examine the SDMP to determine which of the three decision-making perspectives receives the greatest empirical support, namely, the rational perspective, the external control perspective and the strategic choice perspective. More empirical research, such as that of Hitt and Tyler's study is recommended by several scholars (e.g., Schwenk, 1995; Brouthers, Brouthers, & Werner, 2000).

Although some previous studies adopted integrative empirical models of intuition (e.g., Elbanna, 2015), or theoretical ones (e.g., Dane & Pratt, 2007; Shepherd & Rudd, 2014), which take some account of the context, none of them empirically investigates the overall impact of certain factors identified by different perspectives on the use of intuition. In addition, it is useful to investigate what constitutes context and to recognize that contextual factors work relationally rather than independently (Johns, 2006; Härtel & O'Connor, 2014). This study is expected to benefit by adopting instead several perspectives – those of the decision, the firm and the environment – in examining the impact of context on intuitive decision-making and seeking to demonstrate the distinct contributions of these perspectives to explaining the use of intuition.

Our research was driven by another concern as well. This is that, despite the presence of significant differences between countries, and the growing body of research on strategy practice in settings such as

China, the Commonwealth of Independent States and Latin America (Wright, Filatotchev, Hoskisson, & Peng, 2005), strategic management studies have not been matched by others in regions such as Africa and the Arab Middle East, to which Egypt belongs (Elbanna, Di Benedetto, & Gherib, 2015). Given the above, the setting should be taken into account when investigating managerial practices. Egypt in particular is an interesting setting for the purposes of this study, for several reasons: (1) related research finds that Egyptian managers seem to be different from their Western counterparts (Elbanna, Ali, & Dayan, 2011) and certain aspects of decision-making in Egypt are culture-specific (e.g., Elbanna & Child, 2007); (2) Egypt has experienced major changes in its economic and political systems over the last 70 years, which have recently been brought to an end by the dramatic consequences of the Revolution of 25th January, 2011 (Becheikh, 2013; Elbanna, Child, & Dayan, 2013); (3) Egyptian managers have distinctive cultural norms and traditions (Parnell & Hatem, 1999).

For example, it is common in the management literature to characterize Egyptian managers as respectful of leadership and seniority, fatalistic, inclined to act according to the particular relationship(s) involved rather than in accord with rules or standards (Hofstede, 1991), sensitive to personal relationships and cautious (Hickson & Pugh, 2003). Similarly, Elbanna, Ali, and Dayan (2011) report that the Egyptian setting matters in the decision-making process of executives and add that Egyptian decision-makers tend not to differentiate between different types of conflict when making strategic decisions. This is not the case in other settings, such as that of the United States (e.g., Amason, 1996).

Understanding the determinants of strategic decision-making in such settings is undoubtedly crucial in helping executives to make proper decisions. This is particularly important in view of the challenges, for example the high levels of unemployment, poverty, corruption and the lack of water and food, which Egypt and its firms faced after the 2011 revolution (Becheikh, 2013). Our study setting may thus give rise to certain views of intuition that are specific to the country's cultural and institutional characteristics.

In sum, to examine the direct effects of individual factors would be beyond the scope of the current study. Instead, we explore contextual influences on intuitive decision-making in an integrated manner in order to help fill a significant gap in the decision-making literature by complementing those models that concentrate on the direct effects of individual factors (e.g., Dayan & Elbanna, 2011) by integrated models, which investigate the overall effect of certain factors identified by different perspectives on the use of intuition (e.g., Shepherd, 2014). This may help to paint a more complete picture of intuitive decision-making.

MODEL AND HYPOTHESES

In the last decade, the conceptualization of intuition has received increasing attention from scholars (e.g., Khatri & Ng, 2000; Sadler-Smith & Shefy, 2004; Dane & Pratt, 2007). Drawing upon these conceptualizations, we regard intuition as a composite phenomenon involving both knowing (intuition as judgmental and based on experience) and sensing (intuition as gut-feeling). This particular definition seems to capture the essence of intuitive processing, as maintained in many relevant studies (e.g., Khatri & Ng, 2000).

Despite the differences in the theoretical models, which have sought to depict and explain SDMPs (e.g., Hart, 1992; Rajagopalan, Rasheed, Datta, & Spreitzer, 1997; Papadakis, Thanos, & Barwise, 2010), a careful review of such models allows us to draw out some general propositions about the likely influencing factors. The most recent review of the contextual influences of the SDMP proposes an integrative model of such factors, which includes (1) decision-specific features, (2) environmental variables, (3) firm characteristics and (4) the demographic and personal characteristics of decision-makers (Shepherd & Rudd, 2014). For the present study, we developed an integrative model that combines factors associated with all the above perspectives except the last, because data on the

characteristics of managers are not publicly available in Egypt and our exploratory study indicated that Egyptian managers are reluctant to provide them.

Given the wide range of contextual variables that may influence intuition, we applied two criteria in selecting our contextual variables: their relation to major theoretical perspectives and the continuity that they would provide with previous research on SDMPs. We now briefly describe the explanatory perspectives and advance hypotheses concerning their relevance to the use of intuition in the SDMP.

The decision-specific characteristics perspective

We focus on three characteristics (i.e., decision importance, decision uncertainty and decision motive), which have been the subject of considerable interest in previous research (Dayan & Elbanna, 2011). These characteristics also influence the SDMP more than environmental, organizational and managerial factors do (Papadakis, Lioukas, & Chambers, 1998; Elbanna & Child, 2007).

