Accepted Manuscript
Version of record at: https://doi.org/10.1111/joms.12838

TAKE IT FROM THE TOP: HOW INTENSITY OF TMT JOINT PROBLEM SOLVING AND LEVELS OF INTERDEPENDENCE INFLUENCE QUALITY OF STRATEGY IMPLEMENTATION COORDINATION AND FIRM PERFORMANCE

Sal Mistry, Ph.D.
Department of Business Administration
University of Delaware
20 Orchard Road
Newark, DE 19716
mistrys@udel.edu

Bradley L. Kirkman, Ph.D.
Management, Innovation, and Entrepreneurship Department
Poole College of Management
North Carolina State University
2801 Founders Drive, 1350A Nelson Hall
Raleigh, North Carolina 27695-7967
blkirkma@ncsu.edu

Michael A. Hitt, Ph.D.
Department of Management
Mays School of Business
Texas A&M University
4113 TAMU
College Station, Texas 77843-4113
MHitt@mays.tamu.edu

Murray R. Barrick, Ph.D.
Department of Management
Mays School of Business
Texas A&M University
4113 TAMU
College Station, Texas 77843-4113
MBarrick@mays.tamu.edu

TAKE IT FROM THE TOP: HOW INTENSITY OF TMT JOINT PROBLEM SOLVING AND LEVELS OF INTERDEPENDENCE INFLUENCE QUALITY OF STRATEGY IMPLEMENTATION COORDINATION AND FIRM PERFORMANCE

ABSTRACT

Despite the belief that strategy implementation begins at the very top of a firm, there remains an inadequate understanding about top management teams' (TMTs) involvement in the strategy implementation process. Building upon and extending strategic leadership theory, we develop and empirically test a theoretical model of the interactive effects of the intensity of TMT joint problem solving and level of TMT interdependence on quality of TMT strategy implementation coordination and firm performance. Using data collected from TMTs in 83 firms, our results show that the: intensity of TMT joint problem solving is positively related to quality of TMT strategy implementation coordination; interaction between the intensity of TMT joint problem solving and the level of TMT interdependence attenuates the positive influence of each on quality of TMT strategy implementation coordination, demonstrating a substitution effect; and, quality of TMT strategy implementation coordination mediates the relationship between the interaction and firm performance.

Keywords: strategic leadership theory; top management teams; strategy implementation, team interdependence; team problem solving; firm performance

INTRODUCTION

Top executives have a critical impact on firm financial outcomes, accounting for as much as 36 percent of the variance in firm performance (Quigley and Hambrick, 2015). Top executives have responsibility for developing and implementing firm strategy. However, strategy scholars have focused largely on strategy *formulation* processes (i.e., developing a strategic vision, setting objectives, and crafting strategies to achieve the objectives and vision of an organization; Schendel and Hofer, 1979) compared to strategy *implementation* processes (i.e., activities that turn plans into action assignments and ensure that such assignments are executed in a manner that accomplishes a plan's stated objectives; Noble, 1999) (Hitt et al., 2017). This imbalance is both theoretically and practically problematic, as both successful strategy formulation and implementation processes are critical for firm performance (Greer et al., 2017).

Referred to as strategic leaders, top executives garner and coordinate human capital, especially actions of middle- and lower-level managers, to implement firm strategy (Sirmon, 2021). In fact, top management team (TMT) member interactions produce effects that cascade throughout organizations, affecting manager behaviors. As such, strategy implementation process research has focused on an interpersonal process view, centering on a range of interpersonal behaviors that become salient as managers coordinate strategy between organizational levels (Greer et al., 2017; Noble, 1999). Examples are shared problem solving (Atkinson, 2006) and ensuring interdependencies between organizational members (Raes et al., 2011). A key premise is that to create alignment and shared understanding of implementation objectives and goals (Tawse and Tabesh, 2021), leaders should encourage participation of, and interactions between, followers because exchanging information about strategic objectives and processes ensures commitment to strategy implementation (Dooley et al., 2000).

Despite these insights, key limitations in the strategy implementation literature remain. First, although managerial actions directed toward employees enable strategy implementation throughout an organization (Miller, 1997), more needs to be learned about TMTs' specific involvement in strategy implementation coordination. As Hambrick and Wowak (2021, p. 344) note, if "firm performance is shaped by the talents and motivations of employees at all levels (Cowherd and Levine, 1992), along with the fact that many strategic insights originate in the middle ranks of organizations (Burgelman, 1996), it becomes exceedingly clear that there exists a great need to understand the roles of strategic leaders in stimulating and directing the collective energy of their employee populations." TMTs are often responsible for ensuring the quality of a firm's strategy implementation and firm performance (Fries et al., 2020) and thus need to coordinate managerial actions and subunits to execute strategy (Lee and Puranam, 2016).

Second, there is no theoretical framework explaining actions TMTs take to implement firm strategy. To understand these effects on firms, we use strategic leadership theory (Finkelstein et al., 2009), which builds upon and extends upper echelons theory (Hambrick, 2007; Hambrick and Mason, 1984) and focuses on how strategic leaders like TMTs influence firm outcomes, combining micro and macro leadership theories (Samimi et al., 2020; Herrmann, 2020). Whereas upper echelons research explains TMT actions, it relies on member characteristics as proxies for internal interactions (Wiersema and Hernsberger, 2021), offering limited insight into what TMTs actually do, how they do it, and how they affect firm outcomes (see Hambrick and Wowak, 2021). These limitations point to a lack of understanding of team attributes for ensuring high-quality strategy implementation coordination among TMT members and behavioral processes making up strategy implementation coordination. Without

understanding these "pieces of the puzzle" and how they fit together, we cannot theoretically explain how TMTs coordinate strategy implementation.

Considering these opportunities and drawing from strategic leadership theory as our overarching theoretical framework, our purpose is to build and test a theoretical model examining the role of TMTs in the strategy implementation process, provide a fine-grained view of coordination behaviors, and highlight TMT attributes contributing to coordination. Strategic leadership theory acknowledges several team characteristics ensuring "intense interaction" for TMTs (Carmeli and Schaubroeck, 2006, p. 441). We argue that intensity of TMT joint problem solving, or degree to which TMTs collectively acknowledge and resolve challenges (Carpenter and Weikel, 2011; Mathieu et al., 2000), encourages these interactions. Collectively addressing issues by sharing information improves quality of strategy implementation coordination, as members draw on expertise to solve problems harming implementation (Greer et al., 2017). We argue that this effect is moderated by level of TMT interdependence, or degree of mutual reliance among TMT members, which has been a key moderator in prior TMT studies (Barrick et al., 2007). Coordination depends on whether TMTs share unique and complementary information to complete tasks, reach goals, and achieve outcomes (Wei and Wu, 2013).

Our study makes three important contributions to strategic leadership theory and research that, when integrated, provide a fourth broader contribution. First, in a review of the strategy implementation literature, Tawse and Tabesh stated, "Because the quality of implementation processes contributes to the effectiveness of implementation and firm-level outcomes, a better understanding of the *many factors* that contribute to implementation processes should be at the center of attention in future strategy process research" (2021, p. 30, emphasis added). Strategy implementation process research has explored managerial actions without a strategic leadership

perspective. As a result, we have less knowledge about how strategic leaders perform these actions, exacerbating the black box problem (e.g., Boyd et al., 2013). We address this limitation by building a theoretical model focusing on what TMTs do and how they ensure the success of their own actions to implement firm strategy. By doing so, we shift the strategic leadership conversation from understanding implementation actions within and between organizational units, teams, and functions to providing a more fine-grained understanding of an important, yet surprisingly underexamined, factor – a firm's TMT's role in the implementation of strategy.

