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The mediating role of speed in the global sourcing decision process

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ABSTRACT

The principal aim of this study is to provide theory and testing to elucidate the role of decision-maker's decision process and speed during the global sourcing decision-making process (GSDP). In order to achieve this goal, we examine the behavior of a sample of 202 decision-makers belonging to Italian SMEs in the manufacturing sector. Our main finding suggests that faster decisions during the GSDP process lead to superior financial and non-financial performance of the selected supplier. Moreover, we find support for dual processing theory wherein rationality and intuition of the GSDP are associated with increased supplier performance both directly and through their effects on decision speed. Results are discussed in terms of the GSDP, SME and strategic decision-making literatures and practical implications for managers in SMEs.

1. Introduction

Research on strategic decision-making is of great importance and has grown impressively in the past four decades (Elbanna, 2006; Papadakis et al., 2010; Elbanna et al., 2014; Shepherd and Rudd, 2014). However, very few studies of strategic decision-making processes have been conducted within small and medium-sized enterprises (SMEs) (Camuffo et al., 2006; Quintens et al., 2006; Tunisini et al., 2011; Ahi et al., 2017). Even fewer studies (Francioni et al., 2015) attempt to study strategic decision processes in international SMEs or in SMEs engaged in global strategy. One such area in global strategy involves import activities and we are aware of only one study (Kaufmann and Gaeckler, 2015) analyzing decision-making in global purchasing.

This research is a response to a call by Stanczyk et al. (2015) for additional studies of the global sourcing decision-making process (GSDP). More specifically, in a literature review on global sourcing (GS), Stanczyk et al. (2017) highlight the importance of the link between GSDP and global sourcing performance and thus the need for more research in this area.

The main purpose of our study is to provide theory and testing to elucidate the role of decision-maker's speed during global sourcing decision-making processes (GSDP). We also add to knowledge on strategic decision-making by adopting a dual process model wherein rationality and intuition operate not as opposite ends of a continuum but as separate and potentially complementary processes. This research evaluates the GSDP in three steps. Firstly, we propose and analyze the relationship between global sourcing decision-making process dimensions – rationality and intuition - and decision-making speed. Secondly, we verify the relationship between rationality, intuition and both financial and non-financial performance of the selected supplier. Finally, we examine the potential mediating role of decision-making speed in the relationship between global sourcing decision-making process dimensions and global sourcing performance. In so doing we contribute to the literatures on strategic decision-making, SMEs, and global sourcing.

2. Conceptual background

2.1. International strategic decisions in purchasing

Internationalization of SMEs has received growing interest because of the increasing importance of SMEs in international markets (Child and Hsieh, 2014; Colapinto et al., 2015; Francioni et al., 2015; Kuivalainen et al., 2012; Lee et al., 2012). Despite this interest, little to no research has focused on the internationalization of SMEs' purchasing processes (Pla-Barber and Puig, 2009; Agndal, 2006). Instead, researchers have conducted studies of specific international sourcing decisions (e.g. Stanczyk et al., 2015; Carter et al., 2010) with Stanczyk et al. (2015, p. 160) stating "*it is important to distinguish between the global sourcing decision-making (GSDM) process and GS as a specific outcome of this decision-making process. For instance, if a U.S. firm decides to source locally after it has considered multiple Asian and South American*

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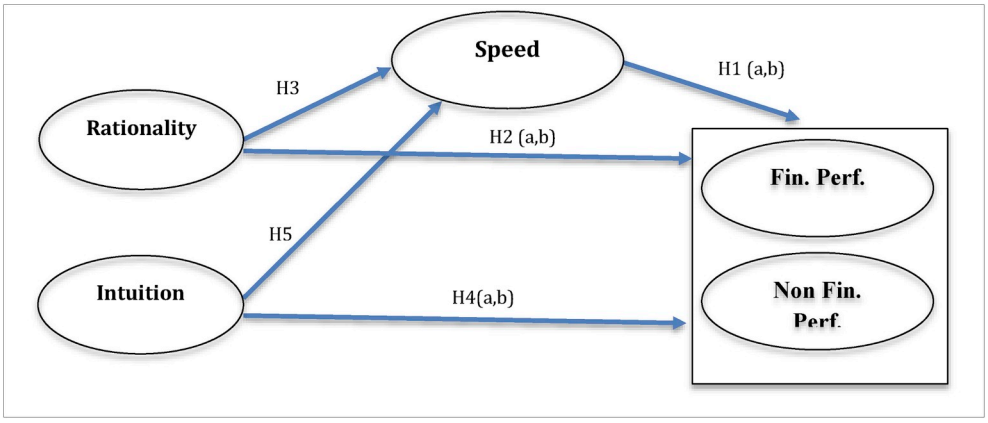

Fig. 1. Global sourcing decision-making speed: theoretical model.

sources, then the decision-making process would still be a GSDM process given that alternative suppliers from around the globe were considered". In this research, we adopt Stanczyk et al.'s (2015, p.160) definition of the GSDP as follows: "*the decision-making process for a specific GS task involves gathering and analyzing diverse information concerning the technical, logistical, operational, and financial parameters provided by alternative suppliers*". In doing so we created a model (Fig. 1) proposing a relationship between speed and supplier performance and between two GSDP dimensions, rationality and intuition, and both decision speed and global sourcing performance. Moreover, our model proposes that strategic decision-making speed mediates the relationship between the decision processes of rationality and intuition and sourcing performance of the selected supplier.

2.2. International strategic decision-making speed and performance

Decision-making speed has been defined as "*the time firms spend on all steps of the decision-making process, including identifying a problem or opportunity, collecting information, developing alternative options, assessing and valuing options, and selecting the best option*" (Kaufmann and Gaeckler, 2015, p.217). In strategic decision-making research, speed has been considered a critical outcome in and of itself (Mintzberg et al., 1976; Fredrickson and Mitchell, 1984; Eisenhardt and Bourgeois, 1988; Wally and Baum, 1994; Baum and Wally, 2003; Forbes, 2005; Clark and Maggitti, 2012). Because competitive environments are increasingly competitive, or even hypercompetitive, the ability to make decisions quickly may enable firms to better exploit opportunities (Makadok, 1998), reduce pre-emption cost (Hawk et al., 2013; Kaufmann and Gaeckler, 2015), and ultimately to increase performance. In support of this point, several studies examining the relationship between decision speed and performance have demonstrated a positive relationship between decision speed and performance (Baum and Wally, 2003; Judge and Miller, 1991; Kauer et al., 2007).

