

# TMT Organizational Configurations and Opportunity Realization in Established Firms:

## An Exploratory Analysis<sup>1</sup>

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### ABSTRACT

This paper studies the relationship between the opportunity realization of established firms and the organization of their top management teams (TMTs). We first consider six key organizational elements of TMTs and show how they combine in TMT organizational configurations. Then, we analyse how these configurations relate to the opportunity realization, also distinguishing between innovation and organizational change opportunities. Using a sample of 237 Italian firms collected through a survey of CEOs, we identify three well defined TMT organizational configurations: *CEO-centric TMT*, *integrated TMT*, and *incentive-based TMT*. The results from econometric models show that firms with an integrated TMT or an incentive-based TMT are generally better able to realize opportunities. Both the integrated TMT and the incentive-based TMT seem to have a positive impact on the realization of innovation opportunities, whereas the CEO-centric TMT positively relates only to organizational change opportunities. Our results contribute to the body of knowledge on how organizational design influences entrepreneurial behaviours/outcomes of established firms.

**Keywords:** established firms, top management teams, TMT organizational configurations, opportunity realization

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## INTRODUCTION

The current conditions of the global business environment urge even established firms to behave entrepreneurially (Ireland, Covin, & Kuratko, 2009). Thus, it is not surprising that scholars call for more research on how entrepreneurship occurs within these firms (Barney, Foss, & Lyngsie, 2018). In particular, since entrepreneurship encompasses not only the discovery but also the realization of opportunities (Shane & Venkataraman, 2000), researchers have recently developed an interest in the *opportunity realization* – i.e., the deployment of resources, actions and investments to realize entrepreneurial opportunities (Foss & Klein, 2012) – of established firms (e.g., Foss & Lyngsie, 2014; Foss, Lyngsie, & Zahra, 2013). Studies in this realm complement those on opportunity realization achieved by new ventures (e.g., Choi, Lévesque, & Shepherd, 2008; Choi & Shepherd, 2004; Schoonhoven, Eisenhardt, & Lyman, 1990), and advance knowledge on an important topic. Indeed, opportunity realization significantly helps firms to build a sustainable competitive advantage because value creation and capture require entrepreneurial opportunities not only to be identified and/or formed<sup>1</sup> but also to be efficiently enacted (Ireland, Hitt, & Sirmon, 2003).

Considering rising academic interest in the opportunity realization of established firms, there is room for further research. In particular, we still have a limited understanding of relations between opportunity realization and *firms' organizational design* (see e.g., Foss & Lyngsie, 2014, for a discussion of this issue and, more generally, of the linkages between firms' organizational design and their entrepreneurial behaviors/outcomes). Given that conventional wisdom suggests that established firms should adopt appropriate organizational arrangements to act entrepreneurially (Burgelman, 1983a), this gap appears highly relevant. Foss and colleagues (2013; 2015) recently attempted to fill it by studying how opportunity realization relates to key organizational design elements: allocation of decision authority (i.e., delegation vs. centralization), formalization, and coordination mechanisms. Both these works focus on the firm-level; in so doing, they overlook the “division of the entrepreneurial labour within the firm”, which prescribes a leading role for the TMT. Top executives have a strong influence on the entrepreneurial processes of established firms (Burgelman, 1983a,

1983b), in which it is crucial for “the entrepreneurial message ... [to] flow from the top” (Higdon, 2000, p. 16). More specifically, whereas scholars view opportunity identification and/or formation as happening at lower organizational levels, where knowledge of markets and technologies primarily resides (Burgelman, 1994), the decision on which opportunities to pursue and how to realize them directly involves the TMT (Barney et al., 2018). Indeed, TMT members possess superior information and judgment about their firm, being also aware of its general strategies and constraints (Prahalad & Bettis, 1986). Accordingly, TMT members are in the best position to understand whether a given opportunity fits with the firm’s core activities – e.g., in terms of potential spillover to diverse lines of business – and what resources the firm should mobilize in order to realize it (Day, 1994). In sum, opportunity realization calls for the level of strategic awareness and of strategic decision-making power, which normally reside in the TMT.

Moving from these premises, this paper investigates how *TMT organization relates to opportunity realization in established firms*. To this end, we consider six key organizational elements of the TMT (i.e., delegation of decision authority by the CEO to TMT members, incentives for TMT members, coordination mechanisms, communication mechanisms, TMT size, and formalization of TMT processes and procedures), and show how they combine to form *TMT organizational configurations*. Then, we analyse how these configurations relate to the realization of entrepreneurial opportunities. Interestingly enough, we take inspiration from Eckardt and Shane (2003), and we also distinguish between *innovation opportunities* and *organizational change opportunities*. The former imply changes in the firm’s processes, products, and markets, such as developing new products, adopting new production technologies, or entering new markets. The latter, instead, entail the adoption of new organizational arrangements, such as implementing a different organizational structure or new employee management practices.<sup>2</sup> In so doing, we explore deeper into whether and how different TMT organizational configurations affect the realization of these two types of opportunities. We conducted our analyses on a sample of 237 Italian firms, which we created by administering a large scale survey to their Chief Executive Officers (CEOs) (Rovelli & Rossi-Lamastra, 2018).

Our work offers several contributions to the literature. First, in line with the seminal work of Miles and Snow (1978), the paper proposes a *holistic view* of the TMT organization, which results from the (emergent) combination of several organizational elements. Second, it advances research on the relationships between organizational design and entrepreneurial behaviours/outcomes of established firms. In particular, it complements extant firm-level studies by explicitly focusing on a crucial firm “building block”: the TMT. Hence, it extends the work of Barney et al. (2018), who investigated how the TMT influences opportunity formation, by documenting the key role of the TMT and of its organization in opportunity realization; in particular, our results show that TMT configurations matter for the realization of both innovation opportunities and organizational change opportunities. Finally, by studying how diverse TMT organizational configurations differently relate to the realization of innovation opportunities and organizational change opportunities, this work advances discussions on the equifinality of configurations (e.g., Doty & Glick, 1994; Fiss, 2007; Gresov & Drazin, 1997). In other words, the paper sheds light on whether the realization of one specific type of opportunity calls for *one specific* TMT organizational configuration, or if it may be associated with two (or more) configurations among which the firm can choose the one it prefers.

## **THEORETICAL BACKGROUND**

### **The role of the TMT in the realization of entrepreneurial opportunities by established firms**

The literature on TMTs unanimously acknowledges the paramount importance of top executives in defining and implementing firms’ strategies (García-Granero, Fernández-Mesa, Jansen, & Vega-Jurado, 2018; Hambrick, 2007; Yoo & Reed, 2015). According to the upper echelons theory (Hambrick & Mason, 1984), these strategies indeed reflect the beliefs, the preferences (Lumpkin & Dess, 1996), the motivational incentives (Li, Guo, Liu, & Li, 2008), and the behaviours of the TMT (Van Doorn, Jansen, Van den Bosch, & Volberda, 2013).

So far, scholars have mainly focused their attention on how the TMT forges strategies related to, for instance, diversification, M&A, internationalization, and sustainability (e.g., Marlin, Lamont, &

Geiger, 2004; Nadolska & Barkema, 2014; Sanders & Carpenter, 1998; Wally & Becerra, 2001). Instead, we need to learn more about the role of the TMT in defining and implementing the so-called *entrepreneurial strategy*. Such a strategy enables entrepreneurial behaviours/outcomes to be adopted also by established firms, and not only by new ventures, and encompasses the creation and realization of entrepreneurial opportunities (Barney et al., 2018; van Doorn, Heyden, & Volberda, 2017). The handful of contributions investigating the ideation and realization of entrepreneurial opportunities in established firms have largely disregarded the role of the TMT (e.g., Burgelman, 1991; Foss, 2003; Lovas & Ghoshal, 2000). The mainstream view is, instead, that, in established firms, entrepreneurship occurs at lower organizational levels, where employees and middle managers creatively recombine their first-hand knowledge on markets and technologies to create novel opportunities for value creation and capture (e.g., Burgelman, 1994; Foss, 2003; Lovas & Ghoshal, 2000). In this framework, top executives are (implicitly) attributed a minor role: they have only to avoid stifling entrepreneurial spirits spontaneously emerging from the bottom up by acting as enablers rather than as constraints. Scholars have recently questioned this alleged distance between the TMT and entrepreneurship in established firms. First, it has been noted that too little involvement in opportunity formation by top executives may cause an inefficient proliferation of disparate entrepreneurial initiatives, which chaotically emerge from the lower levels (Foss, Pedersen, Pyndt, & Schultz, 2012). Accordingly, recent contributions have stressed the key role of the TMT in the process of opportunity formation (Barney et al., 2018)<sup>3</sup>. Second, it is reasonable to expect that the TMT does matter also in the realization of the defined opportunities. As noted in the introduction, the opportunity realization involves carrying out an entrepreneurial opportunity by deploying actions, investments and resources actually needed to implement a new technology, penetrate a new market, bring a new product to the market, establish relations with a new supplier, and so on (Eckardt & Shane, 2003; Foss et al., 2013, 2015; Shane & Venkataraman, 2000). In sum, the realization of entrepreneurial opportunities requires the mobilization of complementary resources, assets, and activities in diverse areas of the firm, like production, marketing, sales, and distribution (Teece, 1986). Such mobilization can effectively occur

only through direct involvement of the TMT. Due to their privileged position, TMT members possess a comprehensive understanding of the firm and of its environment (Cho & Hambrick, 2006), which allows them to wisely orient the actions and investments needed to realize entrepreneurial opportunities. Moreover, being at the apex of the corporate hierarchy, TMT members have also the power to decide about allocation and planning of resources required for opportunity realization.

Taking into account the upper echelon perspective, one may reasonably expect that, as occurs with other strategies defined by the firm, the TMT's influence on opportunity realization depends on the (idiosyncratic) characteristics of its members. Furthermore, scholars have recently suggested that also the way in which top executives organize their team influence the development of firms' strategies (e.g., Talaulicar, Grundei, & Werder, 2005). Inspired by this insight, the organizational design of the TMT is placed at the core of our study. We are confident that in thus doing, we significantly contribute to advance understanding of the relationship between opportunity realization and the TMT in established firms.

Finally, it is worth noting that, above and behind the conversations in the upper echelon realm, our investigation is also motivated by studies on how successful opportunity realization relates to certain organizational designs (Ireland & Webb, 2007; Normann, 1971). In particular, Foss et al. (2013, 2015) recently investigated how delegation of decision authority, formalization of procedures and coordination mechanisms as regards to external knowledge sourcing influence the opportunity realization implemented by established firms. The authors argue that these organizational design elements shape firms' interactions with external sources of knowledge, which, in turn, are crucial for opportunity realization. More specifically, whereas extensive delegation favours access to external knowledge, formalization and use of coordination mechanisms allow to leverage this knowledge once it enters the firm. Despite not being focused on the TMT, we consider the works of Foss et al. (2013, 2015) as an important starting point for our analysis.

## **Opportunity realization and the TMT organizational design**

As stated in the introduction, inspired by Miles and Snow (1978) we argue that TMT organization results from the (emergent) combination of several organizational elements, which cluster into *configurations* (e.g., Rovelli & Butticè, 2020). Consistently with the scope of this paper, we consider six elements of the TMT organizational design, which we deem relevant for the realization of entrepreneurial opportunities. These elements are: (i) delegation of decision authority by the CEO to TMT members, (ii) incentives for TMT members, (iii) coordination and (iv) communication mechanisms among TMT members, (v) size of TMT, and (vi) formalization of TMT processes and procedures. We describe each of these elements below, discussing their alleged effects on opportunity realization.