Second, in their review of the strategic leadership literature, Samimi et al. (2020) suggest that researchers "consider moving beyond performance measures and include other proximal outcomes" and explore "how individuals at higher organizational levels influence their firms." Thus, including quality of strategy implementation coordination as a mediator between TMT attributes and firm performance extends our understanding of strategic leadership in this important direction. We also extend knowledge of strategic leadership by developing a comprehensive and theoretically-based conceptualization and operationalization of quality of TMT strategy implementation coordination. Virtually no strategic leadership research highlights the multidimensional nature of these actions; and, instead, scholars have narrowly examined discrete managerial strategy implementation actions (Lynch and Mors, 2019). A key problem of this approach is that it does not consider the complexity of TMT strategy implementation coordination, which requires TMTs to allocate resources, coordinate with mid-level managers, and encourage collaboration between units (Raes et al., 2011). Without a multidimensional conceptualization of TMT implementation activities, a void exists in strategic leadership research. Thus, we provide a new, refined theoretical lens through which to understand strategy implementation coordination and a basis for new and more focused strategic leadership research.

Third, Hitt and Ireland (2002) argue that exercising strategic leadership requires managing relational capital. Research has focused on middle- and lower-level leaders managing relational capital so that subunit actions are in concert to implement firm strategy (Tawse and Tabesh, 2021). Yet we have an incomplete understanding of how TMTs ensure relational capital. Barrick et al. (2007) noted that TMT interdependence often varies among TMTs, which influences how TMTs function. Given that they found level of TMT interdependence was an important moderator, they cautioned against treating generic behavioral processes as an aggregated collection of variables. Following this logic, and to minimize obscuring unique and interactive effects of intensity of joint problem solving and level of interdependence, we investigate whether each contributes uniquely to quality of TMT strategy implementation coordination and, ultimately, firm performance. We not only support calls for theoretical integration (Mayer and Sparrowe, 2013), but we extend our understanding of strategic leadership by examining how TMTs build the requisite relational capital, namely, the interactive effects of intensity of joint TMT problem solving and level of TMT interdependence that ensure quality of strategy implementation coordination and firm performance.

Finally, the three contributions articulated above lead to the fourth theoretically-based contribution of our research. Specifically, Hitt et al. (2007) emphasized the importance of integrating macro and micro research to develop a more accurate understanding of organizational functioning. Our study answers this call by linking our understanding of strategic leadership with the microfoundations of strategy (e.g., Felin et al., 2012) in at least two ways. One, micro teams research is used to better understand the TMT processes used for strategy implementation. Two, examining the TMT processes involved in the meso activity of coordinating middle- and lower-

level managers' and their units' actions directly answers the call from Hitt et al. (2007) to link the macro and micro activities and processes in organizations (Vera et al., 2022).

THEORETICAL DEVELOPMENT AND HYPOTHESES

Strategy Implementation Process Research: Interpersonal Managerial Actions

Research on strategy implementation processes categorizes actions managers at all levels of organizations take to enact strategies into two types (Noble, 1999; Tawse and Tabesh, 2021; Weiser et al., 2020). The first is the structural process view, focusing on adjusting formal, structural aspects of organizations, such as establishing and modifying roles and responsibilities, reporting relationships, and enforcement mechanisms. The second is the interpersonal process view, which centers on a range of interpersonal behaviors that become salient as managers interpret and act to coordinate strategy. Unlike structural actions, interpersonal managerial actions reflect formal or informal human interactions (Hitt et al., 2017; Noble, 1999).

Scholars suggest that, regardless of whether organizational structures and control policies exist, interpersonal processes are integral to strategy implementation (Heide et al., 2002). Strategy implementation requires managers to guide and shape others' feelings and actions, which can be accomplished through interpersonal managerial actions (Sull et al., 2015). Despite strategy implementation process research focusing on interpersonal managerial actions, most of this work focuses on a range of relational behaviors managers at various organizational levels use for strategy implementation coordination. What is missing, however, is knowledge about what ensures interpersonal managerial actions that *TMTs* use, and how these affect their own strategy implementation coordination efforts and overall firm performance.

Ensuring the Quality of TMT Strategy Implementation Coordination

Much of the early work on upper echelons theory focused on characteristics of top executives as proxies for their decisions and predictors of firm outcomes (Wiersema and Hernsberger, 2021), but did not provide insights into what transpires between TMT members. To overcome this void, strategic leadership theory has built upon and extended upper echelons theory by focusing on behavioral processes. We focus on key team attributes that are important to achieve high quality strategy implementation coordination (Simsek et al., 2005; Skivington and Daft, 1991; Smith et al., 1994). Whereas the intensity of joint problem solving can resolve challenging issues (Edmondson, 2012; Hambrick and Mason, 1984), interdependence induces teammates to work together to complete tasks and attain goals linked to implementation.Barrick et al. (2007) suggested that TMT interdependence captures various aspects of behavioral integration (Hambrick, 1994; 2005), rather than lining up with just one dimension. In their study of TMT interdependence, Barrick et al. (2007, p. 554-555) stated, "team interdependence and team mechanisms should be treated separately" and cautioned against using "behavioral integration as a meta-construct for the whole of TMT dynamics if it doesn't separate within-team interdependence from team processes and emergent states." Following Barrick et al. (2007), we take an interactive approach, accounting for the effects of intensity of TMT joint problem solving while also separately considering level of interdependence among TMT members. This is because those TMTs with higher intensity of joint problem solving can be very successful even if members work independently (i.e., have very low levels of interdependence). Thus, we focus on both team characteristics to shed light into the black box problem that strategy scholars acknowledge (Wiersema and Hernsberger, 2021). Given that the micro organizational behavior teams literature treats them distinctly and consistent with Barrick et al.'s (2007) warning, we argue that intensity of TMT joint problem solving and level of TMT interdependence have

important, separate, unique, and substitutable behavioral effects on quality of TMT strategy implementation coordination and firm performance.

Intensity of TMT Joint Problem Solving. Intensity of TMT joint problem solving enables quality of strategy implementation coordination by tackling internal or external problems and resolving issues. An internal TMT problem could be reactively regulating affect, conflict, and motivational loss (Marks et al., 2001) after a setback. An external issue could be a TMT resolving inter-team or inter-unit collaboration concerns. For both, TMT members need to diagnose problems, debate potential solutions, and gain clarity on the larger issues that exist.

Encouraging interpersonal managerial action is important for executing a chosen strategy (Hitt et al., 2020). Surfacing issues and collaboratively resolving problems enables quality of TMT strategy implementation coordination (Barrick et al., 2015) because coordination requires an accurate view of issues facing various departments and functions. By identifying problems as a team, TMT members leverage insights and diverse knowledge to establish implementation goals because they understand internal and external barriers facing their team and mobilize individuals and resources to adapt. The intensity of joint problem solving not only enables TMTs to monitor conditions impeding achieving implementation goals but also adapt goals in light of changing circumstances (cf. Cascio, 2000). Hence, TMTs need to discuss issues and consider feedback so that adjustments can be made to achieve high quality strategy implementation coordination (Sirmon et al., 2007). In contrast, low quality strategy implementation coordination is often traced back to TMTs not identifying and diagnosing concerns arising from decisions, resulting in a lack of support for a chosen direction (Greer et al., 2017). Using strategic leadership theory, Atkinson (2006) argued that failure of TMTs to operate as a coherent, problem-solving unit could lead to lower levels of organizational effectiveness.