Specific to the global sourcing context of this research, Kaufmann and Gaeckler (2015, p. 218) state "*the increasing competitiveness of global supply chains and rapid technological dynamism in many industries mean that purchasing must accelerate its speed in making decisions for survival and growth*". In the context of the global sourcing decision process, the ability to make quicker supplier selection decisions confers an advantage in that the chosen supplier may confer various benefits to the firm either not available or provided at a lower level by other potential suppliers. These advantages could be of a primarily and directly financial nature (e.g., lower costs, consistent cost levels) and/or of a non-financial nature (e.g., quick and reliable delivery). The central logic here is, particularly in a competitive and changing environment, that a slower sourcing decision process reduces the chance of selecting the best or most appropriate supplier, thus foregoing both financial and non-financial benefits. Based on the research of other types of strategic decisions and the prescription of Kaufmann and Gaeckler (2015) we expect increasing speed in the GSDP will lead to better performance outcomes in global sourcing, specifically, the performance of selected suppliers. Thus:

H1. (a,b): The faster the global sourcing strategic decision making process, the better the a) financial and b) non-financial performance of the selected supplier.

2.3. Global sourcing decision-making process dimensions and their relation with speed and performance of the selected supplier

2.3.1. Rationality and intuition

Prior studies of the strategic decision-making process have focused on many dimensions to include rationality, lateral communication, formalization, political behavior, intuition, and decentralization (Dimitratos et al., 2011; Miller and Ireland, 2005; Kawakami et al., 2012; Francioni et al., 2015). In this study we decided to focus on rationality and intuition for three different reasons: firstly because while past studies have either examined rationality (Deligianni et al., 2016) or intuition (Khatri and Ng, 2000) separately, or have considered them as polar ends of a continuum (Dayan and Di Benedetto, 2011), recent decision-making research (e.g., Hodgkinson et al., 2009) has established that both rationality and intuition can be used together in a complementary fashion (Kaufmann et al., 2017). Secondly, according to the dual process theory, human decision-making is based on two main types of cognitive systems, the intuitive and the rational (Salas et al., 2010). Finally, although rationality and intuition have received some attention from researchers of both strategic decision-making and in specific supplier selection decisions, very few studies have examined these two dimensions in the context of the GSDM Process. Therefore, we contribute by integrating concepts from the strategic decision-making literature with those from the supplier selection literature to enhance understanding of global supply chain management.

2.3.2. Rationality

Decision rationality has been defined variously over the years, sometimes including how decisions are conditioned by rationality (Nielsen and Nielsen, 2011; Deligianni et al., 2016; Basel and Brühl, 2013). In this research we adopted the definition of Dean and Sharfman (1993, p. 589), where rationality is "*the extent to which the decision-making process reflects a desire to make the best decision possible under the circumstances. Such 'intended rationality' is characterized by an attempt to collect the information necessary to form expectations about various alternatives, and the use of this information in the final decision*". This definition fits the research context well since in the sourcing literature rationality is considered an analytical approach for decision-makers when making the important final sourcing decision (Stanczyk et al., 2015;

Narasimhan, 1983; Nydick and Hill, 1992; Mantel et al., 2006).

Recent research (Kaufmann et al., 2012, 2014, 2017) has examined the relationship between rationality in the supplier selection decision and performance and in all cases results revealed that the adoption of rationality is positively related to both financial and non-financial performance of the selected supplier. Also in the GS context, Stanczyk et al. (2015) state that the sourcing literature supports the positive impact of procedural rationality on GSDP effectiveness (Ellram and Siferd, 1998). Thus, based on prior research we propose:

H2. (a,b): The greater the decision-maker's rationality, the higher the a) financial and b) non-financial performance of the selected supplier

The comprehensiveness implied by a rational decision-making has been associated with a slowing of the decision process (Eisenhardt, 1989). However, when the decision context is characterized by complexity, ambiguity, and the decision is critical to the organization (e.g., strategic decisions), a rational process can actually accelerate decision-making (Eisenhardt, 1989; Clark and Maggitti, 2012). Global sourcing decisions are complex and high stakes, conforming to many of the characteristics of strategic decisions. This is particularly the case for SMEs many of which may have only recently developed a global approach to sourcing. Indeed, SMEs have more generally looked to local vendors to provide needed inputs, relying on geographically co-located clusters of affiliated, and similarly small, businesses to complete the supply chain. In this simpler circumstance, intuition often suffices in order to achieve good quality outcomes. The added complexity presented by a process of selecting amongst a larger and less proximal set of vendors may overwhelm the intuitive manager, thus slowing the process. Under these circumstances, the ability to also develop and use a rational selection process may enable the decision-maker to make a choice thus increasing the speed of decision-making. Accordingly, we propose:

H3. The greater the decision-maker's rationality, the faster the global sourcing strategic decision making process

2.3.3. Intuition

The role of intuition on decision-making process has received greater attention in recent years (Elbanna and Naguib, 2009; Child and Hsieh, 2014; Nemkova et al., 2015). Multiple perspectives on intuition have resulted in different definitions (Baldacchino et al., 2015). For instance, Dane and Pratt (2007, p. 40) described intuition as "*affectively-charged judgments that arise through rapid, non-conscious, and holistic associations*". According to Elbanna et al. (2014, p. 150) intuition can be defined as "*a mental process based on a 'gut feeling' as opposed to explicit, systematic analysis, which yields an intuitive insight or judgment that is used as a basis for decision making.*" When conceptualizing intuition in supply chain management, Carter et al. (2017) identified three main intuition constructs: experience-based processing, emotional processing, and automatic processing. In this study we decided to operationalize intuition as automatic process. This decision is based on the findings and approaches of studies conducted in supply-chain research (Simmons and Nelson, 2006; Betsch and Glockner, 2010). Carter et al. (2017) found that subjects described thoughts and preferences in their supplier selection decisions to come to mind rapidly and without much reflection. When studying supply managers, Dayan and Di Benedetto (2011) found that they sometimes made their decisions automatically, without giving much thought to it. Moreover, Liberman-Yaconi et al. (2010) describe intuitive decision-making in small firms as automatic, stemming from a "gut-feeling" or produced by subconscious mental processes, resulting in a sudden ready insight. Thus, automatic processing seems to match well with the form of intuition operating in decision makers engaged in the GSDP in SMEs.