Decision importance

Given the limits on managers' time and attention, decision-makers deal with strategic issues that vary in their urgency and in the seriousness of their consequences. We expect that decision-makers will deem it less appropriate to rely on intuition for the most important decisions. There are functional and symbolic considerations behind this assertion. Economic arguments suggest that more attention and analysis should be allocated to issues involving the highest cost and commitment of resources (Winter, 1981). The generally broader scope of more important decisions suggests that they are more likely to involve contributions from several areas within a firm, which itself could be expected to make it less likely that the intuition of one or a few leaders would be exclusively depended on. The symbolic significance of major decisions to a firm presents a risk to the standing of those making them in the event of failure, which also suggests that the decision-makers will take more care to adopt a rational rather than an intuitive approach. Dayan and Elbanna (2011), for example, show that decision importance reduces the use of team intuition.

Decision uncertainty

Decision-making, especially of a strategic nature, is liable to be characterized by uncertainty. Coping with decision uncertainty forms the nub of decision-making, according to Butler (2002). Hayashi (2001) argues that analytical approaches which are effective for well-defined problems are much less so for ill-defined problems. This is why decision uncertainty may increase the reliance on intuition when making strategic decisions (Daft & Lengel, 1986; Butler, 2002; Sonenshein, 2007).

Decision motive

Perceiving a strategic decision as either an opportunity or a crisis carries much meaning (Ashmos, Duchon, & McDaniel, 1998), because it deeply affects the subsequent processes of decision-making (Child, 2002). There is evidence that executives behave in a different way if they perceive a decision as an opportunity and not as a crisis (e.g., Jackson & Dutton, 1988; Papadakis, Kaloghirou, & Itarelli, 1999). A decision perceived as an opportunity may be easily resolved and may allow decision-makers to be more confident about intuition (Dayan & Elbanna, 2011).

In conclusion, it has been argued that the way in which decision-makers categorize and label a strategic problem in the early stages of decision-making strongly influences the subsequent responses of the firm (Dutton, 1993). For example, Hickson, Butler, Cray, Mallory, and Wilson (1986) conclude that it is the issue being decided that has the most pervasive effect on the SDMP. Simon (1987) argues that the nature of the problem to be solved will probably be a principal determinant of the degree to which decision-makers use intuitive processes in decision-making. Several authors report that

decision-specific characteristics appear to play a dominant role in determining decision processes, with the result that decisions with different characteristics are handled through different decision-making processes (e.g., Papadakis, Lioukas, & Chambers, 1998; Elbanna & Child, 2007; Dayan & Elbanna, 2011). Meyer and Goes (1988) find somewhat comparable results, reporting that the innate attributes of innovations were very good predictors of the process whereby they were assimilated. Thus, we propose that:

Hypothesis 1: Decision-specific characteristics (namely, decision importance, decision uncertainty and decision motive) will account for a significant amount of variance in the use of intuition, above and beyond the variance attributable to the environmental and firm-specific characteristics (namely, environmental uncertainty, environmental hostility, firm performance and firm size).

The environmental determinism perspective

Because both environmental uncertainty and hostility have been of interest to many researchers in the strategic decision area (Miller, Ogilvie, & Glick, 2006), this paper examines their role in decision intuition. As Baum and Wally (2003) state, these two attributes have appeared frequently or been suggested for future research in empirical studies of the SDMP.

Environmental uncertainty

Decision-makers virtually never have access to all relevant information, nor can they generate all possible alternatives and accurately anticipate all consequences (Alkaraan & Northcott, 2006), which makes dealing with environmental uncertainty a common problem for all decision-makers. Hence, as argued by previous research, perceived uncertainty will have an effect on the strategy process (Miller, 2008) and it is likely to be an antecedent of decision-making rather than a moderator of the relationship between decision-making and its outcome (Boyd & Fulk, 1996; Elbanna, 2015). Meissner and Wulf (2014) support this conclusion by commenting that the level of perceived environmental uncertainty directly affects the SDMP. When there is a high level of environmental uncertainty, decision-makers tend to use their intuition because it is likely to be more difficult to rely on formal analysis (Covin, Slevin, & Heeley, 2001). Similarly, Harrington and Ottenbacher (2009) show that dynamism is most closely associated with the use of judgment. According to them, an analytical approach appears more difficult since instability disrupts one of the basic assumptions of the rational decision-making approach (i.e., a stable environment). They further claim that in a dynamic environment executives employ experience and personal knowledge as a primary tactic to make decisions.

Environmental hostility

A hostile environment exhibits the reverse characteristics; in these circumstances the external conditions affecting the firm are perceived as threatening its mission and survival (Edelstein, 1992). Related research examining the impact of environmental hostility on the SDMP points clearly to its importance (Goll & Rasheed, 1997). For example, in a hostile environment, firms need to make a greater analytical effort to understand the threats they face (Khandwalla, 1973) and taking a less cautious and more unjustified intuitive approach in a hostile environment, as opposed to a more benign one, may cost decision-makers their positions. Miller and Friesen (1983) report a positive relationship between environmental hostility and the degree of analysis applied to the SDMP.