Scant empirical research exists on our proposed relationship between intensity of TMT joint problem solving and quality of strategy implementation coordination. Tangentially, in the micro teams literature, studies have found that effective performance results from collectively solving problems. For example, Hiller et al. (2006) found that collectively identifying and diagnosing problems, using a team's expertise to analyze them, and arriving at solutions were positively related to team effectiveness. Sole and Edmondson (2002) found members' knowledge sharing helped resolve team problems. Chen et al. (2007) found that members using problem solving were more likely to perform well as a team. In the macro literature, Carmeli and Schaubroeck (2006) found a positive relationship between TMT behavioral integration and quality of strategic decisions. Based on the above theoretical logic and related findings, we posit:

Hypothesis 1. Intensity of TMT joint problem solving positively influences quality of TMT strategy implementation coordination.

Level of TMT Interdependence. In addition to intensity of TMT joint problem solving, a team characteristic that promotes quality of strategy implementation coordination allowing TMT members to rely on one another and move beyond unit responsibilities is TMT interdependence. Intensity of TMT joint problem solving is theoretically distinct from level of TMT interdependence in that the former helps TMT members to resolve specific challenges, focus attention on problems going beyond unit responsibilities (Hambrick, 1994), and surface and resolve issues as a team. In contrast, level of TMT interdependence encourages strategy implementation by motivating TMT members to rely on one another to complete TMT tasks, fulfill TMT goals, and mutually benefit from results. This is because level of TMT interdependence encourages integrating TMT tasks, goals, and outcomes by sharing unique knowledge, insight, and expertise (Teece, 2014). Level of TMT interdependence helps members

look beyond their self-interest (cf. Uhl-Bien and Graen, 1992) to exchange knowledge exclusively known to them to ensure they operate from the same script. By collectively completing tasks and attaining team goals and rewards, level of TMT interdependence spurs members to collaborate (cf. Campion et al., 1996; Wageman, 1995).

Based on this logic, we argue that intensity of TMT joint problem solving exerts less influence on quality of TMT strategy implementation coordination when there is a higher, rather than lower, level of TMT interdependence because interdependence already reinforces strategy implementation. That is, both encourage executives to collectively share with one another. By reducing members' focus on their own unit tasks, goals, and results, interdependence compels TMT members to collectively plan, assimilate information, and share expertise to coordinate (Courtright et al., 2015). Intensity of TMT joint problem solving is likely less important because problems are prevented or resolved more easily due to processes catalyzed by interdependence. As such, joint problem solving becomes redundant and less necessary for strategy implementation coordination. Thus, even if TMT members do not have major problems to solve or easily engage in joint problem solving, they must still rely on one another because their tasks, goals, and results are linked to strategy implementation coordination. A higher level of TMT interdependence can therefore compensate for lower intensity of TMT joint problem solving.

Likewise, if TMT members have lower levels of interdependence, members must still collaborate to resolve problems. Joint problem solving allows TMT members to spend time together, exchange information, and cooperatively make decisions, all needed for quality TMT strategy implementation coordination (Uzzi, 1996), especially when TMTs have lower levels of interdependence (cf. Wageman, 1995) because it normalizes resolving problems as a team and deals with issues that arise from low interdependence. Hence, intensity of joint problem solving

resolves strategy implementation coordination concerns related to goal specification, tracking, scanning internal and external systems, and adapting. Thus, intensity of TMT joint problem solving builds the necessary collaboration vital to strategy implementation coordination.

In contrast to these substitutive arguments in which TMTs have either high or low levels of TMT interdependence and intensity of joint problem solving, a TMT could also be high or low on both interdependence and joint problem solving. However, if a TMT is low on both, members would likely withhold unique knowledge rather than share it, making it difficult for quality TMT strategy implementation coordination to occur. Macro research suggests that to coordinate actions that help to implement firm strategy, a TMT must have collaboration allowing members to engage in these actions (Hitt et al., 2017). In contrast, situations in which a TMT is high in both interdependence and joint problem solving are rarer because executives are on multiple teams and have competing responsibilities. As Samimi et al. (2020) state, "The limited resources and skills of strategic leaders sometimes create trade-offs regarding these functions so that leaders necessarily need to focus on one function at the cost of ignoring another." Thus, TMT members must balance their time and attention more than other members (Hambrick, 1994). Nevertheless, these team characteristics should overlap in encouraging information exchange, and thus they are unlikely to be synergistic, particularly in completing actions affecting an entire firm. Based on this, we propose that level of TMT interdependence and intensity of joint problem solving substitute for each other enabling a TMT to take actions that ensure high quality TMT strategy implementation coordination. Thus, we predict:

Hypothesis 2. Level of TMT interdependence will moderate the positive relationship between intensity of TMT joint problem solving and quality of TMT strategy

implementation coordination, such that the relationship will be less strongly positive when level of TMT interdependence is higher, rather than lower.

Linking TMT Attributes to Firm Performance

We also argue that quality of TMT strategy implementation coordination mediates the relationship between the interaction of intensity of TMT joint problem solving and level of TMT interdependence on firm performance. As a first step in our mediation logic, we argue that quality of TMT strategy implementation coordination is positively related to firm performance. Although others' actions can contribute to implementation success and firm performance, quality of implementation efforts often lies in coordination actions taken by a firm's TMT. Therefore, TMTs hold a necessary role for ensuring high quality strategy implementation coordination among different units in a firm (Greer et al., 2017) critical for overall firm performance.

Prior empirical research is sparse but suggests that specific CEO strategy implementation approaches, planning, and prioritizing actions are related to firm performance (Hickson et al., 2003). These approaches extend beyond the CEO to other TMT members because strategy implementation requires collective efforts of top management teams to achieve specific goals. For example, TMTs track progress, make coordinated decisions, and take actions in their own areas of responsibility (Finkelstein et al., 2009). TMTs interpret changing conditions by scanning internal (e.g., financial, talent, technology) and external (e.g., competitive pressures, customer demands) environmental factors to learn how to adapt strategy implementation efforts, which are important to firm performance (Hitt et al., 2017). The quality of TMT strategy implementation coordination is thus important to ensure successful firm performance.

Our theoretical logic for mediation is supported by strategic leadership theory, which suggests that overcoming information asymmetries by a TMT is crucial for firm success

(Finkelstein et al., 2009). We acknowledge the influence of two team attributes to establish a more complete understanding of their indirect effects on firm performance through TMT strategy implementation coordination. When TMT members work together effectively, they are more likely to agree upon and support collective actions to execute firm strategy through intensity of joint problem solving or level of interdependence. Thus, quality of TMT strategy implementation coordination is likely more effective when TMT members either rely on intensity of joint problem solving or level of interdependence. Conversely, when TMTs lack joint problem solving or interdependence, their implementation efforts are unlikely to succeed and firm performance suffers (Dooley et al., 2000). Unsuccessful implementation behaviors can result from the lack of a unified vision and purpose (Mintzberg et al., 2005) because TMT executives are pursuing their own interests rather than their firm's (Guth and MacMillan, 1986). Thus, we posit:

Hypothesis 3. Quality of TMT strategy implementation coordination mediates the effect of the interaction of intensity of TMT joint problem solving and level of interdependence on firm performance.

Figure 1 depicts our theoretical model.