Child and Hsieh (2014) note that the study of strategic decision-making in small firms is in its infancy and focus on both rationality and intuition as key foci. Elbanna, Child and Dayan (2013) also note the lack of empirical studies on the topic. There has been an increasing interest in examining the role of intuition in supply management studies (Kaufmann et al., 2014, 2017), with a particular focus on its relationship with performance. However, with specific regards to the GSDP, just one study (Stanczyk et al., 2015) has analyzed the role of intuition emphasizing that this area deserves more research.

In the more general strategic decision-making context, previous studies have found a negative relationship between intuition and organizational performance in a stable environment (Khatri and Ng, 2000), especially because intuition increases decision disturbance (Elbanna et al., 2013). Other studies have suggested that the reliance on intuitive as opposed to rational process may allow for idiosyncrasies in decision-making leading to a decrease in performance (Liberman-Yaconi et al., 2010). However, recent studies in supply management have found either positive or no effect on performance. Kaufmann et al. (2014) found that the adoption of intuition by sourcing team members had a positive effect on supplier performance, while Kaufmann et al. (2017) did not find any significant relationship between intuition and performance. In sum, intuition is generally thought to decrease performance because the departure from a rational ideal allows for bias, knowledge obsolescence, and other noise to interfere with decision effectiveness. However, there is some evidence that in the context of supply decisions in SMEs intuition might play an important role in selecting from amongst suppliers when the resources required of a rational model aren't available. Global sourcing decisions are complex and decision-makers in SMEs may have less experience from which to develop intuition. However, the scarcity of resources with which to conduct a rigorous rational approach also means SME decision-makers are more likely to rely on intuition. Therefore, the use of intuition in SMEs may be at greater risk of resulting in poor supplier selection outcomes. Ultimately, we are hypothesizing a negative relationship however we allow that the use of intuition in the GSDP is likely important to outcomes and may serve as a complement to rationality. Thus:

H4. (a,b): The greater the decision-maker's intuition, the lower the a) financial and b) non-financial performance of the selected supplier

The primary benefits of intuition in decision-making are that, compared to rational processes, it requires fewer resources and that it is faster. These advantages are particularly applicable to SMEs since they often lack resources required to fully engage in rational process and yet are subject to the same competitive forces larger rivals face in terms of the advantages of agile decision-making (Child and Hsieh, 2014). Intuition relies of insights gained from prior experience and requires no additional data collection. Baum and Wally (2003) observed that decision-makers in SMEs often relied on intuition precisely because useful information was not available to them, since in the majority of cases the collection of information for evaluating alternatives was much too expensive and time-consuming. Intuition also operates subconsciously and often leads to rapid choice. Indeed, previous studies in both strategic decision-making and supplier selection decision have found that the use of intuition helps to speed up decision processes (Dayan and Elbanna, 2011), and, consequently, the adoption of intuitive processes could lead to a faster solution (Dane and Pratt, 2007; Elbanna et al., 2013; Kaufmann et al., 2017). To our knowledge there are no specific studies in the context of GSDP, however, based on the above arguments we hypothesize:

H5. The greater the decision-maker's intuition, the faster the global sourcing strategic decision making process

2.4. Global sourcing decision-making speed as a mediator

The form of the relationships between various decision-making factors has long been of interest to organizational researchers (Eisenhardt, 1989; Clark and Maggitti, 2012). Of particular interest in

the strategic decision-making literature is the importance of decision speed and of factors that increase or decrease speed, and the relationship between speed and decision quality. For many years decision-making theory proposed that decision comprehensiveness (a form of quality) and decision speed were in tension. The decision-maker could emphasize one or the other, but only through the expenditure of additional resources could both be achieved – and then only partially. This tradeoff was questioned when Eisenhardt (1989), studying a set of technology companies facing turbulent environments, found that the fastest teams were also making the best decisions. Exploring this surprising finding, she identified a set of five decision tactics that affected three decision processes that in turn had both speed and quality effects on decision-making. Moreover, Eisenhardt's tactics worked through increasing rationality in the decision process (e.g., simultaneous consideration of alternatives, use of real time information), and through practices and processes linked to intuition (decision integration, confidence, smooth group process). In another study of technology firms, Clark and Maggitti (2012) found that several previously identified antecedents to decision speed actually worked through their effects on team potency (a form of confidence), and that speed was also highly correlated with decision quality in some teams. Finally, Baum and Wally (2003) found that rationality and intuition affected performance through decision speed. Accordingly, we expect the performance effects of rationality and of intuition in the global sourcing decision process to be mediated by decision speed as follows:

H6. Decision-making speed will mediate the direct effects of rationality and intuition upon supplier performance such that the significance is reduced when the indirect effects of rationality and intuition through decision-making speed are included in a total effects model.

3. Research method

3.1. Data collection

For collecting data, we obtained a list from AIDA, one of the most important private databases collecting information about firms in Italy. From a list of more than 50,000 manufacturing firms, the target population was limited to firm having the following requirements:

- headquartered in Italy;
- having no more than 250 employees (conforming to the European Union definition of SMEs);
- belonging to industries with a high level of manufacturing activities (where suppliers are critical and global supply decisions directly impact success - please see Appendix 1); and
- with information about the website, a corporate email address, a telephone number, and the number of employees (assuring the firm meets criteria 1 & 2 and to facilitate contact).

Based on this list, we contacted a total of 5074 firms by e-mail, inviting the main decision-maker in one specific global sourcing decision, that took place recently, to complete an online questionnaire. In order to enhance response rates, we also sent three reminders (Dillman, 2007).

We received a total of 288 responses, but the final useable sample size was 202. Table 1 summarizes the primary characteristics of the sample.

3.2. Construct measurement

For measuring purchasing decision-making speed we used a scale adopted by Kaufmann and Gaeckel (2015). When measuring performance of the selected supplier, we considered both financial and non-financial performance (Cai and Yang, 2008; Kaufmann and Carter, 2006; Ruamsook et al., 2007). We operationalized performance using

Table 1
Main characteristics of the sample (N = 202).