In line with Foss et al. (2013, 2015), we expect the allocation of decision authority to play a prominent role in the opportunity realization process. Increasing decentralization of the strategic decision-making process will provide TMT members (and the managers to whom they delegate decisions) more occasions to intervene in deciding which opportunities to realize and what actions to put into place to pursue this aim. Executives thus bring their diverse perspectives and their specific knowledge into the opportunity realization process; this improves the process itself (Jensen & Meckling, 1992) and likely increases the number of realized opportunities. Moreover, opportunity realization requires the wise and efficient mobilization of resources from several functions and units of a firm. Being more autonomous, TMT members, who are responsible for them, can more easily undertake resource mobilization, being also better able to manage the complementarities of resources. There is also evidence that having decision authority stimulates individuals to acquire external knowledge (Foss et al., 2013; Hage & Aiken, 1967), which, in turn, can help to decide whether to realize a given opportunity.

However, despite its benefits, delegation to TMT members has its own drawbacks. It may cause ambiguities in decisions about resource allocation, lack of clarity in the chain of command and accountability, and difficulties in monitoring and control (e.g., Dess, Lumpkin, & McKee, 1999;

Ireland & Webb, 2009; Jansen, Van Den Bosch, & Volberda, 2006; Shane & Venkataraman, 2000). In other words, delegation by the CEO to TMT members can backfire and, as prescribed by the general delegation literature, it should be paired with a coherent use of incentives and/or coordination mechanisms within the team. More specifically, delegation may cause a *loss of control problem* (Dessein, 2002): having the authority to decide, individuals can make decisions that maximize their own private benefits, instead of the firm's benefits.

In such a situation, incentives serve the purpose of aligning individuals' objectives with the firm's objectives, thus rendering delegation more effective (Colombo & Delmastro, 2008). By applying this reasoning to our case, we argue that the presence of incentives for TMT members, as defined by the extent of their variable compensation, reduces the drawbacks of delegation and thus magnifies its alleged positive effects on opportunity realization. In sum, we expect that enhanced delegation and use of incentives within the TMT jointly result in a higher number of realized opportunities. Moreover, incentives have also a value *per se*. Overall, they increase the effort made by individuals in performing their tasks (Foss, Laursen, & Pedersen, 2011; Siemsen, Balasubramanian, & Roth, 2007), even more so if these tasks affect the outcome to which their compensation is tied. As opportunity realization is likely beneficial for the firm's performance (e.g., Rauch, Wiklund, Lumpkin, & Frese, 2009), we expect TMT members' incentives in terms of variable compensation to induce them to decisively engage in selecting the identified opportunities and in mobilizing the resources needed for their realization. Finally, evidence exists that variable compensation for TMT members increases their risk-taking and proactivity in undertaking actions and investments; in turn, risk-taking and proactivity are positively associated with opportunity realization (Covin, Green, & Slevin, 2006; Lyon, Lumpkin, & Dess, 2000; Miller, 1983; van Doorn et al., 2017).<sup>4</sup>

Coordination and communication mechanisms among TMT members are another two important organizational design elements, which likely affect opportunity realization (Foss et al., 2015). Scholars have noted that, in some cases, these mechanisms may slow down decision-making processes within the TMT (García-Granero et al., 2018), thus negatively affecting, among other

things, also decisions concerning opportunity realization. However, we argue that, in most cases, coordination and communication mechanisms engender benefits, which compensate for their alleged drawbacks and, ultimately, lead to an increase in the number of realized opportunities. In general, coordination and communication favour information exchange (Cao, Simsek, & Zhang, 2010; Egelhoff, 1991; Foss et al., 2013) and knowledge integration (Daft & Lengel, 1986) among team members. At the TMT-level, this results in the availability of a wider information set for its members, which improves the quality of their decisions, including those regarding the selection of opportunities to pursue, and the mobilization of resources to achieve this aim. Concerning resource mobilization, we observe that, as already stated, opportunity realization requires the mobilization of resources, which reside in diverse functional areas/units of the firm (Teece, 1986). We expect this cross area/unit mobilization to be easier when TMT members, who are responsible for these areas/units, can efficiently communicate and count on coordination mechanisms, which help them channel the resources of their areas/units toward the same objectives.

The number of managers included in the TMT, i.e., TMT size (e.g., Carpenter, Gelekanycz, & Sanders, 2004), is another organizational design element that likely affects the realization of opportunities. The importance of TMT size for opportunity realization points to the notion of *functional heterogeneity*, as defined by the number of the diverse functional areas/units represented in the TMT (e.g., Carpenter et al., 2004; Zimmerman, 2008). According to the upper echelons theory, developing the TMT's functional heterogeneity will enhance the diversity in skills, access to resources, and connections with market stakeholders (e.g., suppliers, customers, external investors, and so on) across TMT members (García-Granero et al., 2018; Hambrick & Mason, 1984). Clearly, all else being equal, it is reasonable to expect that a larger TMT will correspond to greater functional heterogeneity. In turn, a long-lasting tradition, dating back to the work of Thompson (1969), suggests that functional heterogeneity favours the realization of opportunities, especially those related to complex innovations (Foss et al., 2011). Along this line of reasoning, we conclude that the TMT size is positively associated with opportunity realization. In particular, large size, and allegedly high

functional heterogeneity, results in a higher diversity in knowledge and skills possessed by TMT members, which improves and accelerates the process of selecting the opportunities to be realized. As a matter of fact, a larger number of TMT members entails a higher probability that at least one of them will be capable of judging the value of a given opportunity. Moreover, increasing the number of areas/units included in the TMT will facilitate mobilization of resources residing in the diverse areas/units towards opportunity realization. In other words, such resource mobilization can be entirely managed *within* the TMT without bearing the additional costs of involving top executives who do not belong to the TMT. One may observe that a large TMT size (and functional heterogeneity) might also cause tensions, generating conflicts about resource allocation for opportunity realization (Floyd & Lane, 2000; Jehn, 1995; Li et al., 2008). Nevertheless, these conflicts can be solved by wisely designing the aforementioned organizational design elements of incentives, coordination, and communication.

Finally, the formalization of TMT processes and procedures is the last organizational element we deem important for opportunity realization. It has been noted that formalization potentially constrains the actions of individuals and teams within organizations by bonding them to fixed patterns of behaviours (e.g., Cohen & Bacdayan, 1994; Galunic & Rodan, 1998; Weick, 1979). However, formalization has also its own benefits (Foss et al., 2015). Specifically, by making activities and their relations explicit, it facilitates their planning and monitoring; it offers a clear roadmap of the tasks needed by the diverse work processes, increases internal predictability, and supports the establishment and enforcement of internal agreements among functional areas/units. Formalization also maximizes information sharing (De Boer, Van Den Bosch, & Volberda, 1999) and knowledge exchange (Jansen, van den Bosch, & Volberda, 2005), and enables the coordination of complementary assets, investments, and actions. All this objectification of structures, roles, and processes also allows to monitor the firm's performance (Cohen & Levinthal, 1990; Zander & Kogut, 1995), with a deep understanding of the performance impact of strategies. Based on the above discussion, we argue that formalization of processes and procedures at the TMT-level favours the

selection of opportunities and the resource mobilization required to enact them, thus having a positive impact on the opportunity realization process.

In conclusion, the above discussion underpins the concept that all six organizational elements included in our study are associated with the realization of entrepreneurial opportunities. It also suggests that these elements mutually interact, generating a joint effect. This implies that in order to realize opportunities, firms should design these organizational elements simultaneously and coherently (Ennen & Richter, 2010; Rovelli & Butticè, 2020). Indeed, each of these elements has pros and cons that can be compensated for by other elements. For instance, conflicts generated by a large TMT (which is likely associated with high functional heterogeneity) can be complemented by coordination mechanisms (García-Granero et al., 2018); likewise, formalization can mitigate the ambiguity allegedly caused by delegation of decision authority to TMT members (Foss et al., 2015). Therefore, first, we adopt a configurational approach to examine how such organizational elements are combined at the TMT-level; then, we observe how these configurations affect opportunity realization.

## **DATA AND METHODS**

### **Data collection and sample**

To investigate the TMT organizational configurations and their relations with opportunity realization, we rely on data collected through a large-scale survey (Rovelli & Rossi-Lamastra, 2018). The use of survey data is common both in research on TMTs – which extensively resorts to surveys of CEOs (e.g., Alexiev, Jansen, Van den Bosch, & Volberda, 2010; Carpenter et al., 2004; Ling & Kellermanns, 2010; Ling, Simsek, Lubatkin, & Veiga, 2008) – and in studies on organizational configurations – which use surveys to collect variables for the configuration analysis (Doty & Glick, 1994; Ganter & Hecker, 2014; Rovelli & Butticè, 2020). To collect useful data for our study, we administered a survey to the CEOs of a sample of Italian firms. Our target population consisted of 50,341 Italian firms with at least 20 employees, operating in the manufacturing and service industries.

From this population, we randomly extracted a representative target sample of 6,108 firms stratified by size (20 to 49, 50 to 249, 250 to 499, and 500 or more employees), industry (manufacturing or services), and geographic location (North, Central and South Italy). Then, we searched for contact information of CEOs, which was available for 3,899 firms. In 2013, we administered our structured questionnaire to this sample. The questionnaire consisted of 35 questions – 18 of which were perceptive (i.e., Likert scales) – which served to retrieve data on TMT’s main organizational elements and on the opportunity realization process of firms (more details on the questionnaire and the data collection are available in Rovelli & Rossi-Lamastra, 2018). The majority of the questions were previously validated in the literature, translated into Italian and then back-translated into English to ensure that the original meaning was preserved (Dillman, 2000; Kriauciunas, Parmigiani, & Rivera-Santos, 2011). According to established practices, this questionnaire was first pilot tested and pre-tested (Collins, 2003; Kriauciunas et al., 2011), and then administered directly to the CEOs by e-mail. CEOs could either fill in the questionnaire online on the SurveyMonkey website or fill in the questionnaire attached to the invitation e-mail and return it via e-mail, mail, or fax. Most of the answers (68.05%) were collected online, while 31.54% of the CEOs sent back the questionnaire by e-mail, and only 1 questionnaire was returned by mail (0.41%). Once the survey administration was completed, we obtained a usable sample of 241 firms (response rate: 6.18%). The sample size is in line with other studies based on surveys administered to CEOs (an exhaustive discussion is provided in Rovelli & Rossi-Lamastra, 2018). Moreover, scholars concur that, in survey research, the sample’s representativeness is more important than the response rate (Cook & Heath, 2000). We thus ran several tests, which confirmed that the sample is representative of the population, there are non-response biases, and the CEOs’ answers are reliable. Details on these tests are provided in Appendix A and in Rovelli and Rossi-Lamastra (2018). Due to missing values corresponding to the variables included in the analyses below, the sample used in this paper consists of 237 firms. Table 1 below reports descriptive statistics of the firms included in the sample. Their average age is 27 years, and their average size, as measured by employees and turnover, is respectively 981.41 employees and

178.45 million euro. Sample firms operate in both manufacturing (46.84%) and service industries (53.16%). Most of the firms (66.24%) are located in the North of Italy, 17.30% are located in the Centre, and 16.46% are in the South.

## **Variables and measures**

### ***Dependent variables: three measures of opportunity realization***

To study the relationship between TMT organizational configurations and opportunity realization by established firms, we ran several econometric models, whose dependent variables refer to opportunity realization, in general, and to the realization of innovation and organizational change opportunities in particular.