INSERT FIGURE 1 ABOUT HERE

DATA AND METHOD

Sample and Procedure

We recruited three investment groups managing 102 firms. Respondents represented various industries (i.e., 18% from professional, scientific, and technical; 16% from accommodation and food service; 16% from manufacturing; 12% from construction; and the remaining from eight other industries). After agreeing to participate, CEOs from these 102 firms provided contact information for at least two TMT members, allowing us to use multiple

informants, consistent with previous TMT research (e.g., Ling et al., 2008). In exchange for their effort, we provided CEOs with developmental feedback about their TMT. For data to be used, we required responses from at least three TMT members (i.e., the CEO and two others), in line with prior research (e.g., Barrick et al., 2007). CEOs and the other TMT members provided data on the quality of TMT strategy implementation coordination, intensity of TMT joint problem solving, level of TMT interdependence, and each respondent's personal demographic information; and, the CEO provided organizational demographic information.

About three months after the first survey, we sent another one to one operating partner in each investment group. Because these raters had deep knowledge of financial aspects of each organization (44, 15, and 24 organizations across the three investment groups), we asked them to assess firm performance, with a final sample of 83 TMTs with complete data (i.e., 81% response rate). We compared results from TMTs completing surveys near the end of data collection to those completing them near the beginning to test for non-respondent bias (Armstrong and Overton, 1977). We found no significant differences for any two sets of measures.

The size of TMTs ranged from three to 12 members, with an average of 4.70 (s.d. = 2.1). A total of 266 out of 390 participants invited responded to surveys, yielding a 68 percent response rate on both surveys. The response percentage on each team ranged from 33-100 percent, but importantly, 77 percent of these teams had at least half the members respond. Thus, while we required responses from at least three TMT members (i.e., the CEO and two others), in a majority of cases, this resulted in no less than half of the TMT responding. Organization size ranged from eight to 2000 employees (four organizations had more than 1000 employees), with an average of 154 employees (s.d. = 363.6). To ensure that absence of a strategy did not affect our findings, we randomly asked 20 CEOs of TMTs that were rated high or low on strategy

implementation about the strategy type they used (Slater and Olsen, 2000). All CEOs reported having a strategy, and through this process we discerned their strategy differed from the other constructs in our model. Further, we followed commonly accepted procedures for minimizing common method variance, including changing item order, obtaining predictors and criteria from different raters, and having a complex model (Podsakoff et al., 2003).

Measures

We used a referent-shift composition model (Chan, 1998) for all independent variables because our research focused on TMT members' *collective* perceptions of quality of TMT strategy implementation coordination in their firms, intensity of TMT joint problem solving, and level of TMT interdependence. We assessed all items using five-point, Likert-type scales ranging from (1) strongly disagree to (5) strongly agree, except for the firm performance items, for which a seven-point scale was used that ranged from (1) strongly disagree to (7) strongly agree.

Firm Performance. We used subjective data to assess firm performance because providing objective data would violate operating partners' fiduciary obligations to their portfolio firms, investors, and acquiring firms. A subjective measure also allows the incorporation of a broader, multifaceted set of performance criteria and a focus on longer-term performance, thus providing a more comprehensive and accurate assessment of performance compared to specific financial measures (see Gibson et al., 2007; Hitt et al., 2020). For these reasons, we followed prior macro research that also used subjective measures of firm performance. Scholars suggest that subjective measures are more appropriate than objective measures for comparing profit performance in samples with businesses in multiple industries (Venkatraman and Ramanujam, 1986). Several scholars also point out that top executives and/or their investors are typically unwilling to reveal actual performance data (Gupta and Govindarajan, 1984; Ling et al., 2008).

Based on this reasoning, we used Gupta and Govindarajan's (1984) 9-item subjective firm performance scale that had high validity and reliability in prior research (Covin et al., 1990). Specifically, we asked one operating partner in each investment group to assess firm performance. Operating partners were uniquely positioned to assess performance as they are charged with operational and financial oversight for the firms in which they are invested, either through their advisory capacity or board membership. This ensured the partner's continuous involvement in the decisions and activities (e.g., initial due diligence, operational improvement, and exit) of each firm throughout the investment cycle process. These knowledgeable informants, because of their executive, functional, and/or specialized experience, offered scores designed to precisely and accurately assess ratings relative to other firms in their portfolio based on the following aspects of firm performance: (1) sales level, (2) sales growth rate, (3) cash flow, (4) return on shareholder equity, (5) gross profit margin, (6) net profit from operations, (7) profit to sales ratio, (8) return on investment, and (9) the firm's ability to fund business growth from profits. We averaged the scores provided by the partners to obtain an aggregate rating for firm performance. Cronbach's alpha was 0.95.

Quality of TMT Strategy Implementation Coordination. In their pioneering work, Schendel and Hofer (1979) articulated a paradigm that explicitly identified the central role of top executives in strategy implementation. Drawing from these ideas, Barrick et al. (2015) created a strategy implementation coordination measure with two dimensions: goal specification and tracking and monitoring the situation. Yet, their measure omitted Schendel and Hofer's two other dimensions: frequently checking internal and external systems for environmental changes and adapting to these changes. To create a more comprehensive four-dimension measure of quality of TMT strategy implementation coordination, we incorporated six of the items from Barrick et

al.'s (2015) strategy implementation scale, including dimensions of goal specification and tracking implementation goal progress, originally based on Mathieu et al.'s (2000) measure. In a personal communication (M. Barrick, January, 2018), it was noted that Barrick et al. (2015) relied on Marks et al. (2001) and LePine et al. (2008) to explain their rationale for combining the often-separated transition (i.e., goal specification) and action (i.e., tracking progress) process items.

We then conducted a literature review of measures that capture Schendel and Hofer's (1979) additional two dimensions. We found several valid measures that were regularly used, minimized social desirability, were generalizable, and had high discriminant validity. We thus used established measures to create these items but adapted them for TMT activities of scanning internal and external systems and adapting to changing circumstances. We used Mathieu et al.'s (2000) three-item systems scanning measure to assess internal and external systems monitoring. A sample item is "…examining and managing resources (financial, talent, technology) for our implementation goals." We used de Jong and Elfring's (2010) four-item adaptation scale to measure adapting. A sample item is "…modify the implementation goals and objectives in light of changing circumstances." A complete list of items for this measure is in the Appendix.

Finally, five micro and macro faculty (i.e., three full and two assistant professors) subject matter experts reviewed the content of the measure and considered the comprehensiveness of the dimensions to determine the extent to which the items operationalized TMT strategy implementation coordination. We resolved disagreements until reaching consensus. Seventeen executives reviewed them to ensure fidelity with implementation practices of TMT members. CEOs and TMT members rated strategy implementation coordination by completing a 13-item quality of TMT strategy implementation coordination measure. The instructions informed them

that these items depicted actions taken by TMT members to influence implementation of a firm's strategies by other managers and teams throughout the firm. Cronbach's alpha was 0.94.

Based on extant theory and research, we have argued that our comprehensive quality of TMT strategy implementation coordination construct consists of four dimensions. To support our contention, we conducted a second-order confirmatory factor analysis (CFA; Edwards, 2001; e.g., LePine et al. 2008) to assess convergent and discriminant validity of the four quality of TMT strategy implementation coordination dimensions and the contribution of each dimension to the overall construct. Specifically, we argue that to justify using the single, global quality of TMT strategy implementation coordination construct, the four subdimensions should load on a single, higher-order factor. To test this, we specified a CFA model in which the first-order constructs of goal specification, monitoring, scanning, and adapting were loaded onto a single, second-order latent construct. According to standards specified by Hu and Bentler (1999), the resulting 4-factor model demonstrated an acceptable fit (χ^2=112.99, df=61; CFI=0.92; SRMR=0.06; IFI=.89). As we expected, however, this model did not fit the data better than the 1-factor, single latent variable model ($\Delta\chi^2$=15.77, Δdf=3, CFI=.96; SRMR=.09; IFI=.92), which had a better fit. Furthermore, the results from this model indicated that all items in the measure significantly loaded on their intended dimension ($p<.01$). The gamma loadings for the four dimensions were also statistically significant ($p<.01$) with respect to the higher-order quality of TMT strategy implementation coordination construct (standardized gammas: goal specification=.82, monitoring=.94, scanning=.97, adapting=.99). Thus, all analyses used the more parsimonious single latent variable, composed of four contributing dimensions.