	PERCENT
Employment/Firm size	
Under 10	6.8
From 10 to 25	16.8
From 26 to 50	24.1
From 51 to 100	27.2
From 101 to 250	25.1
Turnover	
Less than 2 (millions of euros)	10.5
From 2 to 10	37.7
From 11 to 20	19.4
From 21 to 30	14.1
From 31 to 50	18.3
Years from foundation	
Less than 20 (years)	9.6
From 20 to 40 years	38.8
From 41 to 60 years	33.0
From 61 to 80 years	12.2
More than 81 years	6.4

two scales taken from Kaufmann et al. (2012). For both rationality and intuition we used an adapted version of the Kaufmann et al. (2014) scales. We controlled for two variables: purchase item dynamism and purchase item complexity. While the former is related to "*the dynamism regarding an internationally purchased item which measures the frequency, extent, and unpredictability of changes*" the latter is related to "*the complexity of that purchase item which measures technical complexity*" (Kaufmann and Carter, 2006, p. 655). For measuring these two variables, we used two scales created by Kaufmann et al. (2014) that were built from other existing scales (Baum and Wally, 2003; Kaufmann and Carter, 2006). To account for the characteristics and motivation of the GSDP decision-maker, we include a dichotomous control indicating whether they are the owner/entrepreneur or not (e.g., manager responsible for purchasing). This is important because the owner may be less likely to be a trained expert in supplier selection and thus may be more likely to rely on intuition and because non-owner purchasing managers are more likely to have specific knowledge in supplier selection (e.g., training and focused experience). Moreover, non-owner decision-makers lack the authority of the owner and thus may be more likely to look to data and rational analysis to support their supplier selection decisions. We also focused on the motivation behind the GSDP decision by asking whether the item was strategically important or not. Since the use of rational approach to supplier selection is costly, especially for SMEs, we needed to control for the level of importance of the item. Although the GSDP necessarily includes consideration of potential suppliers throughout the world, it is sometimes the case that a local supplier is chosen. In addition to characteristics of the purchase item and the decision-maker, it is important to consider characteristics of the supplier. Accordingly, we included a final control indicating whether the supplier is local or global. For a detailed description of adopted variables see Appendix 2.

4. Data analysis

4.1. Reliability and validity

We conducted a number of procedures in order to evaluate the reliability and validity of the measurement model. First, we performed the analysis of item loadings in order to evaluate the individual item reliability. Based on this analysis, we decided to remove some items that did not accomplish the minimum requirements ($\lambda < 0.6$) (Roberts and Thatcher, 2009). Construct validity was assessed with confirmatory factor analysis. Table 2 contains all primary factor loadings and weights

Table 2
Factor loadings and weights.

Construct	FACTOR	LOADING
Global sourcing decision making speed	SPEED 1	0.677
	SPEED 2	0.705
	SPEED 3	0.862
	SPEED 4	0.905
Financial Performance of selected supplier	FPERF1	0.639
	FPERF2	0.741
	FPERF3	0.656
	FPERF4	0.606
Non-financial Performance of selected supplier	NFPERF1	0.889
	NFPERF2	0.962
	NFPERF3	0.648
Rationality	RAT 1	0.808
	RAT 2	0.605
	RAT3	0.839
	RAT4	0.775
	RAT5	0.617
Intuition	INT1	0.750
	INT2	0.864
	INT3	0.872
	INT4	0.900
Purchase item dynamism	DYNAM1	0.614
	DYNAM2	0.823
	DYNAM3	0.694
	DYNAM4	0.773
Purchase item complexity	COMPLEX1	0.654
	COMPLEX2	0.814
	COMPLEX3	0.840
	COMPLEX4	0.748
	COMPLEX5	0.611

for the constructs.

Table 3 provides important indicators for the measurement model. Homogeneity and uni-dimensionality of the variables are confirmed for all cases by the value of Cronbach's alpha (all are greater than the generally accepted threshold value of 0.7). Moreover, The AVE and CR indicators, for convergent validity and reliability, having values greater than the recommended thresholds 0.5 and 0.7, respectively, provide strong support for construct validity (Hair et al., 2014).

Finally, Table 4 summarizes the correlation matrix and descriptive statistics. We note that there are no correlation coefficients higher than .50, with the exception of product dynamism and product complexity (0.548). In addition, we performed both tolerance and variance inflation factor (VIF) analyses in order to detect and guard against possible multicollinearity problems. The tolerance values for the regression variables were between .609 and .944, significantly higher than the generally acceptable threshold of .10. Moreover, VIF values were between 1.060 and 1.642, significantly lower than the general guideline of 10. In sum, our analysis provides confidence that multicollinearity is not an issue in this research (Field, 2005; Hair et al., 2014).

Table 3
Indicators for the measurement model.

Latent variables	Cronbach alpha	AVE	CR
SPEED	0.846	0.548	0.853
FPERF	0.807	0.515	0.809
NFPERF	0.851	0.716	0.878
RAT	0.831	0.524	0.840
INT	0.910	0.724	0.912
DYNAM	0.816	0.534	0.821
COMPLEX	0.851	0.552	0.858

4.2. Examination of potential biases

Following previous studies (e.g. Cousins et al., 2008), we tested for non-response bias through the extrapolation technique, equating late responses to non-respondents (Armstrong and Overton, 1977). Responses were divided into two different groups, representing those received before the third reminder and those received after the third reminder. Consequently, a t-test of difference has been conducted on firm size, turnover and mean of each variable included in the model. We did not find any statistically significant difference at $p < 0.05$, thus providing confidence that there is not a significant difference between respondents and non-respondents.

Following the recommendations of Podsakoff et al. (2003), we used several tactics to prevent potential biases. Firstly, also similarly to previous studies on global sourcing (e.g. Francioni et al., 2015; Kaufmann et al., 2017), for minimizing distortion and memory failure problems, we asked participants to focus on one key global sourcing strategic decision (namely the supplier selection process in which alternative suppliers from around the globe were examined) that took place recently (within the past year) and did so by interviewing the main decision-maker for the supplier selection decision. Several firms responded that they could not participate beacuse they have never carried out a GSDP and were eliminated from the sample. In order to ensure that the main decision-maker in the specific supplier selection process responded to the questionnaire, we contacted each respondent by phone.

Secondly, in the introductory part of the questionnaire we included a statement, in which we assured respondents of the complete anonymity and confidentiality of responses and that each item had no “right” or “wrong” answer (Miller, 2008). The latter procedure ensured that respondent would not answer in a “socially desirable” manner (Podsakoff et al., 2003; Elbanna et al., 2014).