In conclusion, contingency theory suggests that environmental characteristics have major implications for strategic management. The environmental determinism perspective presents the SDMP as markedly affected by environmental characteristics (Hitt & Tyler, 1991), a view supported by a range of empirical studies (e.g., Dean & Sharfman, 1993). So far as intuition is concerned, Burke and Miller (1999) report

the assurance of most of their respondents that it was external rather than internal factors that prompted its use. Although it is problematic to generalize from the findings of previous research concerning the nature of the impact of environmental attributes on the SDMP, the external environment has long been recognized as an important variable in explaining this process (Boyd & Fulk, 1996; Meissner & Wulf, 2014). Thus, we suggest that:

Hypothesis 2: Environmental characteristics (in this case, environmental uncertainty and environmental hostility) will account for a significant amount of variance in the use of intuition above and beyond the variance attributable to decision and firm-specific characteristics (namely, decision importance, decision uncertainty, decision motive, firm performance and firm size).

The firm specific-characteristics perspective

Reflecting their theoretical relevance, previous work and reasons of economy, the firm-specific variables examined in the present study are performance and firm size, which were thought to be much closer ontologically to the use of intuition than were other firm-specific variables of a more organizational nature, such as structure and delegation to experts.

Firm performance

Although executives make strategic decisions during both poor and good performance from their firms, the impact of performance on the SDMP is theoretically meaningful (Rajagopalan et al., 1997), and for this reason different levels of performance can differently influence the responses of managers to strategic issues (Ashmos, Duchon, & McDaniel, 1998). On the same lines, many studies have indicated the influence of organizational performance on the SDMP (e.g., Bateman & Zeithaml, 1989; Eisenhardt, 1989; Elbanna & Child, 2007). For example, managers in high-performing firms may be more confident of their experience and judgment and therefore may tend to make intuitive decisions (Fredrickson, 1985); while managers in low-performing firms may be reluctant to rely upon unexplained and risky intuition (Cyert & March, 1963). Fredrickson (1984) provides a counter argument citing the resources needed to absorb the cost of the rational processes of decision-making. These contradictory findings in previous research on the relationship between firm performance and the SDMP indicate that further empirical investigation is needed (Elbanna & Naguib, 2009).

Firm size

Strategic processes may vary systematically with firm size (Titus, Covin, & Slevin, 2011). Although the evidence on the nature of the role of firm size in the SDMP is far from generalizable (Papadakis, Lioukas, & Chambers, 1998), it has frequently been identified as a factor that can influence the SDMP (Papadakis, Lioukas, & Chambers, 1998; Walter, Kellermanns, & Lechner, 2012; Nielsen & Nielsen, 2013; Meissner & Wulf, 2014). For example, firm size affects the framework of decision-making in organizations and as the number of employees hired by the firm grows, firms tend to create new specialized subunits, such as information systems and planning units, which fosters formal analysis (Hart & Banbury, 1994) and discourages the adoption of intuitive processes of decision-making.

In conclusion, there is reason to expect that the use of intuition in the SDMP is affected by a variety of organizational factors such as size and past performance (Romanelli & Tushman, 1986; Rajagopalan et al., 1997). Shrivastava and Grant (1985), for example, propose that formal structures and the centralization of power are related to rationality, a lower degree of political activity and subunit involvement. Other researchers find that internal firm characteristics exert more significant effects on SDMP dimensions than do environmental variables (e.g., Papadakis, Lioukas, & Chambers, 1998; Elbanna & Child, 2007). We would argue that the generally limited control that decision-makers have

over environmental variables increases the impact of internal firm characteristics on the use of intuition in strategic decision-making. Thus, we propose that:

Hypothesis 3: Firm-specific characteristics (that is, firm performance and firm size) will account for a significant amount of variance in the use of intuition, above and beyond the variance attributable to decision-specific and the environmental characteristics (namely, decision importance, decision uncertainty, decision motive, environmental uncertainty and environmental hostility).

STUDY DESIGN

Given the possible effects of context, we decided to use a two-stage design (Churchill & Iacobucci, 2002) by conducting two phases of empirical work in the course of this study, one devoted to exploratory investigation and the other to hypotheses testing.

The first stage (exploratory investigation)

In this stage, the first-named author conducted the interviews and collected the questionnaires, as discussed below. Following several rules for the interviews, for example that detailed interview notes should be completed within 1 day of the interview, he conducted 36 semistructured interviews in 36 firms with managers who had been involved in making important decisions in their respective organizations (21 private and 15 public sector firms). Each respondent was provided with a definition and examples of strategic decisions and was asked questions from the interview guide of the kind shown below. (1) Please identify the last three recent strategic decisions in your firm; (2) Please give a brief description of each decision and the process followed in making it (after which the first author chose one decision to investigate in depth); (3) In the opinion of the decision-makers, how important was this decision to your firm while it was being made (not now)? (4) How did this decision start? When? (the first author was certain that the respondent went back in time and placed him/herself in the earlier context); (5) How was the actual decision made? Please describe the process followed in making this decision: the main sequence of events from its inception to its completion. (6) When did the processes of this decision end? Was there a deadline for this decision? When was it? (7) Describe your personal involvement in the decision. That is, what did you do and when (e.g., whom did you try to influence and how)? (8) Please determine which approach managers followed in making this decision – rational, intuitive or both. How (the respondent was provided with definitions of both rationality and intuition)?

Following the interviews, 128 questionnaires were collected addressing 117 strategic decisions on the part of 117 firms (106 cases of single respondents and 11 cases of two respondents within the same firm).