Intensity of TMT Joint Problem Solving. The CEO and TMT members rated their degree of agreement on intensity of TMT joint problem solving using Hiller et al.'s (2006) 7-item

unidimensional TMT joint problem solving measure that is based on extant theoretical concepts of TMT joint problem solving. Cronbach's alpha was 0.97, and items are in the Appendix.

Level of TMT Interdependence. Because we were interested in capturing a broad conceptualization of the level of TMT interdependence, the CEO and other TMT members rated it using Barrick et al.'s (2007) 14-item, three-dimension (i.e., task, goal, and outcome) team interdependence measure. Similar to Barrick et al.'s (2007), we used the combined measure to capture the broad TMT interdependence construct. A sample item for TMT task interdependence is "I cannot accomplish my work without information or materials from other members of the executive management team," for goal interdependence is "My work goals come directly from the goals of the executive management team," and for outcome interdependence is "Feedback about how well I am doing my job comes primarily from information about how well the entire team is doing." Cronbach's alpha was 0.83. A complete list of items is in the Appendix.

Control Variables. We control for variables relevant to TMT research to limit potential omitted variable bias and address alternate explanations by including firm- and mean team-level controls (e.g., Barrick et al., 2007; Simsek et al., 2005). Firm-level controls included firm size (i.e., number of employees), age (i.e., number of months since the firm was established), TMT size (i.e., number of TMT members), industry (i.e., firms were assigned to one of eight industry categories based on industry similarity; see Simsek et al., 2005, for a similar procedure), and we dummy-coded the three investment firms to reflect effects from the three operating partners on ratings of firm performance. Team-level controls included members' team tenure, age, race, education, and gender, as reported by the executives, which have been shown to be related to various outcomes (e.g., Smith et al., 1994). For team tenure, we included TMT members' average length of time on their team and variability of team tenure among members (e.g., Smith

et al., 1994). Rather than use the coefficient of variation for variability of team tenure and age, we used the standard deviation as it is better suited for ratio data (Bedeian and Mossholder, 2000). We used a bias-corrected (by team size) weighted Teachman's (1980) index to measure the variability of race, sex, and education because each is a categorical variable (Biemann and Kearney, 2010). Carlson and Wu (2011) recommend a conservative adoption of control variables, and so we excluded all non-significant control variables from further analyses.

Addressing Endogeneity and Omitted Variable Bias

To address endogeneity and omitted variable bias, strategic management work has begun using Frank's (2000) method (e.g., Busenbark et al., 2017; Harrison et al., 2018), which calculates how large the impact of an omitted variable must be to invalidate an inference for statistical significance (0.05). Importantly, this method does not reduce potential for results to be affected by an omitted variable, but it allows researchers to provide some quantifiable boundaries around results. We used *KonFound-it!* (Rosenberg et al., 2018), an online application that relies on Frank's (2000) method, which calculates the confounding variable effect size and correlation between the confounding variable and independent and dependent variables required to invalidate an inference. We found that an omitted variable would need to have an impact of 0.34 to invalidate the inference of an effect of TMT joint problem solving on firm performance. The omitted variable would have to be correlated with TMT joint problem solving and with firm performance at a level of 0.12 or greater to invalidate our inference. As a basis of comparison, of the control variables, "Industry 2," as represented by the manufacturing industry, was correlated 0.13 with TMT joint problem solving and −0.21 with firm performance for an impact of $0.13 \times (-0.21) = -0.027$ (i.e., the negative impact would reduce the negative effect of TMT problem solving on firm performance). To invalidate our inference of an effect for TMT problem solving

on firm performance, an omitted variable would need to have more than 4.5 times stronger impact than our strongest tested covariate, Industry 2.

RESULTS

Aggregation Tests

To establish the psychometric basis for aggregation, we used $r_{wg\ (j)}$ agreement indices (James et al., 1993) and intraclass correlations (ICCs) evaluated against accepted values (Bliese, 2000; Lance et al., 2006). For each variable, the $r_{wg\ (j)}$, ICC (1), ICC (2) were: 0.84, 0.38, 0.66, respectively for the quality of TMT strategy implementation coordination ($F_{82,\ 183} = 2.92$, $p = .00$); 0.89, 0.55, 0.80, respectively for the intensity of TMT joint problem solving ($F_{82,\ 183} = 3.82$, $p = .00$); and 0.74, 0.47, 0.71, respectively for the level of TMT interdependence ($F_{82,\ 183} = 3.54$, $p = .00$). Thus, for each variable, the $r_{wg\ (j)}$ adequately met the agreement index threshold, and a test of the interclass coefficient revealed the analysis of variance F-values were statistically significant, meaning TMT membership significantly explained variance in our measures.

Measurement Model

We conducted a CFA to test discriminant validity of latent constructs. To improve our parameter estimates to sample size ratio, we randomly created three parcels for the three team-level variables (i.e., quality of TMT strategy implementation coordination, intensity of TMT joint problem solving, and level of TMT interdependence; Little et al., 2002). Then, we assessed overall fit of our data to a measurement model of the three team-level variables using the hypothesized measurement model, as well as two alternatives. All analyses of both measurement and structural models included latent variables with three sets of indicators for each variable. The three-factor measurement model corresponding to our hypothesized model ($\chi 2 = 48.07$; CFI = 0.95; SRMR = 0.07; IFI = 0.92) displayed a good fit to the data. Fit statistics did not indicate a

good fit for all other possible two-factor models, which included merging two constructs into a "combined" latent variable (i.e., level of TMT interdependence construct and a combined intensity of TMT joint problem solving/quality of strategy implementation coordination), and the model with just one common method factor ($\chi 2$ ranged from 145.62 to 224.59 and the *best* CFI = 0.74; SRMR = 0.14; IFI = 0.64). The chi-square difference tests revealed that the fit of the three-factor model was significantly better than the fit of each alternative model ($\Delta \chi 2 = 176.52 \sim 97.09$). We use Cohen's (1992) f^2 to test whether the sample size is sufficient. Based on effect size f^2 for our regressions, our sample size has sufficient statistical power (i.e., power > 94% for our model), which is above the standard 80 percent threshold (Cohen, 1992). We standardized our variables and then used structural equation modelling to test our hypotheses.

Descriptive Statistics, Correlations and Hypothesis Tests

Table I presents the means, standard deviations, and correlations for our variables.

INSERT TABLE I ABOUT HERE

Testing the Structural Model

We used structural equation modelling to test our model. Although most measures of model fit: $\chi 2=4.52$, df = 2, p=.10, CFI = 0.94, SRMR=0.05, IFI = 0.95, RMSEA = 0.12; produced adequate results, the RMSEA fell slightly short of suggested fit parameters (< .08). Even so, we concluded that the overall pattern of fit indices for the proposed model were acceptable. As Figure 2 shows, the results indicated that intensity of TMT joint problem solving is significantly positively related to quality of TMT strategy implementation coordination β = 0.39 at p =0.00, supporting Hypothesis 1. As shown in Figure 2, results indicated that level of TMT interdependence moderates the relationship between intensity of TMT joint problem solving and quality of TMT strategy implementation coordination, such that the relationship is

more strongly positive when the level of TMT interdependence is lower, rather than higher. The interaction coefficient is negative and statistically significant (β = -0.22 at p = 0.02), and Figure 3 shows that positive relationship between intensity of TMT joint problem solving and quality of TMT strategy implementation coordination is less strongly positive when the level of TMT interdependence is higher (β = 0.17, p =0.16, *ns*, 95% CI [-0.10, 0.58]), rather than lower (β = 0.60, p = .00, 95% CI [0.33, 0.91]). These results provide strong support for Hypothesis 2.