To measure opportunity realization, we took inspiration from Foss et al. (2013). Specifically, we asked CEOs to assess the number of opportunities “realized by the firm in the last three years”, using a seven-point Likert-like scale, ranging from “no opportunities” (coded 1) to “many opportunities” (coded 7). More specifically, CEOs were asked to assess the realization of opportunities in the following areas: (i) development of new products and services (with the exception of marginal changes); (ii) adoption of new production technologies; (iii) entry into new markets; (iv) changes in the organization (structure and processes); and new ways to manage (v) human resources (HR), (vi) research and development (R&D), and (vii) accounting and finance. We computed the first dependent variable, *Opportunity realization*, as the average of these seven items: its increasing value corresponded to a higher number of opportunities realized.

Then, we ran a confirmatory factor analysis on the seven items of the aforementioned question and, consistently with our expectations, we obtained two factors. The first correlates with items i, ii, iii, and vi, pointing to substantial changes in products and services, production processes, markets, and R&D. We used this factor to measure the realization of innovation opportunities, i.e., *Innovation opportunity realization* (Foss et al., 2015). The second factor, instead, correlates with items iv, v, and vii, pointing to substantial changes in the organization of processes, structure, and functions; thus, we use this factor to measure the realization of organizational change opportunities, i.e., *Organizational*

*change opportunity realization*<sup>5</sup>. Cronbach alpha was greater than the conventional threshold of 0.60 for both factors (i.e., 0.644 for *Innovation opportunity realization* and 0.668 for *Organizational change opportunity realization*).

***Explanatory variables: TMT organizational configurations***

The explanatory variables of this study correspond to TMT organizational configurations. Consistent with previous works (De Massis, Eddleston, & Rovelli, 2020; Gruber, Heinemann, Brettel, & Hungeling, 2010; Rovelli & Butticè, 2020), we first ran a cluster analysis on variables measuring six key TMT organizational elements: TMT delegation, TMT incentives, TMT coordination, TMT communication, TMT size, and TMT formalization. Then, we created a series of dummies representing each of the organizational configurations emerging from the analysis of the variables measuring these elements.

The first organizational design variable is *TMT delegation*. *TMT delegation* accounts for the allocation of decision authority over the firm's strategic decisions, which are usually the responsibility of top executives (e.g., Amason, 1996; Collins & Clark, 2003). Does the CEO have decision authority over these decisions, or is this authority in the hands of her/his corporate superior (e.g., the board or headquarters in the case of subsidiaries)? When the CEO holds this authority, does s/he retain it or delegate it to other TMT members or to lower level managers? To measure *TMT delegation*, we adapted the scale developed by Colombo and Delmastro (2008) to the TMT context. For 21 relevant strategic decisions<sup>6</sup>, we asked the CEO to specify who has the authority to decide using a five-point scale. The points of the scale are: 1 = CEO's corporate superior; 2 = CEO; 3 = first-line managers, formally authorized by the CEO; 4 = first-line managers, autonomously; and 5 = middle managers. We computed *TMT delegation* as the average of all 21 strategic decisions, excluding those made by the CEO's superior (i.e., with a value of 1), to consider only decisions whose authority is in the hands of either the CEO or other TMT members, who can, then, decide to delegate it to lower level managers. In summary, the higher the value of *TMT delegation*, the more

decentralized the decision-making process will be over strategic decisions, and the higher the decision autonomy of the TMT.

TMT incentives consist in the organizational design element that allows to tie individuals' compensation to performance outcomes with the final aim of aligning the objectives of the CEO and the TMT members with those of the firm (e.g., Laursen & Mahnke, 2001). Consistently with the extensive literature on executive compensation (see Devers, Cannella Jr, Reilly, & Yoder, 2007 for a review), we assess firms' adoption of incentives for the CEO and TMT members by measuring the variable portion of their compensation (e.g., Athey & Roberts, 2001; Carpenter & Sanders, 2002; Rivkin & Siggelkow, 2003; Steinbach, Holcomb, Holmes, Devers, & Cannella, 2017): *CEO variable compensation* and *TMT variable compensation*. Specifically, we asked the CEO to indicate the average percentage of her/his variable compensation and the average percentage of the variable compensation of TMT members, over the last three years, by using a six-point scale. Points of the scale are 1 = 0%; 2 = between 0% and 10%; 3 = between 10% and 20%; 4 = between 20% and 30%; 5 = between 30% and 50%; and 6 = more than 50%.

We evaluated the level of TMT coordination by considering the adoption of both formal and tacit coordination mechanisms within the TMT. Adapting the measure defined by Foss et al. (2013) to the TMT context, we assessed the adoption of formal coordination mechanisms by asking CEOs to report how often TMT members participate in (i) formal committees, (ii) temporary cross-functional work groups (task forces), and (iii) liaison committees. CEOs had to make their assessment on a seven-point Likert-like scale, ranging from "never" (coded 1) to "very often" (coded 7). We computed the variable *Formal coordination* by running a principal component analysis (PCA) with items i-iii, which resulted in one factor ( $\alpha = 0.56$ )<sup>7</sup>. A high *Formal coordination* value indicated a more frequent use of formal coordination mechanisms by the TMT. Tacit coordination mechanisms, instead, refer to "mechanisms that enable the formation and leverage of common ground without the need for direct, ongoing communication" (Srikanth & Puranam, 2011, p. 850). We accounted for their adoption within the TMT by adapting the five-item scale used by Srikanth and Puranam (2011) to the TMT

context to measure investments in tacit coordination mechanisms. Specifically, we asked CEOs to report how much effort their firms make in (i) organizing team-building activities to develop a common vision and mutual understanding, (ii) helping TMT members to understand other members' decisions, (iii) encouraging TMT meetings to understand how to work better together, (iv) encouraging the adoption of a common language in the TMT, and (v) encouraging the exchange and sharing of working experience within the TMT. CEOs rated each item on a seven-point Likert-like scale, ranging from “no effort” (coded 1) to “very high effort” (coded 7). As in the case of *Formal coordination*, we computed the variable *Tacit coordination* by running a PCA on items i-v, which resulted in one factor ( $\alpha = 0.85$ ). A high *Tacit coordination* value corresponded to the firms' greater effort to develop informal coordination mechanisms within the TMT.

To measure TMT communication, we again took inspiration from Srikanth and Puranam (2011) and asked CEOs to report how much effort their firms make (i) organizing training initiatives for TMT members on remote collaboration tools, (ii) developing or adopting a dedicated IT communication network, and using electronic tools for (iii) remote collaboration and (iv) remote communication among TMT members. CEOs rated each item on a seven-point Likert-like scale, ranging from “no effort” (coded 1) to “very high effort” (coded 7). As in the case of variables addressing TMT coordination, we computed the variable *Ongoing communication* by running a PCA on items i-iv, which resulted in one factor ( $\alpha = 0.84$ ). A higher value of *Ongoing communication* corresponded to the firm's greater effort to facilitate communications by relying on communication (and remote collaboration) tools.

We measured *TMT size* as the number of top executives forming the TMT. Following a consolidated definition of TMT, we collected this information by asking CEOs to list all the individuals who report directly to them and are involved, on a continuous basis, in decisions about relevant strategic matters. Finally, we measured the variable *TMT formalization* by computing the average of two items, adapted from Clark and Maggitti (2012), which we asked CEOs to evaluate on a seven-point Likert-like scale. Items provide an indication of whether (i) communications among TMT members primarily occur in

a verbal (1) or written form (7), and (ii) tools such as meeting agendas and minutes are “not at all important” (1) or “very important” (7) in TMT decision-making. Higher values of the variable *TMT formalization* indicated a higher level of formalization within the TMT.

### ***Control variables***

In the econometric models, we included a comprehensive set of control variables (at the individual, firm, and industry levels) accounting for possible confounding factors in the relationship between TMT organizational configurations and opportunity realization. First, we had four variables that capture CEOs’ individual characteristics, which can influence opportunity realization achieved by the firms they manage. *CEO gender* is a dummy assuming value 1 for female CEOs. Women are indeed typically more risk averse than their male counterparts (e.g., Charness & Gneezy, 2012; Huang & Kisgen, 2013; Jianakoplos & Bernasek, 1998), even if the presence of women has been found to be associated with a greater entrepreneurial strategic orientation (Yang & Aldrich, 2014). These two effects may balance each other, rendering null the relations between the CEO’s gender and opportunity realization. *CEO tenure* captures how long CEOs hold their office; a longer tenure is usually associated with more conservative behaviour (e.g., Musteen, Barker, & Baeten, 2006), which can hinder opportunity realization. We measured CEOs’ educational background with a dummy (*CEO MBA*) that equals 1 for CEOs with an MBA. The concept is that highly educated CEOs possess better managerial skills, which improve decision-making and likely allow successful realization of a greater number of opportunities (e.g., Baruch, 2009; Lewis, Walls, & Dowell, 2014). *CEO decision power* counts the number of decisions that are not made by CEOs’ corporate superiors (see the question we used to measure *TMT delegation*). Higher *CEO decision power* means greater CEO autonomy and motivation (Acemoglu, Aghion, Lalive, Van Reenen, & Zilibotti, 2007), which are beneficial for opportunity realization.

Second, we included several firm-level controls. *Firm size* is the logarithm of the firm’s number of employees, and *Firm age* is the logarithm of the years elapsed since the firm’s foundation. We do not have predictions on the effect of these two variables on opportunity realization. On the one hand,

smaller and younger firms are more flexible and thus better able to realize opportunities (e.g., Huang, Soutar, & Brown, 2002; Wolff & Pett, 2006). On the other hand, larger and older firms have more resources they can mobilize for this purpose (e.g., Damanpour, 1992). We also inserted *Firm growth* as the average growth in sales in the last three years. The idea is that fast growing firms realize a greater number of opportunities.

Then, we inserted a group of firm-level variables to assess the effects of firms' overall organization concerning opportunity realization. The overarching rationale behind these controls is that firms with a complex and bureaucratic organization have rigid attitudes that place them at a disadvantage in terms of opportunity realization. The variable *Hierarchical levels* counts the greatest number of hierarchical layers between the CEO and the last level with budget or expense responsibility. We expect the variable to have a negative effect on opportunity realization. Four dummy variables capture whether firms have a *Functional*, *Divisional*, *Hybrid*, or *Matrix* organizational structure. *ERP system* assumes value 1, if the firm adopts an enterprise resource planning (ERP) system. The use of an ERP system favours coordination among a firm's functional areas/units (e.g., Madapusi & D'Souza, 2012); it is thus expected to be beneficial for opportunity realization. In addition, we included three dummies capturing sample firms' governance. *Family firm* assumes value 1, if the firm is both family owned and family managed. Indeed, the literature on family firms argues that these firms tend to be conservative and reluctant to change (Beckhard & Dyer, 1983), and are thus less willing to undertake entrepreneurial actions (Chrisman, Chua, De Massis, Frattini, & Wright, 2015; De Massis et al., 2020) to avoid destroying family wealth. *Subsidiary* assumes value 1 for firms that are subsidiaries, and *Subsidiary of foreign firm* equals 1, if the headquarters of the subsidiary is a foreign corporation. The intuition behind the inclusion of this variable is that subsidiaries must typically follow headquarters' blueprints and directives, and have little room for manoeuvre in opportunity realization.