This stage aimed to (1) clarify concepts, (2) operationalize measures, (3) determine the practical problems of carrying out the research, (4) finalize our conceptual model of the second stage and (5) enrich the discussion of our results. In line with the results of the exploratory stage, the first author excluded some variables from the conceptual model, reordered, changed or deleted several items, refined the questionnaire design, and provided some avenues for future research. He also decided to exclude state-owned firms from the second stage of this study because the interviews revealed that top managers were not allowed to take strategic decisions without getting approval from their firms' holding companies and many of their strategic decisions, for example, early retirement decisions, involved merely the implementation of governmental policies.

On the basis of related research (Dean & Sharfman, 1993) and the results of the exploratory investigation, we took the strategic decision as our unit of analysis and identified three criteria to use

when selecting decisions in the second stage for the purposes of hypothesis testing: (1) the decision had to be considered by both the respondent and the researcher as a strategic one; (2) the decision had to be sufficiently recent to minimize memory error; and (3) the respondent should have closely participated in making the chosen decision.

The second stage (hypothesis testing)

In line with the results of the first stage, the target population in the second one was limited to 'Egyptian private manufacturing firms working in greater Cairo and employing more than 100 people'. A total of 400 revised questionnaires were dropped off in person, and 169 usable sets of responses were collected (a response rate of 42%). The firms represent a variety of industries, with no sector accounting for >23% of the sample. The decisions sampled varied widely: capital investment (30%), the introduction of new products (23%), marketing strategy (22%), restructuring (13%), production strategy (6%) and human resource strategy (6%). The average number of employees per firm was 478. The respondents were directors (35%), CEOs (31%), general managers or managing directors (20%) and chairmen or presidents (14%). All the respondents were male.

Questionnaire development and operationalization

In the light of the exploratory stage results, a number of amendments was made to the questionnaire. For example, two questions referring to politics – the threat of armed conflict in the Middle East and the ability of the party in power to maintain control of the country – were removed from the scale of environmental uncertainty because respondents had been reluctant to answer them. The resulting version of the questionnaire was reviewed by several scholars, before a translation from English to Arabic was checked by five bilingual academic staff, and finally a pilot study was conducted involving seven Egyptian executives.

To develop a composite indicator of the use of intuition, Khatri and Ng's (2000) measure of intuition was chosen as the starting point, for three reasons: (1) their measure appears to capture the main indicators of intuition, namely, knowing (judgement and experience) and sensing (gut-feeling), which have been addressed by previous studies (e.g., Sayegh, Anthony, & Perrewe, 2004; Woiceshyn, 2009); (2) Khatri and Ng applied their measure to strategic decision-making, as we were doing in the present study; (3) using this measure, they reported intuition as a characteristic which captures meaningful variations in the SDMP.

Unfortunately, the quantitative evidence from the first stage suggested that Khatri and Ng's measure is not wholly satisfactory for the Egyptian setting. The internal consistency of intuition as assessed by Coefficient α was below 0.70 ($\alpha = 0.65$). The item on experience was the main reason for this low score, since the correlation of this item with the total score did not exceed the normal cut-off point of 0.30. This suggests that, in the Egyptian setting, experience, which conceptually is an integral component of intuition (Burke & Miller, 1999; Sonenshein, 2007), needs special care.

The interviews indicated that some respondents answered the question on experience as if it meant 'to what extent is past experience important in strategic decision-making?' 'Of course, experience is an important variable in any decision' a business development director said. Others see the question as a test of whether they had enough experience. 'The long experience of our top management team is enough to take any decision ... this experience permits any member of the team to manage one of the biggest consultation centres,' replied the head of the commercial sector in a textile and clothing firm. Given the above and as shown in Table 1, the wording of this question was modified. Another modification was to replace 'pure judgement' with 'personal judgement' because 'pure judgement' seemed to be ambiguous, confusing and apt to induce respondent hesitancy. Finally, a fourth question was added to gauge intuition. This was to ask respondents to describe whether the process of making

TABLE 1. THE OPERATIONALIZATION OF INTUITION

	<i>Khatri and Ng (2000)</i>	<i>The present study</i>
1	To what extent do senior managers in your company rely on pure judgement in making important decisions?	To what extent did participants in making this decision rely basically on personal judgement? Factor loading: 0.85
2	In your company, how much emphasis do senior managers place on past experience in making important decisions?	To what extent did past experience play the main role in making this decision? Factor loading: 0.65
3	On many occasions, senior managers do not have enough information, and must make important decisions based on a 'gut feeling'	On many occasions, decision-makers do not have enough information, and must make these decisions based on a 'gut-feeling'. To what extent did participants in making this decision depend on a 'gut feeling' to make it? Factor loading: 0.86
4		In general, how would you describe the process of making this decision? (1 = 'mostly analytical,' to 7 = 'mostly intuitive') Factor loading: 0.61
	$\alpha = 0.65$	$\alpha = 0.76$

the decision as a whole seemed to them mostly analytical or mostly intuitive. These changes led to a more appropriate measure for Egyptian managers, where the α coefficient increased from 0.65 to 0.76. Moreover, the relationship between a similar scale of intuition, based on Khatri and Ng's work (Elbanna, Child, & Dayan, 2013), and a well-established scale of intuitive decision-making (Scott & Bruce, 1995) was significant ($r = 0.51$, $p < .001$).