Finally, as depicted in Figure 2, quality of TMT strategy implementation coordination mediates the effect of the interaction of intensity of TMT joint problem solving and interdependence on firm performance. In line with our theorizing, quality of TMT strategy implementation coordination has a positive and statistically significant effect on firm performance (β =0.34; p =.00). We then examined the indirect effects of intensity of TMT joint problem solving on firm performance through TMT strategy implementation coordination, emphasizing when the moderator, TMT interdependence, was lower rather than higher (Preacher et al., 2007). Results suggest that at one standard deviation above the mean on TMT interdependence, the conditional indirect effect of the intensity of TMT joint problem solving is much weaker (β = .06, 95% CI: [-0.02, 0.27]) than the indirect effect observed when the level of TMT interdependence was one standard deviation below the mean (β = 0.21, 95% CI: [0.07, 0.41], thereby providing strong support for Hypothesis 3. Using ordinary least squares (OLS) estimation to conduct robust test statistics, we included main effects of intensity of TMT joint problem solving, level of TMT interdependence, and quality of TMT strategy implementation coordination, and then tested the relationship between the interaction and firm performance. The result of this test revealed that the interaction variable is not directly related to firm performance

(β =-0.15; *ns*), as expected. These test results are consistent with the structural equation modeling statistics, thus indicating the robustness of the hypothesis testing results.

INSERT FIGURES 2 AND 3 ABOUT HERE

DISCUSSION

Despite the widely held belief that a firm's executive team shapes and bears responsibility for strategy implementation (Greer et al., 2017; Schendel and Hofer, 1979), there remains an incomplete understanding of a TMT's role in the strategy implementation process. Building upon and extending strategic leadership theory, we examine two team characteristics that promote quality of TMT strategy implementation coordination and, ultimately, firm performance. Intensity of TMT joint problem solving positively influences quality of TMT strategy implementation coordination, and level of TMT interdependence moderates this relationship, such that the effect of either is attenuated when the other exists; and, by extension, the effect of either is highly important when the other is of lower strength, and thus their effects on strategy implementation appear to be largely redundant. We also showed that the interactive effects of both significantly influence firm performance via the quality of TMT strategy implementation. Further, intensity of joint TMT problem solving and level of TMT interdependence affect firm performance indirectly through the quality of strategy implementation coordination, highlighting the importance of coordination among TMT members during strategy implementation as a key underlying theoretical mechanism.

Theoretical Implications

We have several theoretical implications for strategic leadership research on strategy implementation. First, we provide "…a better understanding of the many factors that contribute to [strategy] implementation processes" (Tawse and Tabesh, 2021, p. 30), a critical issue for

strategy implementation process research. Previous strategy implementation process research has not taken a strategic leadership perspective but used a more coarse-grained view of antecedents to strategy implementation by focusing on factors outside TMTs' purview, thus contributing to the black box problem (Carpenter and Reilly, 2006). Research on the strategy implementation process (Hitt et al., 2017; Weiser et al., 2020) points to unnamed managers performing generic strategy implementation actions, enabling coordination of activities needed to implement firm strategy. Of the 25 articles we reviewed that examine strategy implementation, only five specified who engages in the implementation process, and Schaap's (2012) unpublished work, along with Barrick et al.'s (2015) article are the only ones that empirically highlight the role of TMTs. This is curious given that Schendel and Hofer (1979), and recent work on the strategy implementation process (Hitt et al., 2017; Weiser et al., 2020), place TMTs at the center of strategy implementation. Providing a fine-grained view of TMT involvement in strategy implementation is important because, perhaps surprisingly, there is little research that indicates which managers have the greatest effects on the strategy implementation process.

Second, including quality of strategy implementation coordination as a mediator between the interaction of TMTs' intensity of joint problem solving, and level of interdependence, and firm performance extends our knowledge of strategic leadership. We respond to calls to examine more proximal outcomes of strategic leaders' actions in addition to performance, as well as investigate ways individuals at higher organizational levels affect their firms (Samimi et al., 2020). Research has examined some proximal outcomes (e.g., attributes of strategic decisions, organizational culture, employee motivation; Samimi et al., 2020). However, the complex nature of strategic leadership requires further theorizing about other outcomes beyond performance to enable executive teams to direct firm capabilities. Examining proximal outcomes shows the

complexities of how strategic leaders have an impact on firm performance, advancing the strategic leadership conversation.

Our study enriches strategic leadership research by focusing on coordinating team attributes ensuring TMT strategy implementation. Despite Schendel and Hofer's (1979) comprehensive theoretical explanation of coordination of strategy implementation efforts that TMTs should take, there is a void in strategy research regarding the range of actions TMTs use to ensure the quality of strategy implementation. Schendel and Hofer (1979) highlighted coordination actions ensuring implementation quality including: setting implementation goals, tracking progress, monitoring, and adapting. Yet, until now, research on strategy implementation has not investigated the multidimensional and more comprehensive set of coordination activities TMTs could use to implement strategies. Closing this research gap is important because responsibility for implementation successes and failures rests with a firm's top managers.

In constructing a multidimensional conceptualization and operationalization of quality of TMT strategy implementation coordination, we build on Barrick et al.'s (2015) TMT strategy implementation coordination measure by adding two dimensions from Schendel and Hofer's (1979) seminal work (i.e., monitoring situational issues and adapting). Broadening strategy implementation coordination activities TMTs enact allowed us to test critical activities TMTs use to enhance strategy implementation. Without an accepted multidimensional conceptualization and operationalization of a strategy implementation coordination construct, understanding TMTs' role in implementing strategy has been fragmented and incomplete. Hence, an important implication of this contribution is that it offers a broader yet refined lens to view the coordination of strategy implementation that TMTs perform and provides a valuable base for new research.

Third, focusing on how TMTs manage relational capital in their teams to achieve strategy implementation coordination extends strategic leadership theory. Strategic leadership research has primarily investigated TMT characteristics (Holmes et al., 2020), despite theorizing that behaviors can also influence outcomes such as firm performance (Wiersema and Hernsberger, 2021). In taking a relational capital view of strategic leadership, we offer a fine-grained view of interpersonal managerial actions of firms' TMTs critical for strategy implementation. We extend strategic leadership theory by investigating how intensity of TMT joint problem solving and level of TMT interdependence help build and manage relational capital. We also demonstrate their interactive and substitutive effects on quality of TMT strategy implementation coordination and, ultimately, firm performance. We were able to show that each offers TMTs a separate approach for ensuring collaboration, which results in enhanced strategy implementation coordination. TMTs use coordination to implement firm strategy, illustrated in our study with perhaps the most important organizational-level outcome, firm performance. Hence, our research suggests that combining both attributes into one construct could obscure their independent (and interactive) effects (e.g., Simsek et al., 2005). This has an important implication for strategic leadership research on the TMT process of behavioral integration. Combining such constructs assumes TMTs would need both to implement firm strategy successfully, whereas our findings demonstrate that only one or the other is needed (and thus a more efficient use of TMT resources).