Finally, we added controls at the industry-level. Firms in our sample operate in a wide range of industries and geographical areas; thus, we included *Industry* and *Geographical* dummies. *Industry dummies* refer to the Pavitt-Miozzo-Soete classification (Miozzo & Soete, 1989; Pavitt, 1984). Four

dummies assume value 1 for manufacturing firms operating in (i) science-based, (ii) supplier-dominated, (iii) scale-intensive, and (iv) specialized supplier industries. Another four dummies assume value 1 for service firms operating in (v) knowledge-intensive business services, (vi) supplier-dominated services, (vii) physical networks services, and (viii) information networks services. The baseline for these eight industry dummies is the dummy assuming value 1 for firms operating in the construction industry. We then included three *Geographical area dummies* representing the three main Italian geographical areas: North, Central and South Italy. Opportunity realization might also depend on the velocity of the market in which firms operate and on the level of competition faced by the firms. For instance, a firm operating in a competitive market might be eager to realize opportunities for overruling competitors; likewise, there are more opportunities to realize in dynamic environments (e.g., Short, Ketchen, Shook, & Ireland, 2010). Accordingly, we computed the variable *Market evolution* and *Market competition* by running a PCA on items of the question that asked the CEO to evaluate, using a five-point Likert-like scale, whether the market size is rapidly shrinking (1) or rapidly growing (2); whether the technological change is very slow (1) or very fast (5); whether, in the market, there are few (1) or many (5) competitors; and whether the competitive intensity within the industry is very low (1) or very high (5). We obtained two factors; the one on market evolution included the first two items, and the other on competition included the last two items.

## **Methods**

Consistently with prior contributions (e.g., De Massis et al., 2020; Fiss, 2007; Gruber et al., 2010; Rovelli & Buttice, 2020), we identified TMT organizational configurations by running a two-step cluster analysis (e.g., Gibson & Birkinshaw, 2004; Gruber et al., 2010) on the variables described in the above session. Specifically, after standardizing all the variables<sup>8</sup>, we used the hierarchical cluster procedure developed by Ward (1963) to determine the number of clusters; then, we assigned the 237 sample firms to clusters through the k-means clustering method. Each cluster represents a TMT organizational configuration and we associated a dummy variable with it, assuming value 1 for firms belonging to that cluster, i.e., adopting that organizational configuration. To check whether original

variables significantly differ across clusters, we ran the Scheffe post-hoc test for pairwise comparison of means and the one-way analysis of variance (ANOVA) test.

We also resorted to Scheffe and ANOVA tests when performing an initial check of the differences in opportunity realization among firms adopting various TMT organizational configurations. Then, we assessed the relationship between TMT organizational configurations and *Opportunity realization* through OLS models. To exclude multicollinearity, we performed variance inflation factor tests; the maximum VIF is 1.81 and the average VIF is 1.38, which were lower than the thresholds generally associated with multicollinearity problems (Belsley, Kuh, & Welsch, 1980). Additionally, we applied a seemingly unrelated regression specification when estimating the two equations in which *Innovation opportunity realization* and *Organizational change opportunity realization* are the dependent variables, and thus evaluated how TMT organizational configurations relate to the realization of these two types of opportunities. Indeed, the error terms of these equations can be correlated because the two equations pertain to the same firm; the SURE model allows for these potentially correlated errors to obtain consistent and efficient estimations (Greene, 2012).

The following section reports the results of the cluster analysis and of the econometric models.

## **RESULTS**

Tables 1 and 2 report descriptive statistics and correlations for all the variables used in the analyses; the first eight variables are those used to identify TMT organizational configurations. As indicated in the tables, the majority of these variables are statistically correlated among each other, thus supporting the idea that a configurational approach better fits the study of TMT organization. The tables also report on variables related to opportunity realization and control variables included in econometric models.

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Insert Tables 1 and 2 here  
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### **Cluster analysis: TMT organizational configurations**

The cluster analysis underpins the presence of three well characterized clusters. For each of the eight variables included in the analysis, Table 3 shows the mean of the overall sample and the cluster means. To improve readability, we report non-standardized values, with the only exceptions being *Formal coordination*, *Tacit Coordination*, and *Ongoing communication*, which are standardized factors resulting from PCAs. The ANOVA tests show that the average values of the variables differ significantly among clusters at 99%. Based on the results of the Scheffe post-hoc tests, and considering Gruber et al. (2010), for each variable we indicated the existing significant differences across clusters. Specifically, the same superscript label indicates that the mean of the variable is not significantly different in the various clusters. The highest mean is labelled with ‘a’, the next highest mean with ‘b’, and the lowest mean with ‘c’.<sup>9</sup> We labelled the three clusters, respectively: *CEO-centric TMT*, *integrated TMT*, and *incentive-based TMT*. As mentioned above, to ease the following analyses, we created three dummy variables, one for each cluster (*CEO-centric TMT*, *Integrated TMT*, *Incentive-based TMT*). Each dummy is equal to 1 in case the specific firm in the sample adopts the organizational configuration that it represents, otherwise it is 0.

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Insert Table 3 here

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*CEO-centric TMT*. The 80 TMTs in the sample adopting this organizational configuration have the lowest level of *TMT delegation*; thus, we called them *CEO-centric*, meaning that decisions are primarily centralized in the CEO’s hands. The low level of delegation pairs with a low level of TMT coordination (both formal and informal) and of TMT communication, likely because centralized decision-making does not require TMT members to coordinate and communicate during information exchange and decision-making processes. Limited delegation is consistently associated with limited use of incentives to align TMT members’ objectives; *CEO variable compensation* settles at an

intermediate level, whereas *TMT variable compensation* is at the lowest level. Finally, CEO-centric TMTs are the smallest (5 members on average) and the least formalized ones.

*Integrated TMT.* The 80 TMTs in the sample with this organizational configuration have a high level of delegation but make limited use of incentives to align TMT members' objectives, as confirmed by the lowest level of *CEO* and *TMT variable compensation*. Conversely, high delegation pairs with the highest use of coordination and communication mechanisms, testifying to an effort to forge an *integrated TMT*. The TMT size is intermediate between the other two clusters (7 members on average), whereas formalization is high.

*Incentive-based TMT.* In contrast to the CEO-centric TMTs and similarly to the integrated ones, the 77 TMTs in the sample adopting this configuration show a high level of delegation and of use of formal coordination mechanisms. The use of informal coordination mechanisms and of ongoing communication is, instead, low, whereas the use of *CEO* and *TMT variable compensation* is highest. Therefore, we refer to this configuration as *incentive-based TMT*. In summary, compared with *integrated TMTs*, *incentive-based TMTs* have a similar level of delegation but they differ in mechanisms used to align TMT members' objectives and to avoid the loss of control problem potentially engendered by delegation. These TMTs are the largest (8 members on average), whereas the level of formalization does not differ from that of the other clusters.

Some interesting results emerged by analysing the distribution of these three TMT organizational configurations with respect to some contingency factors. Specifically, the size of the firms significantly changes when comparing firms adopting alternative configurations ( $p = 0.022$ ). Firms using the *incentive-based TMT* configuration are the largest of the sample (2,243.26 employees on average), followed by those preferring the *integrated TMT* (509.25 employees on average) and the *CEO-centric TMT* configuration (239.03 employees on average). Instead, there are no differences concerning the firms' industry, meaning that the three configurations are equally distributed between manufacturing and services firms. Conversely, configurations are differently distributed in the North, Centre and South of Italy ( $p = 0.018$ ). While in the North of Italy, firms are equally distributed among

the three types of TMT organizational configurations, in the Centre there is a preference for the incentive-based TMT (39.02%) and CEO-centric TMT (36.59%), while in the South firms mainly adopt the integrated TMT (48.72%) or the CEO-centric TMT (41.03%) configuration.

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Insert Table 4 here  
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Scheffe post-hoc tests and ANOVA tests revealed differences in the realization of opportunities across TMT organizational configurations (see Table 4). Overall, *Opportunity realization* (p-value = 0.000), *Innovation opportunity realization* (p-value = 0.000), and *Organizational change opportunity realization* (p value = 0.004) differ across the three clusters. In detail, we found significant differences in opportunity realization between CEO-centric TMT and incentive-based TMT, and between CEO-centric TMT and integrated TMT for all three variables. These results provide an early indication of differences in opportunity realization across TMT organizational configurations, and of the possible equifinality of integrated and incentive-based TMTs. In the following section, we further explore the association between TMT organizational configurations and realization of opportunities by running OLS and SURE models.

#### **Econometric models: TMT organizational configurations and opportunity realization**

To further explore the relationship between TMT organizational configurations and opportunity realization, we initially ran two OLS models (Table 5), whose dependent variable is *Opportunity realization*. Model 1 only includes the aforementioned individual-, firm-, and industry-level controls. Among these, positive coefficients, which are significant at the conventional statistical levels, reveal that larger (*Firm size*) and more complex (*Matrix structure*) firms are better at realizing opportunities, most likely because of the greater amount of resources they have at their disposal. In addition, *Opportunity realization* is greater when the CEO has more managerial discretion (*CEO decision power*) – and thus autonomy and motivation – and when the firm has adopted an *ERP system* that

favours coordination among areas (on the role of ERP for coordination see Colombo & Delmastro, 2008). Finally, in line with the idea that entrepreneurial behaviour by established firms does pay-off in high velocity environments (a discussion is for instance in Kathuria & Joshi, 2007), *Opportunity realization* positively associates with *Market competition* and *evolution*. Conversely, *Family firm* and *Subsidiary of a foreign firm* have negative and (slightly) significant coefficients (p value = 0.099 and 0.078, respectively). These results are consistent with the expectation that both family firms and foreign subsidiaries are reluctant to undertake entrepreneurial actions. The former are, indeed, typically conservative (Beckhard & Dyer, 1983), whereas the latter likely have limited room for manoeuvre from their headquarters.

In Model 2, we added the two dummy variables representing the two TMT organizational configurations that appeared to be equifinal in the preliminary analysis described above: *Integrated TMT* and *Incentive-based TMT*, with *CEO-centric TMT* as baseline. The coefficients of both dummy variables are significantly positive (p-value = 0.001 and 0.007, respectively), whereas the signs and significance of controls are consistent with signs and significance of controls in Model 1. Interpreting the positive relationship of *Integrated* and *Incentive-based TMTs* with *Opportunity realization*, we first observe that both configurations show higher levels of delegation, compared with the CEO-centric one. Accordingly, the positive association between *Integrated TMT* and *Incentive-based TMT* and *Opportunity realization* supports the view that delegation of decision authority stimulates and motivates top executives to make better decisions and evaluations when selecting and enacting opportunities (e.g., Foss et al., 2013; Hage & Aiken, 1967; Jensen & Meckling, 1992).

The equifinality of the two configurations likely stems from the fact that they manage the drawbacks of delegation with two diverse but equally effective approaches, which constitute crucial antecedents of opportunity realization. Specifically, integrated TMTs rely primarily upon (formal and informal) coordination and communication mechanisms that favour information exchange (Cao et al., 2010; Egelhoff, 1991; Foss et al., 2013), knowledge integration (Daft & Lengel, 1986), and ease resource orchestration (e.g., Teece, 1986). Incentive-based TMTs largely resort to incentives that increase

TMT members' effort (Foss et al., 2011; Siemsen et al., 2007) and align their objectives with those of the firm. Finally, given the characteristics of these two equifinal configurations, we can also assert that setting up larger and more-formalized TMTs helps to realize opportunities. Indeed, a greater number of executives contribute more perspectives and more (functionally specialized) knowledge to the table (Carpenter et al., 2004; Zimmerman, 2008). In turn, formalization favours information sharing among TMT members (De Boer et al., 1999) and better management of their knowledge (Jansen et al., 2005). It is also conducive to agreement and coordination among them (Child, 1973, 1974). Taken together, these elements favour greater realization of opportunities.