Contextual variables were measured on the basis of related research, as shown in Table 2, which presents the measures employed, their component items, α coefficients and factor loadings. They were decision importance (Beach & Mitchell, 1978; Dean & Sharfman, 1993; Papadakis, Lioukas, & Chambers, 1998); decision uncertainty (Beach & Mitchell, 1978; Dean & Sharfman, 1993; Papadakis, Lioukas, & Chambers, 1998); decision motive (Billings, Milburn, & Schaalman, 1980; Ashmos, Duchon, & McDaniel, 1998); environmental hostility (Khandwalla, 1977); environmental uncertainty (Miller, 1993); and firm performance (Hart & Banbury, 1994). It is worth noting that we define performance as the level of a firm's attainment on both financial and nonfinancial indicators compared with that of firms which are similar in size and industry (Elbanna, 2012). In line with many previous studies, we assessed firm size by the number of full-time employees; the logarithm of this number was used in the analysis.

Because of the large number of items involved (51), we ran three sets of factor analyses; the one for each perspective and intuition was incorporated with the set of firm-specific perspectives because it has the lowest number of items (e.g., Hart & Banbury, 1994). Inspection of the correlation matrix, the Kaiser-Meyer-Olkin measure of sampling adequacy, the anti-image correlation matrix and Bartlett's test of sphericity suggests that factor analysis was appropriate for each data set. Regarding decision-specific characteristics, the first set of factor analyses produced three factors, consisting of the decision motive, decision uncertainty and decision importance. Each factor is defined by the variables with a loading >0.45 . However, there were two unexpected results. First, although both confidence in making the right choice (Dean & Sharfman, 1993) and the clarity of goals (Beach & Mitchell, 1978) should theoretically be loaded on decision uncertainty, they were in fact significantly loaded on decision motive. Second, although time pressure should theoretically be loaded on decision motive

TABLE 2. CONTEXTUAL MEASURES EMPLOYED

Variables	Measured items	α	Factor loadings
Decision importance	1. To set parameters for subsequent decisions; 2. Seriousness of the consequences if something went wrong; 3. Seriousness of delaying the decision; 4. Decision importance; 5. Time pressure	0.63	0.52–0.78
Decision uncertainty	1. Clarity of kind of information to be collected; 2. Uncertainty about the actions to be taken; 3. Difficulty of predicting the outcomes	0.74	0.53–0.93
Decision motive	1. Adequate freedom in addressing the decision; 2. Initial perception of the decision; 3. Motivation to make the decision; 4. Confidence in making the right choice; 5. Clarity of the goals for the participants	0.72	0.55–0.84
Environmental uncertainty	1. <i>Product</i> : clients' preferences; demand; changes in product components; changes in product quality; new product; and changes in the production process	0.89	0.74–0.87
	2. <i>Economy</i> : inflation rate; exchange rate with the dollar; interest rate; and results of economic restructuring	0.87	0.70–0.85
	3. <i>Competition</i> : changes in competitors' prices, markets and strategies; and entry of new companies into the market	0.83	0.49–0.92
	4. <i>Governmental policies</i> : tax policies; monetary policy; public service provision; control of prices; legal regulations; national laws; and tariffs on imported goods	0.90	0.71–0.84
Environmental hostility	Threat to survival; stressfulness; dominance over the company	0.86	0.81–0.83
Performance	<i>Financial and business performance</i> : return on assets; operating profits; market share; growth rate of sales or revenues; new product development; and diversification into new business	0.84	0.52–0.88
	<i>Nonfinancial performance</i> : quality of product; employee satisfaction; efficiency of operations; and social responsibilities	0.84	0.70–0.90
Company size	Number of employees (log)	NA	NA

Note. All items were measured by 7-point Likert-type scales except for company size.

(Billings, Milburn, & Schaalman, 1980), it was actually loaded on decision importance. Further research is required to verify whether these unexpected results are ever replicated and if they have a cultural implication.

With respect to environmental characteristics, factor analysis produced five distinct factors, four of environmental uncertainty and one of environmental hostility. Since the four subscales of environmental uncertainty do not separately add to the prediction of decision intuition, but do so in aggregate, an aggregate of all 21 environmental uncertainty items was used in the analysis. The third set of factor analyses produced three clear factors, two distinct dimensions of performance (financial and business performance; nonfinancial performance) and one factor for intuition. The above results suggest that the measurement instruments of this study meet the criteria for convergent and discriminant validity. As shown in Table 2, the results of the α coefficients range between 0.72 and 0.90 for all scales, with the exception of decision importance (0.63), indicating a satisfactory degree of internal consistency.

Response bias

Because of the difficulty of securing permission to conduct a multiple-informant survey, we relied on single respondents. We dealt with this concern before data collection in order to reduce the limitations

of incomplete recall and retrospective rationalization and also after data collection in order to examine the possibility of response bias. Before data collection, we (1) assured the respondents that all the information would be completely anonymous and confidential; (2) objectively measured firm size; (3) reversed scale anchors in several places; (4) used multiple sources of data, that is questionnaire and interview; and (5) carefully designed our survey on the basis of the exploratory study results.

After data collection, several means were employed to test the possibility of different types of bias. First, the Pearson correlation coefficients between the answers of the eight respondents who completed the identical questionnaire on two different occasions (3 months apart) range between 0.83 and 0.99. This suggests a high degree of stability/intertemporal reliability in our measures. The possibility of common method bias was tested using Harman's one-factor test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The results of factor analyses (rotated or unrotated) revealed neither a single factor nor a general factor (the first factor accounts for only 20% of the variance), suggesting that no significant systematic variance common to the measures was present.