Finally, we performed the Harman's single-factor test (Podsakoff et al., 2003) for common method variance. A principal-components factor analysis on the items revealed 9 factors with eigenvalues greater than 1.0, and these factors together accounted for 71.436 per cent of the total variance. The first (largest) factor did not account for the majority of the variance (20.182 per cent). Therefore, our findings provide evidence that common method bias is not of great concern in our research.

5. Results

Table 5 contains the results of the hierarchical regression analyses testing the hypothesized relationships among the global sourcing decision-making process dimensions of rationality and intuition, decision speed, and financial and non-financial performance of the selected suppliers.

As a first step, we introduced control variables finding a significant and positive relationship between product complexity and financial performance of the selected supplier (Model 1a). In addition, we found a negative relationship between global supplier and non-financial performance (Model 2a). Purchase item dynamism was not found to be related to either financial or non-financial performance of selected supplier.

In strong support of our Hypothesis 1 (a,b), Model 1c and 2c of Table 5 indicate that decision-making speed is positively related to both financial (H1a: $\beta = 0.419$, $p < 0.001$) and non-financial performance (H1b: $\beta = 0.290$, $p < 0.001$). This finding is consistent with research on different types of complex decisions, but has not been shown in the case of global sourcing decisions.

Our hypotheses 2 and 4 are related to the global sourcing decision-making process dimensions of rationality and intuition and supplier performance (Model 1b and 2b). Hypothesis 2 was strongly supported. Specifically, rational decision process was shown to be significantly related to both financial (H2a: $\beta = 0.203$, $p < 0.01$) and non-financial

Table 4
Correlation matrix and descriptive statistics.

Variable	1	2	3	4	5	6	7	8	9	10	Collinearity statistics	
Mean	3.387	3.385	3.972	3.185	2.512	2.560	3.445	.92	.46	.35	Tolerance	VIF
Standard deviation	.870	.736	.853	.886	1.045	.946	.936	.271	.500	.479		
1. SPEED	1										823	1.215
2. FPERF	.430**	1										
3.NFPERF	.289**	.396**	1									
4.RAT	.287**	.244**	.211**	1							.866	1.155
5.INT	.212**	.171*	.015	.170*	1						.891	1.122
6.DYNAM	.144*	.055	.054	.126	.085	1					.683	1.467
7. COMPLEX	.301*	.160*	.112	.206	.044	.548**	1				.609	1.642
8. STRAT_PROD	.094	.025	-.082	-.042	.065	.086	.163*	1			.937	1.067
9. GLOB_SUPPL	.060	.046	-.149	-.063	.039	-.084	.012	.161*	1		.944	1.060
10.OWNER	-.006	-.002	.065	-.100	.198**	-.016	-.156*	.024	.111	1	.907	1.103

*p < 0.05; **p < 0.01 (2-tailed).

Table 5
Results of regression analysis on financial and non-financial performance of the selected supplier.

	Model 1a	Model 1b	Model 1c	Model 1d	Model 2a	Model 2b	Model 2c	Model 2d	Model 3a	Model 3b
	Financial performance				**Non-Financial performance**				**Speed**	
Control variable										
DINAM	−0.044	−0.057	−0.033	−0.041	−0.041	−0.043	−0.033	−0.031	−0.027	−0.042
	(0.606)	(0.493)	(0.677)	(0.596)	(0.623)	(0.609)	(0.679)	(0.700)	(0.741)	(0.593)
COMPLEX	**0.189***	0.145	0.057	0.045	0.167	0.129	0.075	0.057	**0.315*****	**0.267****
	(0.031)	(0.091)	(0.491)	(0.583)	(0.052)	(0.133)	(0.376)	(0.506)	**(0.000)**	**(0.001)**
STRAT_PROD	−0.009	−0.001	−0.024	−0.018	−0.083	−0.068	−0.094	−0.080	0.037	0.044
	(0.904)	(0.986)	(0.715)	(0.789)	(0.245)	(0.335)	(0.173)	(0.243)	(0.597)	(0.511)
GLOB_SUPPL	0.039	0.046	0.020	0.027	**−0.153***	**−0.143***	**−0.165**	**−0.157***	0.044	0.051
	(0.595)	(0.514)	(0.760)	(0.684)	**(0.033)**	**(0.044)**	**(0.017)**	**(0.023)**	(0.532)	(0.444)
OWNER	0.023	0.009	0.007	0.002	0.109	0.129	0.098	0.124	0.037	0.019
	(0.752)	(0.897)	(0.911)	(0.973)	(0.127)	(0.075)	(0.152)	(0.078)	(0.596)	(0.783)
Independent variable										
RAT		**0.203****		0.122		**0.197****		0.138		**0.217****
		(0.005)		(0.077)		**(0.007)**		(0.055)		**(0.002)**
INT		0.131		0.072		−0.036		−0.079		**0.158***
		(0.068)		(0.288)		(0.614)		(0.263)		**(0.022)**
Mediating variables										
SPEED			**0.419*****	**0.372*****			**0.290*****	**0.271*****		
			(0.000)	**(0.000)**			**(0.000)**	**(0.000)**		
R2	0.029	0.094	0.188	0.208	0.053	0.088	0.129	0.149	0.097	0.177
Adj. R2	0.004	0.061	0.163	0.175	0.029	0.055	0.102	0.113	0.074	0.147
Model F	1.181	2.877	7.504	6.331	2.193	2.684	4.813	4.214	4.195	5.967
ΔR2	0.029	0.065	0.158	0.114	0.053	0.035	0.076	0.060	0.097	0.080
ΔF	1.181	6.937	38.002	27.734	2.193	3.759	17.021	13.689	4.195	9.489

Notes: Values displayed in the table are the standardized regression coefficient. n = 202. *p < 0.05; **p < 0.01; ***p < 0.001.

(H2b: β = 0.197, p < 0.01) performance of the selected supplier. Hypothesis 4 did not receive support, because no direct relationship was found between intuition and both financial and non-financial performance. Overall, these results demonstrate robust links between global sourcing decision process and supplier performance, but in the case of intuition the results conform more to those found in the nascent supply management research rather than the more established general decision-making stream.