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Insert Table 5 here  
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Finally, we ran SURE models, in which *Innovation opportunity realization* and *Organizational change opportunity realization* are the dependent variables, to explore how TMT organizational configurations relate to the realization of these specific opportunities. Mirroring what we did when running OLS models, we only added the control variables to Model 3. *Organizational change opportunity realization* positively relates to *Firm size* and to *Market competition and evolution*; reasonably enough, larger firms and firms operating in high velocity environments likely have more compelling needs to adjust their organization. Conversely, *Organizational change opportunity realization* negatively relates to *CEO tenure*, providing support to the idea that longer-tenured CEOs typically show more conservative behaviours (Miller, 1991). Results on the controls of the equation having *Innovation opportunity realization* as dependent variable align with the results obtained in Model 1, in which *Opportunity realization* is the dependent variable. Specifically, firms' organizational complexity (*Matrix structure*), CEO autonomy (*CEO decision power*), the adoption of ERP (*ERP system*), and the pressure of *Market competition* increase the realization of innovation

opportunities. *Innovation opportunity realization* is, instead, lower in subsidiaries of foreign corporations.

We added the *Integrated TMT* and *Incentive-based TMT* dummy variables to Model 4. Equifinality emerges when considering the realization of innovation opportunities; both TMT organizational configurations have significantly positive coefficients (p-value = 0.089 and 0.032, respectively). We interpret the equifinality of *Integrated TMT* and *Incentive-based TMT* configurations using the same reasoning we applied to opportunity realization in general. A higher level of delegation better enables top executives to decide and act on the realization of innovation opportunities, even more so because autonomy is considered a crucial antecedent of organizational members' innovative behaviour (e.g., Scott & Bruce, 1994). Again, the coordination problems engendered by a high level of delegation are equally solved by either coordination and communication mechanisms or by incentives.

Conversely, only the *Integrated TMT* significantly relates positively to *Organizational change opportunity realization* (p-value = 0.003). We make sense of this finding by arguing that the realization of opportunities to change the organization requires an organizational context that is oriented toward flexibility and change (Schneider, Brief, & Guzzo, 1996). CEOs and TMT members have a strong influence on the creation of such a context (Bennis, 1986). Accordingly, one can reasonably expect the TMT's adoption of an organizational configuration characterized by tacit (and thus rapid and easy) coordination and open communication to promote a change-oriented context at the TMT-level and, overall, in the whole firm. In turn, such a context is conducive to organizational rejuvenation. These positive effects do not manifest in the case of incentive-based TMTs, which align their goals through incentives; these incentives can limit top executives' and the whole organization's inclination to adopt flexibility and change (e.g., O'Brien, David, Yoshikawa, & Delios, 2014).

### **Robustness checks**

We performed additional analyses to test the robustness of our findings. Results are available from the authors upon request. First, as our sample is not representative of the population with respect to the firm's size (see the Appendix for details), we ran our models once again by including sample

weights for this variable. Results are in line with those presented above and, in some cases, even better. Specifically, not only the *Integrated TMT* but also the *Incentives-based TMT* significantly relates to *Organizational change opportunity realization* (p-value = 0.018). Similarly, the significance of both *Integrated TMT* (p-value = 0.000) and *Incentive-based TMT* (p-value = 0.003) over *Innovation opportunity realization* improves.

Second, we checked whether our findings depend on how we measured dependent variables. We repeated estimates by running *probit* and *seemingly unrelated bivariate probit regression*, whose dependent variables are dummies assuming value 1, if the number of realized opportunities is above the median of the *Opportunity realization*, *Innovation opportunity realization*, and *Organizational change opportunity realization*. The results are consistent with those of our main models. More specifically, they are the same for the realization of opportunities, in general, and of innovation opportunities, whereas organizational change opportunities are positively related to both integrated TMT and the incentive-based TMT (p-value = 0.084).

Third, we compute TMT organizational configurations using an alternative measure of *TMT delegation*. Indeed, the measure we considered also includes the option that decision authority is delegated to middle managers, who are not top executives. Consequently, one can wonder whether this measure is appropriate in a study on TMT organizational configurations. We ran the analyses excluding the middle manager level in computing *TMT delegation*; our results are robust for such an exclusion.

Fourth, we ran all the analysis by excluding *formal coordination* and *formalization* variables from the analysis. Indeed, someone may question their reliability due to their low Cronbach alpha. Results are robust with such an exclusion. Specifically, three TMT organizational configurations emerge, which differ for the same characteristics highlighted above; their significant relations with opportunity realization is confirmed as well.

Fifth, we enhanced the four models with five additional controls, which are not available for the whole sample but likely influence opportunity realization. We considered two characteristics of the TMT:

the average tenure of TMT members (*TMT tenure*) and the percentage of women in the TMT (*TMT female representation*). The concept is that the longer TMT members have been working together, the more efficient their decision-making processes are, including those on opportunity realization. Furthermore, a highly heterogeneous team in terms of gender (e.g., Mensi-Klarbach, 2014; Tsui, Egan, & O'Reilly III, 1992) might entail more conflicts (e.g., Rovelli, 2020) hindering the opportunity realization process. Then, we included the ratio between the firm's foreign sales and total sales; intuitively, firms operating in a global market are more exposed to opportunities and thus, are more entrepreneurial. In addition, we introduced two variables measuring investments that likely relate to the realization of innovation and organizational change opportunities, namely, *R&D expenditures* and *HR training expenses*, respectively. In particular, we expect that investing in training centred on human resource management and organizational aspects favours the realization of organizational change opportunities. We have complete information on all five variables mentioned above and on the other variables included in the model only for 119 observations. Thus, we initially included the TMT-related variables (160 observations) in the models, and then the firm-related ones (164 observations). In both cases, results are similar to those presented above. Namely, we obtained the same results for opportunity realization in general and organizational change opportunities, whereas the integrated TMT retains its significant effect only for innovation opportunities.

Finally, we checked for the presence of endogeneity. Indeed, the CEO's choice of TMT organizational configuration can be influenced by her/his unobserved characteristics (e.g., her/his need for control or preference for small teams). Moreover, there might be unobserved factors simultaneously affecting TMT configurations and opportunity realization, which would lead to inconsistent results and biased estimations (e.g., Angrist & Krueger, 2001). To test for the presence of endogeneity, we resorted to an instrumental variable (IV) approach, adopting a two-stage model. Due to the difficulties in finding diverse instruments for the integrated TMT and the incentive-based TMT, which are quite similar configurations, we focus the IV procedure on the CEO-centric TMT. Specifically, we defined three theoretically relevant instruments, which represent some traits of a

CEO's personality that might explain her/his decision to adopt a CEO-centric TMT configuration – i.e., *CEO sense of superiority*, *CEO exhibitionist behaviour*, and *CEO sense of being respected* – but which we expect to be unrelated to the number of opportunities realized by the firm.

We measured these variables by resorting to the narcissistic personality inventory (NPI, Raskin & Hall, 1981), which we administered to the 241 CEOs who took part in our survey. We obtained 202 answers (83.82% response rate). *CEO sense of superiority* is a dummy variable equal to 1, if the respondent agrees with the NPI item “I know that I am good because everybody keeps telling me so”. This variable thus represents how much the CEO believes or other individuals induce her/him to believe s/he is a special person in her/his everyday life. Believing her/himself a special person might lead the CEO to think s/he is better than the TMT managers and thus to organize a CEO-centric TMT. The dummy *CEO exhibitionist behaviour* is, instead, equal to 1, if the item “I like to be the centre of attention” were selected. *CEO exhibitionist behaviour* indicates the extent to which s/he likes to be the centre of attention of many individuals in her/his everyday life. In this case, the CEO's enhanced exhibitionist trait would correspond to a preference to be surrounded by many managers, thus being less likely to create a small CEO-centric TMT. Finally, the third dummy variable (*CEO sense of being respected*) is equal to 1, if the CEO agrees on the NPI item “I usually get the respect that I deserve”. This dummy measures the CEO's feeling of being respected by other individuals in her/his everyday life. In this case, a CEO who is used to feeling respected by others is more likely to establish social relationships and to be more comfortable with them. Consequently, s/he would be more likely to organize the TMT as an integrated TMT or as an incentive-based TMT, in which s/he can interact with other managers. Conversely, if the CEO does not feel respected by other individuals, s/he is more likely to seek isolation in her/his everyday life and, when leading her/his firm, s/he would likely tend to design a CEO-centric TMT. Thus, s/he could also display her/his positive aspects and capabilities to induce other individuals to respect her/him.

Prior to performing the IV analysis, we again ran Model 1 on *Opportunity realization*, considering as independent variable the *CEO-centric TMT* dummy to obtain results by comparison with those of the

IV analysis. Then, we ran the two-stage model. In the first stage, the CEO chooses to adopt a CEO-centric TMT configuration based on her/his sense of superiority, exhibitionist behaviour, and feeling of being respected; in this stage, we used a *probit* model due to the dichotomous nature of the dependent variable (i.e., *CEO-centric TMT*). In the second step, we inserted the predicted probability of the adoption of the CEO-centric TMT configuration (*CEO-centric TMT predicted*), using an OLS model (Stata command: *ivtreatreg* (probit-OLS), Cerulli, 2014). Results are consistent with those of the main estimations. However, once we ran the two-stage model, we conducted the Hausman endogeneity test (e.g., Wooldridge, 2002) for the CEO-centric TMT; it did not produce a significant result ( $\chi^2(1) = 0.268$ , p-value = 0.6044). In other words, our configuration variable is not endogenous in the opportunity realization model (we report the results of the IV estimates in Appendix B).

## CONCLUSIONS

The drivers of the realization of opportunities by established firms are far from being completely understood (Ireland et al., 2009), and this holds particularly true for the organizational antecedents of opportunity realization. Indeed, although organizational arrangements that specify and coordinate the division of *entrepreneurial labour* in established firms are crucial to promote entrepreneurship in these contexts, scholars have so far under-remarked them (Sørensen & Fassiotto, 2011).

This paper carries knowledge in the sector a step further by exploring the relationship between TMT organization and the realization of entrepreneurial opportunities by established firms. First, we identified three alternative TMT organizational configurations (which we labelled as CEO-centric TMT, integrated TMT, and incentive-based TMT) as combinations of six organizational elements of the TMT, which we deem to be key for the opportunity realization process. Hence, based on the seminal contribution of Miles and Snow (1978), we provide empirical evidence that complements the conceptual work by Smith and Tushman (2005) who, specifically distinguish between *leader-centric* and *team-centric* TMTs, depending on whether decisions are made by a leader or collectively.

According to them, the two organizational architectures have a different impact on the management of strategic contradictions, which the diverse cognitions of top executives may generate.

Second, we relate these organizational configurations to opportunity realization, also distinguishing between two specific types of opportunities: innovation opportunities and organizational change opportunities. We show that the integrated TMT configuration and the incentive-based TMT configuration are *equifinal* in their association with opportunity realization, in general, and with innovation opportunities, in particular. Instead, only the integrated TMT configuration positively relates to organizational change opportunities. The CEO-centric TMT shows no positive association with opportunity realization. These results offer interesting insights on how established firms realize entrepreneurial opportunities. As discussed above, opportunity realization mainly encompasses two diverse, but interrelated, activities: the selection of opportunities to be pursued and the mobilization of resources to achieve this goal. These activities call for an organizational design that enables the mindful engagement of all top executives in the team. Indeed, a full engagement brings diverse perspectives and competences to the discussion on which opportunities to pursue, and enables the effective mobilization of resources. Such an engagement is made possible by an organizational architecture that grants decision authority to TMT members and assures that they work jointly towards a common objective. In turn, this latter element can be achieved either through formal organizational arrangements – like variable compensation, formal coordination mechanism, as in the incentive-based TMT – or through informal ones ultimately based on mutual adjustments (Mintzberg, 1973, 1979). Conversely, it seems that a team organized around a lone wolf will experience some difficulty behaving entrepreneurially. Furthermore, incentive-based TMT and integrated TMT are not invariant in terms of organizational change opportunities. A possible explanation is that designing an incentive-based TMT requires time and effort, and affects the whole firm, which is likely more structured. In some way, this locks the firm into a given organizational status, making it better able to realize opportunities that can change its organization.