The analysis of variance-based intraclass correlation and Pearson correlation analyses show that in the first stage 10 out of the 11 cases of multiple respondents within the same firm demonstrated significant correlations at the 1% level or better. This finding shows that our data enjoy a modest level of interrespondent reliability.

As proposed by Churchill and Iacobucci (2002), we used extrapolation to assess the total nonresponse bias by comparing the two samples in both stages, namely, exploratory investigation (117 firms) and hypotheses testing (169 firms), in relation to the number of employees. The two-sample *t*-test was found to be insignificant, showing that there was no significant difference between the two samples in terms of firm size ($p = .56$). This may suggest that our sample is representative of the population. Regarding the nonresponse bias of 'sporadic' items, sample means were used to replace missing values by the mean for the variable concerned (Churchill & Iacobucci, 2002).

RESULTS

Table 3 indicates that all correlation coefficients are below 0.55, the tolerance statistics for the three regression models are all well above 0.10 and the variance inflation factors (VIF) values are all well below 10. We can therefore conclude that there is no substantial multicollinearity within our data. Because none of the three regression models has Cook's distance above one or standardised residuals above +3.3 or below -3.3, we can argue that outliers do not give rise to concern (Stevens, 1992).

Following related research, our hypotheses were tested in two steps (e.g., Hitt & Tyler, 1991; Brouthers, Brouthers, & Werner, 2000). The first step was to enter into the equation the effects of the broader contextual factors belonging to the associated perspective as a single block. If R^2 was significant, three equations were generated using hierarchical regression to test our hypothesis. The three variables of strategic decision-specific characteristics explain 7% ($p \leq .01$) of the variance in intuition (Model 1.1 in Table 4). Given this, three equations were generated to test Hypothesis 1, as proposed above. The addition of the strategic decision-specific characteristics to the firm variables added 3% (n.s.) to the explained variance in intuition (Model 1.2 in Table 4). Adding the strategic decision-specific characteristics to the environmental characteristics in Model 1.3 increased the explained variance of intuition by 5% ($p \leq .05$) (Model 1.3 in Table 4). Finally, the addition of the strategic decision-specific characteristics to the firm and environmental variables added another 2% (n.s.) to the explained variance of intuition (Model 1.4 in Table 4). These results lend partial support to Hypothesis 1.

We followed the procedure employed to test Hypothesis 1 in order to examine Hypotheses 2 and 3. As shown in Table 4, the environmental characteristics explain 7% ($p \leq .01$) of the variance in intuition. The addition of environmental characteristics explained a significant amount of the variance of intuition above and beyond the variance explained by the firm-specific characteristics ($\Delta R^2 = 0.04$,

TABLE 3. DESCRIPTIVE STATISTICS AND CORRELATIONS AMONG VARIABLES

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1. Intuition	4.16	1.56	1								
2. Decision importance	5.13	1.12	-0.01	1							
3. Decision uncertainty	2.32	1.43	0.26**	0.08	1						
4. Decision motive	5.71	1.14	-0.18**	-0.03	-0.42**	1					
5. Environmental uncertainty	4.13	1.21	0.04	0.15	0.12	-0.12	1				
6. Environmental hostility	3.59	1.63	0.25**	0.13	0.15	-0.23**	0.43**	1			
7. Financial and business performance	4.84	1.16	-0.14	0.11	-0.23**	0.34**	-0.20*	-0.35**	1		
8. Nonfinancial performance	5.69	1.08	-0.31**	0.17*	-0.28**	0.52**	0.02	-0.25**	0.52**	1	
9. Company size (log)	2.45	0.42	-0.26**	0.08	-0.11	0.04	0.15	-0.09	0.16*	0.17*	1

Note. *, **Significant at .05 and .01 level.

TABLE 4. REGRESSION MODELS FOR PREDICTOR PERSPECTIVES OF INTUITION

Model 1.1				Model 1.2				Model 1.3				Model 1.4					
Perspective	R ²	F	Perspectives	R ²	F	ΔR ²	ΔF	Perspective	R ²	F	ΔR ²	ΔF	Perspective	R ²	F	ΔR ²	ΔF
Decision-specific	0.07	4.3**	Firm	0.14	9.1**			Environmental	0.07	6.1**			Environmental and firm	0.18	7.0**		
			Firm and decision-specific	0.17	5.6**	0.03	2.0 (n.s.)	Environmental and decision-specific	0.12	4.6**	0.05	3.4*	All perspectives	0.20	5.1**	0.02	1.8 (n.s.)
Model 2.1				Model 2.2				Model 2.3				Model 2.4					
Perspective	R ²	F	Perspectives	R ²	F	ΔR ²	ΔF	Perspective	R ²	F	ΔR ²	ΔF	Perspective	R ²	F	ΔR ²	ΔF
Environmental	0.07	6.1**	Firm	0.14	9.1**			SD-specific	0.07	4.3**			SD-specific and firm	0.17	5.6**		
			Firm and environmental	0.18	7.0**	0.04	3.4*	Decision-specific and environmental	0.12	4.6**	0.05	4.7**	All perspectives	0.20	5.1**	0.03	3.1*
Model 3.1				Model 3.2				Model 3.3				Model 3.4					
Perspective	R ²	F	Perspectives	R ²	F	ΔR ²	ΔF	Perspective	R ²	F	ΔR ²	ΔF	Perspective	R ²	F	ΔR ²	ΔF
Firm	0.14	9.1**	Environmental	0.07	6.1**			Decision-specific	0.07	4.3**			Environmental and decision-specific	0.12	4.6**		
			Environmental and firm	0.18	7.0**	0.11	7.1**	Decision-specific and firm	0.17	5.6**	0.10	6.5**	All perspectives	0.20	5.1**	0.08	5.3**

Notes. SD = strategic decision.