Findings from Model 3a to Model 3b show the relationship among global sourcing decision-making process dimensions and speed. Model 3a shows the control purchase item complexity is related to decision speed. Model 3b demonstrates strong support for our hypotheses H3 and H5, as coefficients obtained for both rationality (H3: β = 0.217, p < 0.01) and intuition (H5: β = 0.168, p < 0.05) were significant, showing in both cases and positive relationship with speed. Results of direct links between GSDP rationality and intuition, decision speed, and performance of selected supplier are shown in Fig. 2 and Fig. 3.

Finally, we followed the Baron and Kenny's (1986) three-step procedure to test whether decision speed mediates the relationships between global sourcing decision processes and supplier financial and non-financial performance. According to Baron and Kenny, three preconditions are required in order to test for mediation.[1] The first is related to the fact that the independent variable must affect the mediator, and in our case both rationality and intuition affect speed (model 3b). According to the second condition, the independent variable must affect the dependent variable, and Table 5 shows that, while rationality affects both financial and non-financial performance, intuition does not (model 1b and model 2b). Finally, the third condition states that the

[1] Baron and Kenny employ the strong-form definition of mediation, whereas the counterview held by many researchers (MacKinnon et al., 2002) relaxes the second requirement, allowing for what is termed "indirect effects" whereby the independent variable affects the dependent variable through an intervening variable.

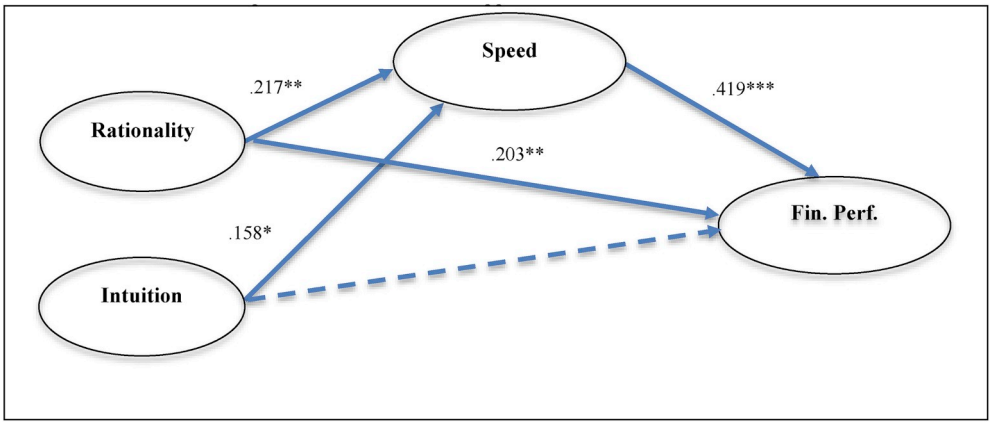

Fig. 2. Direct effects with financial performance of selected supplier.

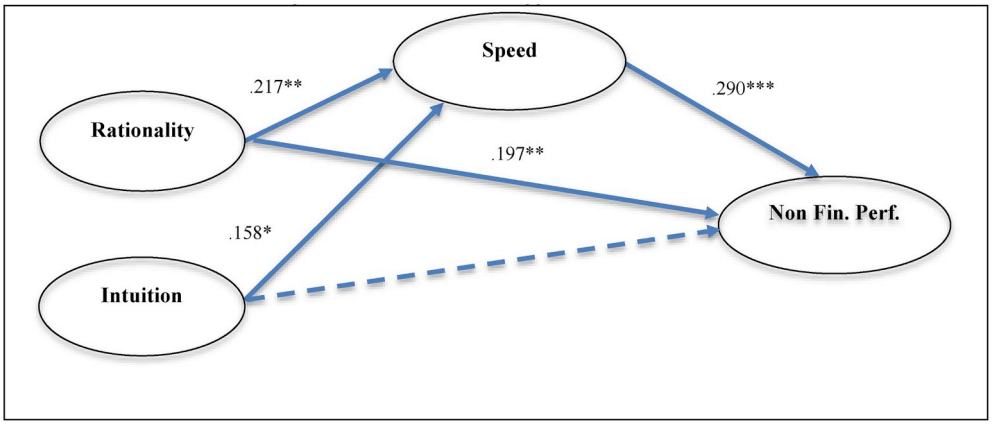

Fig. 3. Direct effects with non-financial performance of selected supplier.

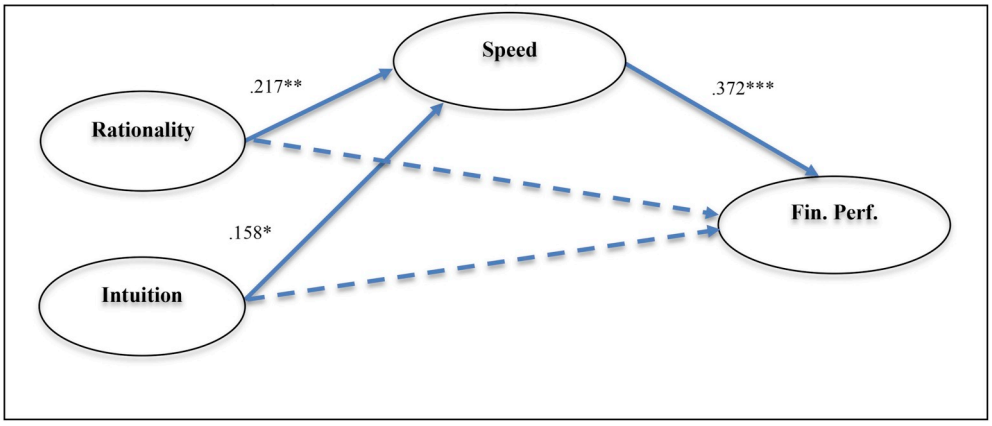

Fig. 4. Mediation model for financial performance of selected supplier.

mediator must affect the dependent variable, and in our findings speed affects both financial and non-financial performance (model 1c and model 2c).

After verifying these three conditions, according to Baron and Kenny (1986) "*perfect mediation holds if the independent variable has no effect when the mediator is controlled*". Based on that, in the median test for financial performance of supplier, the effect of rationality ($\beta = 0.203$, $p = 0.005$) completely disappeared once decision speed is introduced (Model 1d and Fig. 4). Similarly, in the mediation test for non-financial performance, the effect of rationality ($\beta = 0.197$, $p = 0.005$) completely disappeared once decision speed is introduced (Model 2d and Fig. 5).