Our work stands at the intersection between corporate entrepreneurship and organizational design. Hence, it advances knowledge in several directions. First, the few recent studies in this research strand have emphasized firm-level variables (e.g., Foss et al., 2013, 2015), leaving room for further investigations at individual and team levels. In this realm, we take inspiration from less-recent (and rather sparse) contributions, which address the approach adopted by top executives to foster entrepreneurial behaviours (e.g., Burgelman, 1983a; Burgelman, 1994) in order to study how the realization of opportunities by firms relates to the team organization model chosen by top executives. Since the seminal work of Hambrick and Mason (1984), scholars have devoted a massive effort to investigate the multifaceted antecedents and consequences of top executive behaviours (Carpenter et al., 2004). A central tenet of this research is that the TMT is ultimately responsible for designing firm strategies and visions, including the entrepreneurial strategy (Barney et al., 2018). In this last respect, scholars have championed the idea that top executives are largely responsible for designing organizational arrangements, which boost individuals' entrepreneurial attitudes and actions, and for introducing and integrating them at the firm-level. For instance, a central debate within this research stream is whether the TMT has a role only in selecting and enacting opportunities identified by employees (being also responsible for creating a culture conducive to individual creativity) or if it also plays a role in identifying opportunities (a recent review of this literature is in Barney et al., 2018). This paper moves beyond previous works (e.g., Barney et al., 2018) by demonstrating that TMT organization matters also in the realization of opportunities, and not only in their creation. We thus extend the literature on strategic entrepreneurship and upper echelons theory by contending that it is important to take into account the TMT's role in fostering opportunity realization. Second, and partially connected to the previous point, evidence confirms that *organicity* – or dimensions of organicity – is associated with the tendency of established firms to exhibit entrepreneurial behaviours (e.g., Barrett & Weinstein, 1998; Covin & Slevin, 1988; Russell Merz & Sauber, 1995). Our results show that, at the TMT level, both an *organic-like* configuration – i.e., integrated TMT based on informal communication and coordination mechanisms – and a *mechanistic-like* configuration – i.e.,

incentive-based TMT centred on incentives – are conducive to opportunity realization. Third, we further corroborate a central tenet of the literature on corporate entrepreneurship (Ireland et al., 2009) by showing that the positive relationship between delegation of decision authority and opportunity realization also holds at the TMT level. Indeed, both configurations, which are conducive to opportunity realization, encompass a high level of delegation.

As any other study, our paper has limitations that open up avenues for future research. First, our data have a cross-sectional structure, which limits our possibilities of claiming causality. Likewise, though we include a wide array of controls, we cannot entirely rule out the presence of (unobservable) confounding factors. The instrumental variable analysis and the other robustness checks presented in the paper mitigate these concerns. However, we welcome future studies which leverage time-variant data and, more generally, make additional efforts to provide robust empirical evidence on the phenomenon investigated. Second, we consider a few, highly relevant organizational elements. In so doing, we might have overlooked other important factors influencing TMT organizational configurations and, ultimately, opportunity realization. More generally, our study does not consider the attributes of the organizational culture. Since top executives significantly contribute to forge such a culture (Kilmann, Saxton, & Serpa, 1985), they can stimulate (or hamper) the formation of cultural norms favouring entrepreneurial behaviours and outcomes in the firm. Thus, we invite scholars to consider other organizational elements and to include the cultural dimension in their analysis. Third, despite being based on previous literature, our variables measuring innovation and organizational change opportunity realization might not be considered as fully reliable given their Cronbach alpha (which is close to but not above the 0.7 threshold). Therefore, we suggest that researchers should further explore these and other types of opportunities by developing solid measures for them. Fourth, our data refer to Italian firms. The Italian context is largely characterized by owned-managed firms and small and medium enterprises, whose top executives have high managerial discretion. Thus, studying the relationship between TMT organization and opportunity realization is particularly meaningful in this context. However, a single country focus can hamper the generalizability of results

because institutional factors and dimensions of the national culture influence TMT organizational configurations and entrepreneurship in established firms. For instance, do top executives show a higher tendency to design CEO-centric TMT in countries in which either the level of trust is low or the power distance is high (e.g., Bloom, Sadun, & Van Reenen, 2012; Bloom & Van Reenen, 2007, 2010)? Do established firms realize more opportunities in countries where individuals have a greater bent for entrepreneurship (e.g., Acs, Desai, & Hessels, 2008; Wennekers, Van Wennekers, Thurik, & Reynolds, 2005)? Studies answering these research questions would be a valuable complement to our work. Fifth, our models include a wide array of control variables, which make us reasonably certain that we have ruled out (almost) all the confounding factors. However, something might be missing. For instance, we do not have information about (dyadic and non-dyadic) relationships among TMT members, which might influence TMT organizational configurations. Have TMT members worked in the same organization, or have they attended the same university before joining the focal firm? Common experiences, indeed, favour tacit coordination and communication; thus, they likely enhance the informal communication and coordination mechanisms.

Despite these limitations, our work offers interesting managerial implications to CEOs, who want to organize their TMT to foster opportunity realization and, more generally, the entrepreneurial behaviour of their firms. First, we advise CEOs to note that, in designing their TMT, they should focus on all six core organizational design elements analysed in this study, without underestimating their complementarities and interdependencies, which, instead, give rise to well defined configurations. These configurations are *archetypes* that may offer guidelines to design the TMTs of real world firms. Second, our findings document that relationships exist between TMT organizational configurations and the realization of opportunities. In other words, CEOs who aim toward this goal should organize their TMT accordingly. Specifically, they can choose between two alternative organizational configurations (the integrated TMT and incentive-based TMT) that, being equifinal, should yield the same outcome in terms of opportunity realization. CEOs can thus pick the one that best suits their leadership style and their firm's characteristics and organizational culture.

Additionally, this equifinality facilitates a CEO's redesign of her/his current TMT organization to promote entrepreneurship by enabling the selection of the configuration that minimizes the changes to be implemented in the team. In other words, given the initial TMT organization, the CEO can choose the closest configuration between the two equifinal ones. Third, our results offer indications specific to the type of opportunities the CEO and firm aim to exploit. Although both integrated TMT and incentive-based TMT favour the realization of innovation opportunities, only the former organizational architecture helps to exploit organizational change opportunities. Finally, we inform CEOs that designing the TMT around themselves by choosing a CEO-centric TMT configuration complicates opportunity realization, irrespective of the type of opportunity considered.

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<sup>1</sup> Corporate entrepreneurship is typically viewed as the sum of opportunity formation and realization; opportunity formation consists of "the process of forming a (likely loosely defined) idea into a workable project that can potentially be exploited" (Barney et al., 2018, p. 1327).

<sup>2</sup> See the *data and method* section for a description of how we measured the variables corresponding to these two types of opportunities.

<sup>3</sup> Note that some works have studied the role of the TMT in shaping the entrepreneurial behaviours/outcomes of established firms without distinguishing between the formation and the realization of opportunities (Block & MacMillan, 1993; Foss & Klein, 2012).

<sup>4</sup> Also note that risk-taking may provide premium returns to TMT members and may also induce them to adopt opportunity diversification (Alessandri & Seth, 2014).

<sup>5</sup> The realization of organizational change opportunities echoes the notion of organizational rejuvenation (Day, 1994) and the organizing methods included by Eckardt and Shane (2003) in their definition of opportunities.

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<sup>6</sup> These strategic decisions are developing innovative products and services; introducing significant changes in products and services; developing sustainable products; introducing major changes in marketing activities; entry or exit decisions from markets/product lines; major price decisions; radical changes in organizational processes and organizational procedures; significant changes in the organizational structure; strategic alliances/partnerships with other firms or organizations (acquisitions and joint ventures are not included); major business investments (e.g., acquisitions, joint ventures, creation of new firms, opening new plants, and creation of new infrastructures); hiring, firing, promotions, salaries and incentives for middle management; labour disputes with unions; (re)design of management control systems; main financing decisions (e.g., choice of capital providers and relationships with banks); strategic decisions about purchases; strategic decisions about production insourcing/outsourcing; expansion of production capability, expansion and modernization of production equipment and plants; significant investments in information and communication systems; definition of a sustainability strategy for the improvement of work conditions; definition of a sustainability strategy for civil society development; and definition and implementation of environmental initiatives.

<sup>7</sup> While Cronbach alpha seems to be low, it is worth noting that its computation is affected by the low number of items considered (Schweizer, 2011; Tavakol & Dennick, 2011). To confirm the reliability of *formal coordination*, we thus also computed the inter-item correlation (Pallant, 2011), which is equal to 0.30 and thus falls within the optimal range of 0.20 and 0.40 suggested by Briggs and Cheek (1986).

<sup>8</sup> We also checked for the presence of outliers because cluster analysis tends to be sensitive to them.

<sup>9</sup> The following are three examples to interpret Table 3:

- (i) in the case of TMT delegation, two separate brackets emerge: the first one, with the superscript 'a', includes clusters 2 and 3, meaning that there are no significant differences

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between these two clusters; the second bracket coincides with cluster 1, identified with the superscript 'b'; in other words, it is significantly different from clusters 2 and 3;

(ii) considering *TMT size*, there are three significantly different brackets; a specific cluster, characterized by a specific subscript label: 'a', 'b', and 'c', falls into each of them;

(iii) finally, similar to TMT delegation, TMT formalization is characterized by two brackets.

However, in this case there are no significant differences between clusters 1 and 3, and clusters 2 and 3, whereas clusters 1 and 2 are significantly different. Because cluster 3 is not different from either cluster 1 or cluster 2, its superscript label includes both 'a' (specific for cluster 2) and 'b' (representative of cluster 1). Note that, unlike this case, in the previous one the intermediate cluster significantly differs from the remaining two.