*, **Significant at .05 and .01 level.

$p \leq .05$; Model 2.2), the strategic decision-specific characteristics ($\Delta R^2 = 0.05$, $p \leq .01$; Model 2.3) and both the strategic decision and the firm characteristics ($\Delta R^2 = 0.03$, $p \leq .05$; Model 2.4). These results lend strong support to Hypothesis 2.

Following the same procedure, firm-specific characteristics explain 14% ($p \leq .01$) of the variance in intuition (Model 3.1 in Table 4). They explain a significant amount of variance above and beyond the variance explained by environmental characteristics ($\Delta R^2 = 0.11$, $p \leq .01$; Model 3.2), strategic decision-specific characteristics ($\Delta R^2 = 0.10$, $p \leq .01$; Model 3.3) and both environmental and strategic decision-specific characteristics ($\Delta R^2 = 0.8$, $p \leq .01$; Model 3.4). In consequence, Hypothesis 3 was strongly supported.

As shown above, we ran the regressions in all possible entry orders to rule out the effects of order and see how these results compared. The results support the conclusion that the relative importance of firm variables in predicating decision intuition is approximately equivalent to the sum of both decision- and environment-specific variables. As shown in Table 4 (Models 1.1, 2.1 and 3.1), the firm variables accounted for 7% of the variance in the use of intuition, greater than the effect of the decision variables ($p \leq .10$) or that of the environmental variables ($p \leq .10$).

DISCUSSION

A major contribution of this study is the way in which it demonstrates the potential effects that certain categories of factors have on explaining decision intuition; this is recommended by related research (Hitt & Tyler, 1991; Brouthers, Brouthers, & Werner, 2000; Elbanna & Child, 2007; Shepherd, 2014). Such a procedure extends the scope of the enquiry, which has so far focused mainly on individual effects by building upon the differential contribution to explaining intuitive decision-making that the three theoretical perspectives in our study make. Another contribution of this study is related to its setting. Egypt is distinguished as a society in transition which is experiencing dynamic changes and the mechanisms and consequences of such changes are not yet clear (Ali, 1998; Elbanna, Child, & Dayan, 2013); this explains why important decisions made by Egyptian managers should be examined to make it easier to understand the determinants of the SDMP in general and of intuition in particular. Furthermore, little research has been conducted, in particular in Egypt, to examine the connections between the contextual factors and intuitive processes of decision-making and there are constant demands for more such studies (Carr, Kolehmainen, & Mitchell, 2010).

As a contribution to providing the required research, our results suggest that the use of intuition in strategic decision-making cannot be perfectly modeled by means of a single perspective. More specifically, each perspective that we invoked accounted for some variance in the use of intuition. This fails to support the conclusion reached by Papadakis, Lioukas, and Chambers (1998) that the environmental model is inoperative. The differences in the findings of the two studies could be due to their different dependent variables (rationality and intuition); differences in analytical framework; and different settings (Egypt and Greece).

When taking account of multiple perspectives, the results point to the fact that firm-specific variables are more important than decision-specific and environmental variables for predicting decision intuition. The results of this study do not accord with the view that environmental variables exert greater influence on strategic decisions than organizational variables do (e.g., Jemison, 1981). A possible explanation of this result is that previous research on decision intuition in particular and decision-making in general has mostly been conducted in developed countries, in which environmental effects are associated with characteristics such as competition, which are likely to reflect the presence of a relatively free market system and less bureaucratic state control. Such conditions are not found in many African countries such as Egypt, where the bureaucratic regulation of business has been high. This may reduce the impact on the SDMP in Egyptian firms that is attributable to environmental variables rather than to organizational

variables (Elbanna & Child, 2007). Moreover, it may reduce the impact of political variables among the environmental ones in the approach of Egyptian firms to strategic decisions, since they have no control over them, though they may have control over organizational variables.

There is a further possible explanation for our finding that firm-specific characteristics played a leading role in predicting the use of intuition in strategic decision-making. One of the assumptions of strategic thinking is that environmental factors should be investigated and taken into account when making strategic decisions. However, Elbanna (2007) argues that organizations working in Egypt may practice strategic planning less than their counterparts in developed countries. For example, he reports that 36% of his sampled organizations have no written strategic plans; and a high percentage of his respondents are not familiar with some of the recognized traditional tools for analyzing the environment. This may indicate that Egyptian managers tend to be internally oriented, and hence the impact of environmental variables on decision intuition would be less than that of organizational variables. This possibility would support the argument that our finding about the use of intuition in the SDMP is nation-specific. It also leads to the following general proposition, which needs further research to test it through comparative analysis, such as would juxtapose cases in Egypt with those in a developed country.

Proposition: The relative contribution of environmental characteristics in accounting for variance in strategic decision-making intuition is reduced by the specific nature of the Egyptian environment.

The tenuous role of the decision-specific characteristics model in this study appears to conflict with the results of previous related research (e.g., Hickson et al., 1986; Meyer & Goes, 1988; Papadakis, Lioukas, & Chambers, 1998; Dayan & Elbanna, 2011). For example, our finding that decision-specific characteristics do not explain the unique variance in intuition over and above the combination of firm-specific and environmental variables is inconsistent with the results of Elbanna and Child (2007) for rationality as the dependent variable. This suggests that the impact of contextual variables on the SDMP varies from one attribute of the decision process to another. Given the exploratory nature of this study, the claim that decision variables have less influence on intuition than other environmental and firm variables must be treated with caution.