We proposed that TMTs with high levels of joint problem solving and interdependence would not benefit from both. Each is influential for strategy implementation coordination. Supporting this, we found that joint problem solving and interdependence operate as functional substitutes. Teams with low levels of TMT interdependence benefit the most from greater joint

problem solving. Furthermore, when the intensity of TMT joint problem solving is strong, the positive influence of level of TMT interdependence on quality of strategy implementation coordination is attenuated because they have adequate team attributes. However, when a TMT sparingly engages in joint problem solving, interdependence provides an alternate means (Uzzi, 1996) for prompting coordination to implement firm strategy. We show that only one is needed to achieve strategy implementation coordination. By examining both, we provide a more refined understanding of the TMT activities needed to ensure that strategy implementation coordination is achieved in a way that boosts firm performance.

Lastly, we respond to calls to integrate macro and micro research (e.g., Aguinis et al., 2011; Hitt et al., 2007) to understand organizational functioning. By drawing from theory in organizational behavior, we linked two widely-studied team attributes to TMT strategy implementation coordination. We also answer calls for macro research to move beyond reliance on demographic data (Carpenter and Reilly, 2006) and use primary data in TMT research; and, for micro research to provide mechanism-rich explanations for predicting firm performance, instead of focusing only on team outcomes (Hiller et al., 2011). Using strategic leadership theory, we delineate firm-wide implementation activities TMTs use to ensure a chosen strategy is implemented. We bridge the macro-micro gap by synthesizing and integrating research from both micro work teams and strategic leadership research to develop a more comprehensive theory of TMT actions related to strategy implementation that would not be possible if each research stream were used alone (cf. Mayer and Sparrowe, 2013). As a result, we offer a precise view of how macro and micro activities and processes operate and demonstrates the importance of the microfoundations of strategy research (Felin et al., 2012) by linking research on teams with strategy implementation.

Implications for Practice

There are a number of ways to enhance intensity of TMT joint problem solving. Research suggests that purposely instilling a joint problem-solving orientation (i.e., the extent to which team members are oriented toward emphasizing and resolving problems as a collective in their joint work) should focus members on solving problems collectively. This is very important for fluid, cross-boundary teams like TMTs, in which member focus, priorities, and availability fluctuate (Kerrissey, Mayo, and Edmondson, 2020). A joint problem-solving orientation could be enhanced via team training and action research interventions (Sunding and Odenrick, 2010). Training alone, however, may be inadequate if TMT members sense an overemphasis on specific problems that should be prioritized and corrected to the exclusion of others. Edmondson (1999) found that team psychological safety (i.e., a shared belief that a team is safe for interpersonal risk-taking) is important, as it mediates relationships between team training and team performance. Finally, creating stronger social ties, which could include close connections between TMT members and other relevant and important stakeholders, can enhance joint problem solving (Dhanaraj et al., 2004; Uzzi, 1997). Such interventions would need to be led and reinforced by a CEO, who can be a role model for the behavior needed in joint problem-solving (Finkelstein et al., 2009).

Team interdependence can be established in a variety of ways. For example, CEOs can emphasize that all parts of the organization have mutual dependencies and have to be aligned, and that members should work together to successfully complete tasks in their own area(s) of responsibility (Barrick et al., 2007; Wageman, 1995, 2001). CEOs can also instill team interdependence by focusing TMT member efforts on achieving overall firm objectives. By emphasizing the importance of larger goals, members can clearly see how working together

achieves firm objectives rather than focusing myopically on issues related to their own functional area or unit (Lawler, 1990). Instilling this type of egalitarian versus meritocratic emphasis can help TMTs overcome agency problems, which TMTs often experience (Hambrick, 1994). Finally, TMT members could be evaluated and rewarded on the extent to which they achieve firm objectives (e.g., profit sharing, stock options), rather than evaluated and rewarded only on the performance of their own function, department, or group (Lawler, 1990). These reward systems will likely entail and place a combined emphasis on TMT members' working together to achieve firm- and unit-level objectives (performance).

Because our research shows that either of the two attributes can be effectively used to prompt the quality of TMT strategy implementation coordination (and, ultimately, enhance firm performance), CEOs will not be compelled to support both attributes. Decisions regarding which approach to focus will be based on prior practices or perceived costs associated with each. Depending on factors such as the nature of the TMT, organizational culture, industry, and others, CEOs could find it more effective to focus on the intensity of TMT joint problem solving rather than TMT interdependence, or vice versa. Our research suggests that they should avoid devoting time and energy to building both, as this is unnecessary and will result in a waste of resources.

Limitations and Future Research

As with all research, our study has limitations that future work could address. First, using Schendel and Hofer (1979), we added two dimensions to a measure of quality of TMT strategy implementation coordination (Barrick et al., 2015). Future research should ensure that the broader construct can help us to understand and predict other important outcomes. Theory guided the addition of these critical dimensions, and the relationship between the expanded measure and firm performance matched our theoretical expectations, perhaps partially mitigating this concern.

Second, despite a strong theoretical basis for our constructs, there are other potential factors important in TMT strategy implementation coordination, as well as possible mediators. One avenue for future research could be to identify other TMT-level factors important for strategy implementation coordination. Macro theory on strategic consensus, defined as a shared understanding and commitment to a firm's strategy (e.g., Woolridge and Floyd, 1989), could be integrated with micro theory on team psychological safety (Edmondson, 1999). Fusing these two streams of research could provide new insights on whether TMT conditions and actions, such as psychological safety and quality of TMT strategy implementation coordination (Sirmon et al., 2007), are influenced by TMT strategic consensus. Future research could also examine whether intensity of TMT joint problem solving and level of interdependence influence management of resources to achieve competitive advantage, which could further bridge the macro-micro gap and thereby provide additional insights into the microfoundations of strategy.

Third, future research could examine additional boundary conditions. Scholars have suggested that CEOs wield immense power in determining what TMTs do (Finkelstein et al., 2009). Isolating the effects of a CEO's power and influence on implementation of a firm's strategy could yield valuable insights. For example, does a CEO or the TMT have a primary influence on strategy implementation? Does a powerful CEO inhibit or augment TMT joint problem solving or interdependence? To fully shed light on specific roles and actions of CEOs and TMTs in the strategy implementation process, much more research is required. For example, when and how do these leaders employ dynamic capabilities to make modifications during implementation process? After the roles and responsibilities for implementing the plan has been distributed, how much direct leadership do the CEO and TMT exercise (Vera et al., 2022)?

Fourth, we were unable to demonstrate causality conclusively. We partially alleviated this concern by the temporal ordering of our data collection; that is, we assessed independent and dependent variables at two different points in time. Nonetheless, we cannot be certain that the sequencing of our predictors matched the causal ordering in our hypothesized relationships. One avenue for future research would be a longitudinal design with more time lags to examine longer-term effects of our predictors. This would respond to team scholars' calls to use time-based research designs to show the utility of narrower team mechanisms (LePine et al., 2008).

A fifth limitation is that we do not identify the specific strategy or quality of that strategy that a firm is attempting to implement. However, research suggests that implementation is important even with a flawed strategy, as it could lead to developing a better future strategy (Lee and Puranam, 2016). Yet, future research can identify the strategy used (and its appropriateness) to examine its effects and those of implementation on firm outcomes. Nevertheless, similar to goal setting research in which goal content is not often measured, we find that when a TMT collectively completes implementation tasks, performance often improves.

A sixth limitation is that we examined privately-held companies, which could limit the generalizability of the results. Due to additional layers of management between a TMT and lower-level employees in larger public companies, there may be other influences. Coordination and oversight of implementation are likely more challenging with more management layers in larger, publicly held firms. Future research should examine the effects of TMTs on middle- or lower-level managers and employees or teams across different types and sizes of firms.