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## TABLES

Table 1. Descriptive statistics and correlations (1)

	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) TMT delegation	2.69	0.44	1.00															
(2) TMT variable compensation	2.69	1.12	0.11*	1.00														
(3) CEO variable compensation	2.92	1.58	0.08	0.72***	1.00													
(4) Formal coordination	0.01	1.00	0.09	0.21***	0.13**	1.00												
(5) Tacit coordination	0.00	1.00	0.04	0.16**	0.08	0.53***	1.00											
(6) Ongoing communication	0.01	1.00	0.08	0.04	0.02	0.41***	0.57***	1.00										
(7) TMT size	6.42	2.93	0.24***	0.30***	0.25***	0.26***	0.23***	0.17**	1.00									
(8) TMT formalization	3.88	1.35	0.01	-0.08	0.04	0.17**	0.16**	0.16**	0.07	1.00								
(9) Opportunity realization	4.10	1.08	0.12*	0.15**	0.11	0.23***	0.34***	0.32***	0.13**	0.03	1.00							
(10) New products and services	4.37	1.75	0.17**	0.12*	0.08	0.13*	0.17**	0.12*	0.11*	0.05	0.58***	1.00						
(11) New production technology	4.03	1.83	0.14**	0.00	-0.02	0.21***	0.26***	0.19***	0.01	0.01	0.63***	0.31***	1.00					
(12) New markets	4.37	1.95	0.15**	0.15**	0.10	0.05	0.12*	0.10	0.03	-0.15**	0.51***	0.36***	0.21***	1.00				
(13) Changes in the organization (structure and work)	4.55	1.79	0.03	0.16**	0.15**	0.20***	0.27***	0.22***	0.23***	0.08	0.54***	0.12*	0.18**	0.06	1.00			
(14) New ways to manage HR	4.11	1.69	-0.02	0.15**	0.15**	0.22***	0.35***	0.32***	0.06	0.11*	0.62***	0.12*	0.22***	0.02	0.50***	1.00		
(15) New ways to manage R&D	3.68	1.82	0.10	0.08	0.04	0.07	0.14**	0.14**	0.11*	0.01	0.70***	0.36***	0.39***	0.30***	0.20***	0.30***	1.00	
(16) New ways to manage Accounting & Finance	3.62	1.82	-0.08	-0.03	-0.05	0.12*	0.14**	0.27***	0.00	0.05	0.63***	0.16**	0.29***	0.10	0.21***	0.50***	0.39***	1.00
(17) Organizational change opportunity realization	0.01	0.99	-0.05	0.09	0.09	0.22***	0.31***	0.32***	0.12*	0.12*	0.69***	0.06	0.33***	-0.10	0.71***	0.87***	0.41***	0.69***
(18) Innovation opportunity realization	-0.01	1.00	0.21***	0.10	0.05	0.11*	0.16**	0.13*	0.06	-0.06	0.72***	0.75***	0.58***	0.74***	0.01	0.03	0.63***	0.23***
(19) Firm size	5.36	1.46	0.19***	0.35***	0.33***	0.25***	0.21***	0.08	0.49***	-0.02	0.22***	0.09	0.13*	0.03	0.28***	0.24***	0.15**	0.02
(20) Hierarchical levels	2.58	1.18	0.02	0.11*	0.12*	0.16**	0.22***	0.13*	0.09	0.02	0.12*	0.01	0.06	-0.05	0.11*	0.17**	0.09	0.10
(21) Divisional structure	0.11	0.32	0.04	0.01	-0.03	0.10	0.10	0.11*	0.08	0.10	-0.04	0.05	-0.02	-0.02	0.06	-0.04	-0.13**	-0.06
(22) Hybrid structure	0.28	0.45	0.01	-0.02	0.05	-0.05	-0.14**	-0.10	0.01	0.02	0.01	0.09	-0.13*	0.02	0.01	0.01	0.06	-0.02
(23) Matrix structure	0.13	0.33	0.09	0.16**	0.19***	0.23***	0.18**	0.13*	0.07	-0.04	0.18**	0.10	0.13*	0.11*	0.11*	0.15**	0.09	0.07
(24) Firm age	3.12	0.68	0.04	0.01	-0.10	0.04	0.08	-0.02	0.08	-0.02	-0.06	0.01	0.05	-0.03	-0.03	0.05	-0.19***	-0.07
(25) Family firm	0.33	0.47	0.12*	-0.32***	-0.46***	-0.16**	-0.25***	-0.07	-0.07	-0.11*	-0.12*	-0.03	0.01	0.01	-0.21***	-0.21***	-0.07	-0.03
(26) Subsidiary firm	0.49	0.50	0.10	0.26***	0.38***	0.05	0.12*	0.02	0.22***	0.03	0.04	0.03	0.02	0.05	0.16**	0.06	-0.02	-0.11*
(27) Subsidiary of a foreign firm	0.16	0.36	-0.08	0.19***	0.24***	0.08	0.10	0.03	0.12*	0.15**	-0.15**	-0.06	-0.16**	-0.05	0.06	-0.12*	-0.14**	-0.16**
(28) CEO gender	0.09	0.29	0.00	-0.15**	-0.08	-0.07	-0.09	-0.04	-0.14**	-0.01	-0.04	-0.07	-0.08	-0.01	-0.02	-0.06	0.03	0.02
(29) CEO tenure	1.71	1.11	0.11*	-0.14**	-0.30***	-0.08	-0.09	-0.03	-0.02	-0.05	-0.06	-0.01	0.03	0.10	-0.14**	-0.14**	-0.03	-0.08
(30) CEO degree	0.73	0.44	-0.09	0.28***	0.25***	0.10	0.17**	0.05	0.13*	-0.03	0.13**	0.14**	0.04	0.09	0.14**	0.07	0.07	0.00
(31) CEO decision power	2.77	0.35	0.33***	0.15**	0.09	0.13**	0.04	0.08	0.19***	-0.01	0.12*	0.18**	-0.03	0.14**	0.06	0.07	0.11*	-0.01
(32) Firm growth	0.07	0.17	-0.02	-0.01	0.04	-0.02	-0.06	0.04	-0.06	-0.03	0.11*	0.05	0.07	0.09	0.05	0.05	0.09	0.04
(33) ERP system	0.70	0.46	-0.01	0.19***	0.15**	0.14**	0.11*	0.08	0.23***	0.06	0.21***	0.11*	0.08	0.21***	0.16**	0.06	0.22***	0.05
(34) Market competition	0.00	1.01	0.08	0.02	-0.05	0.04	0.12*	0.13**	0.01	-0.02	0.29***	0.05	0.24***	0.17**	0.19***	0.13**	0.25***	0.17**
(35) Market evolution	0.03	0.97	0.04	-0.03	-0.09	0.04	0.11*	0.02	0.00	0.07	0.15**	0.15**	0.12**	0.01	0.04	0.08	0.09	0.14**

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

Table 2. Descriptive statistics and correlations (2)

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	
(17)	1.00																			
(18)	0.01	1.00																		
(19)	0.24***	0.07	1.00																	
(20)	0.18**	-0.01	0.38***	1.00																
(21)	-0.04	-0.04	0.08	0.09	1.00															
(22)	-0.02	0.03	0.08	0.07	-0.23***	1.00														
(23)	0.13*	0.12*	0.17**	0.10	-0.14**	-0.24***	1.00													
(24)	-0.03	-0.06	0.02	-0.08	0.04	0.00	-0.04	1.00												
(25)	-0.19***	0.03	-0.24***	-0.17***	0.03	-0.07	-0.19***	0.14**	1.00											
(26)	0.04	0.00	0.27***	0.06	0.02	-0.01	0.01	-0.16**	-0.33***	1.00										
(27)	-0.10	-0.13**	-0.01	-0.03	0.03	-0.01	0.05	-0.08	-0.28***	0.44***	1.00									
(28)	-0.02	-0.03	-0.13**	-0.02	-0.02	0.09	-0.08	-0.04	0.05	-0.08	-0.10	1.00								
(29)	-0.17**	0.08	-0.16**	-0.15**	0.11*	-0.04	-0.08	0.07	0.37***	-0.17**	-0.11*	-0.07	1.00							
(30)	0.07	0.11*	0.23***	0.13*	0.04	-0.03	0.06	-0.02	-0.20***	0.14**	0.05	0.06	-0.24***	1.00						
(31)	0.02	0.15**	0.08	0.02	-0.02	-0.01	0.02	-0.03	0.08	0.02	-0.02	-0.16**	0.12*	0.04	1.00					
(32)	0.06	0.10	-0.06	-0.05	-0.05	-0.03	-0.02	-0.15**	0.03	0.04	-0.02	0.01	0.06	0.08	0.02	1.00				
(33)	0.09	0.20***	0.23***	0.05	-0.02	0.01	0.11*	0.02	-0.14**	0.16**	0.16**	-0.01	-0.16**	0.14**	0.04	-0.08	1.00			
(34)	0.21***	0.20***	0.10	0.03	-0.04	0.08	-0.01	-0.18**	0.00	0.03	-0.03	0.00	0.03	0.01	0.01	0.13*	0.07	1.00		
(35)	0.10	0.12*	0.01	0.02	-0.01	0.03	0.08	-0.02	0.01	-0.07	-0.03	0.03	0.10	-0.01	-0.05	0.03	-0.12*	0.00	1.00	

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

Table 3. Results of the cluster analysis

<b>Variables</b>	<b>1</b> <i>CEO-centric TMT</i>	<b>2</b> <i>Integrated TMT</i>	<b>3</b> <i>Incentive-based TMT</i>
TMT delegation	2.50 <sup>b</sup>	2.79 <sup>a</sup>	2.79 <sup>a</sup>
TMT variable compensation	2.23 <sup>b</sup>	2.08 <sup>b</sup>	3.81 <sup>a</sup>
CEO variable compensation	2.35 <sup>b</sup>	1.89 <sup>c</sup>	4.57 <sup>a</sup>
Formal coordination	-0.83 <sup>b</sup>	0.54 <sup>a</sup>	0.33 <sup>a</sup>
Tacit coordination	-0.86 <sup>c</sup>	0.57 <sup>a</sup>	0.28 <sup>b</sup>
Ongoing communication	-0.76 <sup>c</sup>	0.74 <sup>a</sup>	0.06 <sup>b</sup>
TMT size	4.48 <sup>c</sup>	6.72 <sup>b</sup>	8.13 <sup>a</sup>
TMT formalization	3.54 <sup>b</sup>	4.23 <sup>a</sup>	3.87 <sup>a,b</sup>

Based on ANOVA tests, the means of all the variables are significantly different among clusters at 99%. For an example of interpretation of Table 3, see Footnote 7.

Table 4. Opportunity realization and clusters

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>
	<i>CEO-centric TMT</i>	<i>Integrated TMT</i>	<i>Incentive-based TMT</i>
Opportunity realization	-0.50 <sup>b</sup>	0.27 <sup>a</sup>	0.23 <sup>a</sup>
Organizational change opportunity realization	-0.37 <sup>b</sup>	0.27 <sup>a</sup>	0.12 <sup>a</sup>
Innovation opportunity realization	-0.31 <sup>b</sup>	0.12 <sup>a</sup>	0.17 <sup>a</sup>

Based on ANOVA tests, the means of all the variables are significantly different among clusters at 99%. For an example of interpretation of Table 4, see Footnote 7.