Our study highlights some implications for practice which could contribute to improving the SDMP. For example, since research suggests that executives do make significant use of intuition (Baldacchino, 2013) and making complex decisions under time pressure seems to come more easily to some executives than to others who struggle (Woiceshyn, 2009), the more we know about intuition, the better executives will understand how and when they can use it to their best advantage. This study could help decision-makers understand intuition and value it as a legitimate mental function which is particularly useful for some situations, such as those of rapid change. Many executives try to keep secret the fact that they use intuition (Agor, 1989); while others attempt to provide a *post hoc* rationalization for decisions reached intuitively (Reynolds, 2006), revealing their lack of confidence in their own intuition. This may be due to the negative perception of intuition. Such problems may be worse for Egyptian managers than for their Western counterparts with less confidence in their intuition. This study helps to highlight intuition as a relevant mode of decision-making by pointing to the variables, which may influence its use in the SDMP. It shows that the impact of contextual variables varies from rationality to intuition (see, e.g., Papadakis, Lioukas, & Chambers, 1998; Elbanna & Child, 2007) and that the characteristics specific to the firm and to the environment appear to have more meaning for intuition than the nature of the decision problem itself. Future research, as mentioned below, can link intuition with different types of decision outcomes. Doing so will help executives, in particular those from less developed countries such as Egypt, to understand the practical value of intuition, the fact that rationality is not the only viable approach to making effective decisions and the relative contributions, which intuition and rationality may make to the success of decisions under different sets of contextual

variables. This is of particular importance in developing countries such as Egypt, since decision-makers there may have less experience than those working in Western countries.

Limitations and future research

Some potential limitations should be kept in mind when interpreting our findings. First, our study is based on cross-sectional data that were collected from a single informant for each decision. We encourage future research to have multiple respondents and adopt a longitudinal design in order to minimize the risk of bias. Second, although we carefully reviewed related research to guide the choice of explanatory variables, which have invited substantial theoretical interest and received empirical support, we cannot claim that they are entirely representative of the three perspectives that inform our theoretical model. Hence, future research needs to consider other well-thought-out explanatory variables such as emotions (Sayegh, Anthony, & Perrewe, 2004), experience (Leybourne, 2002), confidence (Leybourne & Sadler-Smith, 2006), learning (Dane & Pratt, 2007), organizational culture (e.g., Sonenshein, 2007) and the characteristics of decision-makers, such as experience (Elbanna, Child, & Dayan, 2013). Third, the scarcity of empirical research on the antecedents of intuition in strategic decision-making constrains our ability to compare our results with these of related research. A final limitation is that this study does not incorporate intuition outcomes such as organizational performance (e.g., Khatri & Ng, 2000), decision quality (e.g., Amason, 1996) or improvisation (e.g., Leybourne & Sadler-Smith, 2006). Future research needs to consider this limitation, if a more complete model of intuition is to emerge.

Further lines of future research are also suggested by this study. First, more research of an empirical kind is required to better understand the role of the noteworthy and understudied phenomenon of intuition in the SDMP. This, together with current theoretical knowledge, will help us to build a well-developed theory on its role in decision-making. Second, this study focuses on a specific sector (manufacturing firms) in a particular country (Egypt). Future research might usefully emphasize the question of whether our findings vary across different settings, for example countries and sectors. Third, considering the weighty and growing role of foreign direct investment inflows into developing African countries such as Egypt (Zhang, Wei, & Liu, 2013), researchers need to examine the determinants and outcomes of the SDMP of foreign firms investing in these countries and compare them with those of their local counterparts. This may enhance their collective learning and in this way contribute to better decisions being made in the future.

Fourth, the intuitive and rational processes of decision-making are better conceived as two parallel systems of knowing (Dane & Pratt, 2007). The analysis of our interviews supports this notion. For example, a decision to restructure a private firm and to obtain the International Organization for Standardization certificate involved both intuition and rationality. The idea of the decision was suggested from the experience and judgment of the chairperson, that is, his intuition, in order to qualify for the European Union aid package to modernize and rehabilitate the Egyptian private sector. The European Union aid package covered 90% of the cost of modernization and rehabilitation. Afterwards, the decision was regarded as procedurally rational, since the firm conducted various International Organization for Standardization training programs and sought the help of an external consulting firm and European Union experts. The evidence extracted from this case shows that different phases of the decision-making process may be characterized by different characteristics. Moreover, it emphasizes how executives make decisions using intuitive and rational procedures. This is consistent with Jonas Salk, the discoverer of the polio vaccine, who notes 'if we combine our intuition and our reason, we can respond in an evolutionarily sound way to our problems' (as cited in Khatri & Ng, 2000: 58). Hence, a more detailed consideration is needed of the concept of intuition and its relation to other modes of decision-making such as rationality, and this may provide interesting results (e.g., Child & Hsieh, 2014).

In conclusion, by focusing on the way in which contextual variables affect the use of intuition in strategic decision-making, this paper provides a rare empirical examination of intuition. It incorporates three perspectives in order to apply a more comprehensive model than before of the contextual influences on the use of intuition and shows their different contributions to explaining intuition. It also reports research conducted in Egypt, an African country, which is rare.

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