In conclusion, we find strong support for hypothesis 6 that decision speed mediates the relationship between rationality and performance of selected supplier. The form of the relationship between intuition, decision speed and both financial and non-financial performance of the supplier is indirect (MacKinnon et al., 2002) rather than mediated, since the direct paths from intuition to both types of performance were not significant.

6. Conclusions and limitations

As global sourcing decisions are among the most complex and high stakes decisions SMEs face, it is appropriate to frame these as strategic

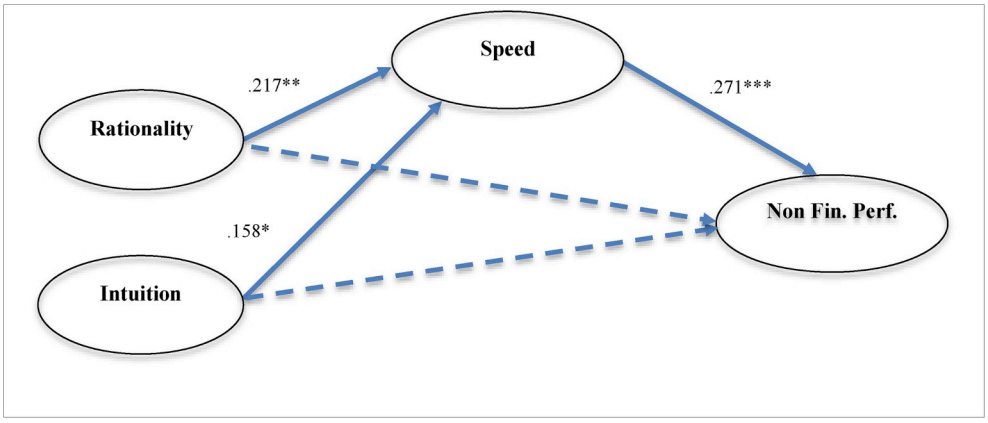

Fig. 5. Mediation model for non-financial performance of selected supplier.

decisions. This study is one of the very few that apply concepts, theories, and methods from the strategic decision-making literature into the field of supply management (Kaufmann et al., 2012) and as such makes a significant contribution to our understanding of the global sourcing decision process and for how small and medium sized firms achieve supplier performance.

SMEs often suffer from a liability of smallness such that they do not have the resources necessary to approach problems in the structured way larger organizations can. SME decision-makers have been shown to rely on intuition more as compared to managers in larger more formalized organizations (Child and Hsieh, 2014). We theorize and find that speed in the GSDP is related to financial and non-financial supplier performance. Given that suppliers vary in performance and have limited capacity to service clients, SMEs that are able to move faster than rivals have an advantage in identifying and selecting the best suppliers. Moreover, SMEs may be viewed as less legitimate or attractive partners for suppliers, particularly those who are most capable and who offer the best performance. Again, our research shows that SMEs who are able to make sourcing decisions faster, through the use of both intuitive and rational decision process, are able to achieve better outcomes from suppliers. Perhaps the decisiveness that comes from a dual processing approach conveys legitimacy to suppliers, allowing some SMEs to contract with higher quality suppliers. Indeed, Child and Hsieh (2014) note that one way SMEs potentially overcome a liability of smallness is through establishing networks with other larger entities. To the extent that decisiveness as demonstrated by decision speed is perceived as legitimizing SMEs in the eyes of high quality vendors, this research may contribute to the liability of smallness literature. Thus, while our study does not directly measure these links, future research could illuminate the mechanisms by which decision speed affects supplier perceptions of SMEs. Given the critical importance for SMEs of being able to contract with world class vendors, research in this area would also be of great practical value to managers.

Another important contribution of this research is that it provides additional support for previous studies (Baum and Wally, 2003; Judge and Miller, 1991; Kauer et al., 2007) that found decision speed to positively influence performance, in this case supplier performance. By studying a different decision context, global sourcing, and adopting a dual processing theory that simultaneously includes both rational and intuitive approaches, we expand knowledge on how and where decision speed affects performance. As mentioned above, more research is needed to understand the decision speed to performance linkage. Especially important would be detail the contingencies that either increase, decrease, or eliminate this relationship. Our work and that of prior studies has pointed to complexity as one such contingency, but others most certainly exist. A more useful theory of decision-making would define boundary conditions of the relationship so that managers can determine when speed facilitates performance and when the expenditure of additional time and resources will yield higher performance.

Counter to the expectations of prior strategic decision-making research, our study found that intuition was positively related to decision speed. Though preliminary, this is a very interesting finding and one that aligns with at least one prior study of the use of intuition in supply decisions. First, most strategic decision-making research takes place in larger organizations where structures exist to promote rationality in decision-making. In such resource rich and structured environments, intuition may be viewed as a departure from rationality. As we note above, most research considers the two to be opposite ends of a continuum. Moreover, the adoption of intuition in large structured organizations may be viewed as deviant and may introduce political behavior and other non-rational factors to the decision process (Child and Hsieh, 2014). The potential for this pollution of the process is much lower in SMEs where intuition is a staple of decision process. By adopting a dual processing theory, we allow for intuition to work on concert with, instead of in opposition to, rationality in the GSDP. To be clear, the use of intuition does not mean that rationality is absent, rather, the deep and subconscious knowledge of the intuitive decision-maker acts as complementary knowledge that is available to both speed up and increase the quality of decisions. This may be particularly the case in SMEs, where managers are more reliant on intuition and thus may be expert, as opposed to managers in large rational organizations, in developing and using intuitive decision processes.

Finally, our results revealed that strategic decision speed mediates the relationship of rationality and intuition with supplier performance, which also supports a causal argument for decision speed. Indeed, the relationships between rationality, intuition and supplier financial performance worked entirely through decision speed (e.g., full mediation). These results highlight the importance of decision speed and should intensify interest in unpacking exactly how decision speed affects decision quality. Further specification of these relationships is a promising avenue of inquiry for researchers of global sourcing, SMEs and decision-making.

Our research has several limitations. First, the study focused on the main decision-maker, however global sourcing decisions are sometimes made within a team. Therefore, we would encourage future studies to more fully define and study the range of decision-makers involved in global sourcing decisions. While we expect these studies to largely validate our findings, they could shed more light on the use of rational and intuitive decisions processes, and at the team level of analysis. For example, we expect global sourcing teams to be more likely to use rational process due to the increased human capital available to implement a more comprehensive decision process. However, when multiple personnel are engaged in a decision the potential for political behavior and conflict increases. The effects of these processes on decision speed are well known and may affect the results shown here. In any case, the

ability to identify and study all relevant decision-makers will increase our understanding of global sourcing outcomes.