Table 5. OLS and SURE models on opportunity realization (in general and specific)

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>		<b>Model 4</b>	
	<i>Opportunity realization</i>	<i>Opportunity realization</i>	<i>Organizational change realization</i>	<i>Innovation opportunity realization</i>	<i>Organizational change realization</i>	<i>Innovation opportunity realization</i>
<i>Integrated TMT</i>	-	0.47*** (0.15)	-	-	0.43*** (0.15)	0.24* (0.14)
<i>Incentive-based TMT</i>	-	0.46*** (0.17)	-	-	0.27 (0.17)	0.35** (0.16)
Firm size	0.09* (0.05)	0.06 (0.05)	0.11** (0.05)	0.01 (0.05)	0.10** (0.05)	-0.01 (0.05)
Hierarchical levels	0.00 (0.05)	-0.01 (0.05)	0.04 (0.05)	-0.03 (0.05)	0.03 (0.05)	-0.03 (0.05)
Divisional structure	0.04 (0.20)	-0.06 (0.19)	-0.13 (0.20)	0.14 (0.19)	-0.20 (0.19)	0.08 (0.19)
Hybrid structure	-0.04 (0.14)	-0.06 (0.14)	-0.20 (0.14)	0.14 (0.14)	-0.22 (0.14)	0.13 (0.14)
Matrix structure	0.37* (0.19)	0.30 (0.19)	0.04 (0.19)	0.46** (0.18)	-0.01 (0.19)	0.40** (0.18)
Firm age	-0.01 (0.09)	-0.03 (0.09)	0.10 (0.09)	-0.14 (0.09)	0.09 (0.09)	-0.15* (0.09)
Family firm	-0.24* (0.15)	-0.20 (0.15)	-0.21 (0.15)	-0.14 (0.14)	-0.20 (0.15)	-0.10 (0.14)
Subsidiary	0.08 (0.14)	0.06 (0.14)	0.01 (0.14)	0.07 (0.13)	0.00 (0.14)	0.05 (0.13)
Subsidiary of a foreign firm	-0.56*** (0.19)	-0.58*** (0.18)	-0.29 (0.19)	-0.54*** (0.18)	-0.29 (0.19)	-0.57*** (0.18)
CEO gender	-0.07 (0.21)	-0.01 (0.21)	-0.07 (0.21)	-0.01 (0.20)	-0.01 (0.21)	0.02 (0.20)
CEO tenure	-0.07 (0.06)	-0.06 (0.06)	-0.15** (0.06)	0.05 (0.06)	-0.15** (0.06)	0.05 (0.06)
CEO degree	0.04 (0.14)	0.07 (0.14)	-0.18 (0.14)	0.22 (0.14)	-0.14 (0.14)	0.22 (0.14)
CEO decision power	0.33* (0.17)	0.22 (0.17)	0.11 (0.17)	0.34** (0.16)	0.02 (0.17)	0.27 (0.16)
Firm growth	0.22 (0.36)	0.19 (0.35)	0.31 (0.36)	-0.01 (0.34)	0.29 (0.35)	-0.02 (0.34)
ERP system	0.43*** (0.14)	0.36** (0.14)	0.22 (0.14)	0.36*** (0.14)	0.15 (0.14)	0.33** (0.14)
Market competition	0.30*** (0.06)	0.27*** (0.06)	0.18*** (0.06)	0.24*** (0.06)	0.15** (0.06)	0.23*** (0.06)
Market evolution	0.15** (0.06)	0.14** (0.06)	0.14** (0.06)	0.08 (0.06)	0.12* (0.06)	0.08 (0.06)
Industry dummies	YES	YES	YES	YES	YES	YES
Geographical area dummies	YES	YES	YES	YES	YES	YES
Intercept	-1.72** (0.79)	-1.51* (0.78)	-1.16 (0.79)	-1.24 (0.76)	-1.03 (0.78)	-1.07 (0.76)
N	237	237	237	237	237	237
Log likelihood	-285.90	-279.08	-591.26	-591.26	-583.92	-583.92
R <sup>2</sup>	0.26	0.30	0.25	0.32	0.27	0.33

Standard errors in parentheses; \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

## **APPENDIX A – Representativeness, non-response bias, and reliability of the survey sample**

To assess the quality of data gathered through our survey data collection, we performed several tests regarding the representativeness, the absence of non-response bias, and the reliability of CEOs' answers. First, the sample of 241 firms represents the initial population of 50,341 firms. We considered the dimensions used to stratify the sample: industry (manufacturing or services), geographical location (North, Central and South Italy), and size (20 to 49, 50 to 249, 250 to 499, and 500 or more employees). Chi-tests showed that there are no statistically significant differences between the distribution of firms by industry ( $\chi^2(1) = 2.058$ ; p-value = 0.151) and geographical location ( $\chi^2(2) = 0.910$ ; p-value = 0.634). However, statistical differences emerged considering size classes based on the number of employees ( $\chi^2(3) = 659.385$ ; p-value = 0.000): firms with at least 250 employees are over-represented, while those with 50 or less employees are under-represented probably because it is hard to find personal contact information of CEOs of the smallest firms. Then, we checked for the possible presence of a non-response bias, comparing respondents vs. non-respondents, full vs. dropped respondents, and early vs. late respondents (considering as late respondents those who completed the questionnaire after three e-mails, i.e., the invitation e-mail plus two e-mail reminders). Comparing respondents (241) vs. non-respondents (3,658) along the dimensions we used to stratify the sample frame, i.e., size (t statistic = -0.856, p-value = 0.392), industry ( $\chi^2(1) = 0.004$ , p-value = 0.952), and geographic location ( $\chi^2(2) = 8.061$ , p-value = 0.018) we found differences only for the latter. Comparing full (241) vs. dropped (114) respondents, no differences emerged for size (t statistic = -0.341, p-value = 0.774), industry ( $\chi^2(1) = 0.028$ , p-value = 0.868), or geographic location ( $\chi^2(2) = 2.498$ , p-value = 0.287). In this case, given the available information, we also compared the CEOs by gender ( $\chi^2(1) = 0.109$ , p-value = 0.741) and age (t statistic = -1.559, p-value = 0.120), finding no difference. Finally, considering early (139) vs. late (102) respondents, no differences emerged for size (t statistic = 0.280, p-value = 0.774) and industry ( $\chi^2(1) = 0.004$ , p-value = 0.948), while there were differences in terms of geographic location ( $\chi^2(2) = 15.127$ , p-value = 0.001), as CEOs in Northern Italy responded earlier, probably due to their

proximity to the University that launched the survey. In this case, we also considered a series of firm-level, CEO level and TMT level characteristics that we used in our analyses (the detailed description of the variables is provided in the core of the paper). At firm-level, we found no differences with respect to age (t statistic = -0.828, p-value = 0.409), number of hierarchical levels (t statistic = -0.560, p-value = 0.576), family ( $\chi^2(1) = 2.450$ , p-value = 0.114) and subsidiary ( $\chi^2(1) = 2.113$ , p-value = 0.146) nature, subsidiary of a foreign firm ( $\chi^2(1) = 0.049$ , p-value = 0.825), sales' growth (t statistic = 1.343, p-value = 0.181), ERP system ( $\chi^2(1) = 0.032$ , p-value = 0.859), market competition (t statistic = 0.209, p-value = 0.835), market evolution (t statistic = 0.102, p-value = 0.919), opportunity realization (t statistic = 0.015, p-value = 0.998), innovation opportunity realization (t statistic = 0.139, p-value = 0.890), and organizational change opportunity realization (t statistic = -.038, p-value = 0.970). CEOs have the same gender ( $\chi^2(1) = 0.315$ , p-value = 0.547), tenure (t statistic = 1.409, p-value = 0.160), educational background, such as a degree ( $\chi^2(1) = 0.178$ , p-value = 0.673), and decision power (t statistic = 0.279, p-value = 0.780), but a different variable compensation (t statistic = -2.837, p-value = 0.005). At TMT level, we found no statistical differences in the extent of delegation (t statistic = -0.202, p-value = 0.840), variable compensation (t statistic = -1.507, p-value = 0.133), formal coordination (t statistic = -0.942, p-value = 0.347), tacit coordination (t statistic = -1.732, p-value = 0.085), ongoing communication (t statistic = -0.478, p-value = 0.633), size (t statistic = -0.974, p-value = 0.331), and formalization (t statistic = 0.196, p-value = 0.845). We can thus conclude that non-response bias is not a concern in our study.

Finally, we checked data reliability in two ways: (i) using secondary data for non-perceptive variables and constructs concerning firm or CEO characteristics, and (ii) administering a second questionnaire to a sample of Chief Human Resource Officers. In this last respect, we triangulated data from the survey addressed to CEOs administering a second survey to the Chief Human Resource Officers (CHROs) of the 114 firms participating in the first survey, and which provided the e-mail contact of these managers. Forty-three CHROs completed the questionnaire. Following Danneels (2015), we compared CEOs' and CHROs' answers by computing the Average Deviation Index (ADI, Burke &

Dunlap, 2002) for each item and for the 13 constructs in the questionnaire. No significant differences emerged. Specifically, the interrater agreement was acceptable for all items and constructs (i.e., lower of 0.80 in the case of 5-point scales and of 1.20 for 7-point scales, Burke & Dunlap, 2002). Moreover, in the case of constructs, the ADI was always lower than 1, meaning that the responses of CEOs and CHROs differed by an average of less than 1 scale point (Danneels, 2015). Moreover, the ADI was lower than 0.05 for the majority of items that did not comprise constructs (30 of 43 items, 69.77%), indicating an average difference lower than 0.50 scale points.

## APPENDIX B

Table 6. Instrumental variables estimates

	<b>Model 5</b>	<b>Model 6</b>	<b>Model 7</b>	<b>Model 8</b>
	<i>Opportunity realization</i>	<i>Opportunity realization</i>	<i>CEO centric TMT</i>	<i>Opportunity realization</i>
<i>CEO centric TMT</i>	-	-0.39 (0.15)	-	-
<i>CEO centric TMT - predicted</i>	-	-	-	-0.88** (0.44)
CEO sense of superiority	-	-	0.70** (0.28)	-
CEO exhibitionist behavior	-	-	-0.51* (0.27)	-
CEO sense of being respected	-	-	-0.71* (0.43)	-
Firm size	0.13** (0.06)	0.09* (0.06)	-0.36*** (0.12)	0.06 (0.07)
Hierarchical levels	-0.04 (0.06)	-0.05 (0.06)	-0.01 (0.11)	-0.06 (0.06)
Divisional structure	0.06 (0.21)	-0.03 (0.21)	-0.88** (0.42)	-0.13 (0.22)
Hybrid structure	-0.08 (0.16)	-0.08 (0.16)	0.03 (0.28)	-0.09 (0.15)
Matrix structure	0.47** (0.22)	0.40* (0.21)	-0.79* (0.46)	0.29 (0.24)
Firm age	-0.05 (0.11)	-0.05 (0.11)	0.06 (0.20)	-0.06 (0.10)
Family firm	-0.27 (0.17)	-0.24 (0.17)	0.36 (0.29)	-0.21 (0.17)
Subsidiary	0.07 (0.17)	0.06 (0.17)	0.08 (0.32)	0.05 (0.17)
Subsidiary of a foreign firm	-0.52** (0.21)	-0.52** (0.21)	0.04 (0.40)	-0.53*** (0.20)
CEO gender	-0.04 (0.25)	0.02 (0.24)	0.81** (0.41)	0.10 (0.22)
CEO tenure	-0.09 (0.07)	-0.09 (0.07)	0.16 (0.12)	-0.08 (0.06)
CEO degree	0.06 (0.16)	0.08 (0.15)	0.09 (0.27)	0.09 (0.16)
CEO decision power	0.32* (0.19)	0.23 (0.19)	-1.15*** (0.40)	0.12 (0.18)
Firm growth	0.19 (0.39)	0.17 (0.38)	0.23 (0.70)	0.13 (0.40)
ERP system	0.38** (0.16)	0.32** (0.16)	-0.58** (0.27)	0.26 (0.16)
Market competition	0.27*** (0.07)	0.25*** (0.07)	-0.26** (0.13)	0.21*** (0.08)
Market evolution	0.11 (0.07)	0.11 (0.07)	-0.07 (0.13)	0.10 (0.08)
Industry dummies	YES	YES	YES	YES
Geographical area dummies	YES	YES	YES	YES
Intercept	-1.62* (0.86)	-1.07 (0.87)	4.68*** (1.68)	-0.36 (0.97)
N	198	198	198	198
Log likelihood	-239.55	-235.68	-88.15	-237.49
R <sup>2</sup>	0.34	0.37	0.31	0.35

Standard errors in parentheses. Model 5 and Model 6 are the same of Model 1 and Model 2, but considering the CEO centric TMT configuration and the sub-sample of 198 observations due to missing data in the instrumental variables. Model 7 and Model 8 are the instrumental variables estimations. Specifically, Model 7 is the first-step *probit* instrumental variables estimate, while Model 8 is the second-step instrumental variable estimate in which we consider the CEO centric TMT configuration predicted using Model 7.