We control for characteristics of the item being sourced, the decision-maker, and the selected supplier. Though we have strong confidence in our results, a limitation of this research relates to other controls that could affect outcomes of the GSDP including the motivation of the decision-maker for employing the GSDP (e.g., to seek cost advantages, to access specific and difficult to source inputs); prior GSDP experience of the decision-maker; home country or region of the selected supplier, and cultural distance of the selected supplier. The development of more fine-grained controls is a promising avenue for future research.

Another limitation of this research is the narrow way we measured non-financial performance of suppliers. When adapting the scale from Kaufmann et al. (2012), on the basis of the factor analysis we dropped two items that appear to relate most closely to quality. This resulted in non-financial performance being measured primarily in terms of reliability of supply. To be certain, reliability is a critical performance factor, but it is only one of several. Future researchers might fruitfully explore additional elements of non-financial performance to include not only quality, but also flexibility and loyalty (such as fulfillment during difficult circumstances).

This study found that decision speed plays a critical role in global sourcing outcomes, however it did not consider other potential factors which may influence speed, such as decision-makers' personality characteristics, the use of decision tactics that increase speed, and, where teams are used in the GSDP, processes that increase both speed and decision quality. Future studies could include a wider range of factors to further elucidate the GSDP.

Finally, this study focused on Italian SMEs. While this sample is an exceptional context within which to study global sourcing, the results may or may not generalize to other types of businesses situated in other cultures. Future research is, therefore, needed to test the generalizability of our findings.

APPENDIX 1. Industry categories sampled

The National Institute of Italian Statistics (ISTAT) adopts a specific classification of economic activities, named ATECO (ATtività ECOnomiche). This classification is also used by AIDA for dividing Italian companies into industry categories. Based on our third sample selection criterion, industries with a high level of manufacturing activity, we selected firms belonging to the following ATECO categories representing a broad range of manufacturing intensive industries:

- *20 - chemical products manufacturing*
- *21 - manufacture of basic pharmaceutical products and pharmaceutical preparations*
- *22 - manufacture of rubber articles and plastic materials*
- *23 - manufacture of other products of the processing of non-metallified minerals*
- *24 - metallurgy*
- *25 - manufacture of metal products (excluding machinery and equipment)*
- *26 - manufacturing computers and electronic and optical products; electromedical appliances, measuring and watching appliances*
- *27 - manufacture of electrical appliances and equipment for non-electric domestic use*
- *28 - manufacture of machinery and equipment nec*
- *29 - manufacture of motor vehicles, trailers and semi-trailers*
- *30 - manufacture of other means of transport*
- *31 - manufacture of furniture*
- *32 - other manufacturing industries*

APPENDIX 2. Construct, indicator, item and reference

Construct	Indicator	Item	Reference
Global sourcing decision making speed	SPEED 1	Within all purchasing process activities we respond faster than our competitors to problems	Kaufman and Gaeckel (2015)
	SPEED 2	Purchasing reacts fast to changes in the competitive environment	
	SPEED 3	If we see a good opportunity, we can move faster than our competitors	
	SPEED 4	Important decisions we make faster than our competitors	
Financial performance of selected supplier	FPERF1	Total cost relative to expectations at the beginning of the transaction.	Kaufmann et al. (2012)
	FPERF2	Actual cost relative to agreed upon cost at the time of the supplier selection.	
	FPERF3	Price stability since the beginning of the transaction.	
	FPERF4	Meeting target costs (the actual cost of the purchase item compared with the target cost)	
Non-financial performance of selected supplier	NFPERF1	Time from order to delivery (relative to your requirements)	Kaufmann et al. (2012)
	NFPERF2	On-time delivery (relative to your requirements)	
	NFPERF3	Completeness of deliver (relative to your requirements)	
Rationality	RAT 1	I analyzed relevant information extensively before I came to a conclusion	Kaufmann et al. (2014)
	RAT 2	I handled complex tasks by breaking them down into sub tasks and dealing with them one at a time	
	RAT3	I determined a set of relevant criteria prior to making my decision(s)	
	RAT4	I prioritized relevant decision criteria before requesting information from suppliers	
	RAT5	I structured supplier information for the purpose of evaluating the relevance of its individual aspects	
Intuition	INT1	I knew almost instantly what the best course of action was	Kaufmann et al. (2014)
	INT2	I immediately knew which supplier was the right one for the company's requirements	
	INT3	I directly knew what to do	
	INT4	I immediately was sure about which supplier to choose	
Purchase item dynamism	DYNAM1	Changes in the item specification have been difficult to predict in the past	Kaufmann et al. (2014)
	DYNAM2	The item specification was subject to frequent technological developments	
	DYNAM3	Past changes in performance requirements of the purchase item were substantial	
	DYNAM4	The item was subject to more technological changes than other items our organization has purchased	

Purchase item complexity	COMPLEX1	The item was technically complex	Kaufmann et al. (2014)
	COMPLEX2	The process required a lot of specific (technical/business) knowledge	
	COMPLEX3	The process that I considered required a substantial amount of information about the item 0.86	
	COMPLEX4	An employee involved in this process needed to know a lot about the item to do a good job	
	COMPLEX5	Numerous factors needed to be taken into account in this process	
Strategic product	STRAT_PROD	Is the product you thought about a strategic product? (Yes – 1; No – 0)	
Global supplier	GLOB_SUPPL	Is the supplier you thought about an international supplier? (Yes – 1; No – 0)	
Owner	OWNER	We asked for the main decision-maker in the purchasing context. We recoded 1 for owner and 0 for purchasing or general manager.	

Items dropped as a results of scale purification: 1 Item in SPEED (Within our firm purchasing is known as being very decisive) 1 Item in FPERF (Cost reduction initiatives of the supplier) 2 Item in NFPERF (Compliance to specifications (relative to your requirements); Quality complaint rate (relative to your requirements)) 3 Items in RATIONALITY (I followed a mostly analytical process in making decisions; I looked extensively for information before making a decision; I used a lot of quantitative analyses in making my decision).

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