Last, we answer calls for macro research to move beyond reliance on archival demographic data (Carpenter and Reilly, 2006) to use primary data. Perceptual measures are generally collected for studies of human behavior using primary data (Spector, 1994). To

minimize the effects of social desirability bias often found in the use of collecting primary, perceptual data, we followed a procedure of explaining to participants that their responses were confidential, that the software platform used prevented identification of individual respondents, that the data would be collected using a server external to and independent of their firm, and that only aggregated results would be reported. We believe that there is a low likelihood of social desirability bias distorting our results because of the procedures we followed. Evidence for these procedures was confirmed in that respondents reported low ratings on several measures.

REFERENCES

Aguinis, H., Boyd, B. K., Pierce, C. A. and Short, J. C. (2011). 'Walking new avenues in management research methods and theories: Bridging micro and macro domains'. *Journal of Management*, **37**, 395-403.

Armstrong, J. S. and Overton, T. S. (1977). 'Estimating nonresponse bias in mail surveys'. *Journal of Marketing Research*, **14**, 396-402.

Atkinson, H. (2006). 'Strategy implementation: a role for the balanced scorecard?'. *Management Decision,* **44**, 1441-60.

Barrick, M. R., Bradley, B. H., Kristof-Brown, A. L. and Colbert, A. E. (2007). 'The moderating role of top management team interdependence: Implications for real teams and working groups'. *Academy of Management Journal*, **50**, 544-57.

Barrick, M. R., Thurgood. G. R., Smith. T. A. and Courtright, S. W. (2015). 'Collective Organizational Engagement: Linking Motivational Antecedents, Strategic Implementation, and Firm Performance'. *Academy of Management Journal,* **58**, 111-35.

Bedeian, A. G. and Mossholder, K. W. (2000). 'On the use of the coefficient of variation as a measure of diversity'. *Organizational Research Methods,* **3**, 285-97.

Biemann, T. and Kearney, E. (2010). 'Size does matter: How varying group sizes in a sample affect common measures of group diversity'. *Organizational Research Methods,* **13**, 582-99.

Bliese, P. D. (2000). 'Within-group agreement, non-independence, and reliability: Implications for data aggregation and Analysis'. In Klein, K. J. and Kozlowski, S. W. (Eds), *Multilevel theory, research, and methods in organizations*. San Francisco, CA: Jossey-Bass, 349-81.

Burgelman R. A. (1996). 'A process model of strategic business exit: Implications for an evolutionary perspective on strategy.' *Strategic Management Journal*, **17**, 193–214.

Busenbark, J. R., Lange, D. and Certo, S. T. (2001). 'Foreshadowing as impression management: Illuminating the path for security analysts'. *Strategic Management Journal,* **38**, 2486-507.

Campion, M. A., Papper, E. M. and Medsker, G. J. (1996). 'Relations between work team characteristics and effectiveness'. *Personnel Psychology,* **49**, 429-52.

Carlson, K. D. and Wu, J. (2011). 'The illusion of statistical control: control variable practice in management research'. *Organizational Research Methods,* **15**, 413-35.

Carmeli, A. and Schaubroeck, J. (2006). 'Top management team behavioral integration, decision quality, and organizational decline'. *The Leadership Quarterly,* **17**, 441-53.

Carpenter, M. A. and Reilly, G. P. (2006). 'Constructs and Construct Measurement in Upper Echelons Research'. *Research Methodology in Strategy and Management,* **3**, 17-35.

Carpenter, M. A. and Weikel, M. K. (Eds). (2011). *The handbook of research on top management teams*. Cheltenham: Edward Elgar Publishing.

Cascio, W. F. (2000). 'Managing a virtual workplace'. *The Academy of Management Executive*, **14**, 81-90.

Chan, D. (1998). 'Functional relations among constructs in the same content domain at different levels of analysis'. *Journal of Applied Psychology,* **83**, 234-46.

Chen, M., Liou, Y., Wang, C. W., Fan, Y. W. and Chi, Y. P. J. (2007) 'Team Spirit: Design, Implementation, And Evaluation Of A Web-Based Group Decision Support System'. *Decision Support Systems*, **43**, 1186–202.

Chimhanzi, J. (2004). 'The impact of marketing/HR interactions on marketing strategy implementation'. *European Journal of Marketing*, **38**, 73-98.

Cohen, J. (1992). 'A power primer'. *Psychological Bulletin,* **112**, 155-59.

Courtright, S. H., Thurgood, G. R., Stewart, G. L. and Pierotti, A. J. (2015). 'Structural Interdependence in Teams'. *Journal of Applied Psychology,* **100**, 1825-46.

Cowherd, D. M. and Levine, D. I. (1992). 'Product quality and pay equity between lower-level employees and top management: An investigation of distributive justice theory.' *Administrative Science Quarterly* **37**, 302–20.

Covin, J. G., Prescott, J. E. and Slevin, D. P. (1990). 'Technological sophistication on strategic profiles, structure and firm performance'. *Journal of Management Studies,* **27**, 485-510.

de Jong, B. A. and Elfring, T. (2010). 'How does trust affect the performance? The mediating role of reflexivity, monitoring, and effort'. *Academy of Management Journal,* **53**, 535-49.

Dhanaraj, C., Lyles, M. A., Steensma, H. K. and Tihanyi, L. (2004). 'Managing tacit and explicit knowledge transfer in IJVs: the role of relational embeddedness and the impact on performance'. *Journal of International Business Studies*, **35**, 428-42.

Dooley, R. S., Fryxell, G. E. and Judge, W. Q. (2000). Consensus, commitment, and strategy implementation speed and success'. *Journal of Management* **26**, 1237-57.

Edmondson, A. (1999). 'Psychological safety and learning behavior in work teams'. *Administrative Science Quarterly*, **44**, 350-83.

Edmondson, A. C. (2012). *Teaming: How organizations learn, innovate, and compete in the knowledge economy*. New York: John Wiley and Sons.

Edwards, J. R. (2001). 'Multidimensional constructs in organizational behavior research: An integrative analytical framework'. *Organizational Research Methods*, **4**, 144-92.

Felin, T., Foss, N. J., Heimeriks, K. H. and Madsen, T. L. (2012), 'Microfoundations of Routines and Capabilities: Individuals, Processes, and Structure'. *Journal of Management Studies*, **49**, 1351-74.

Finkelstein, S., Hambrick, D. C. and Canella, A. (2009). *Strategic leadership: Theory and research on executives, top management teams, and boards*. New York: Oxford University Press.

Frank, K. A. (2000). 'Impact of a confounding variable on a regression coefficient'. *Sociological Methods and Research,* **29**, 147-94.

Fries, M., Stensaker, I. and Colman, H. L. (2020). 'Strategy implementation: Taking stock and moving forward'. *Long Range Planning*, **54**.

Gibson, C. B., Porath, C. L., Benson, G. S. and Lawler III, E. E. (2007). 'The differential relationship between specific practices, firm financial performance, customer service, and quality'. *Journal of Applied Psychology,* **92**, 1467-80.

Greer, C. R., Lusch, R. F. and Hitt, M. A. (2017). 'A service perspective for human capital resources: A critical base for strategy implementation'. *The Academy of Management Perspectives,* **3**, 137-58.

Gupta, A. K. and Govindarajan, V. (1984). 'Business unit strategy, managerial characteristics, and business unit effectiveness at strategy implementation'. *Academy of Management Journal,* **27**, 25-41.

Guth, W. D. and MacMillan, I. C. (1986). 'Strategy implementation versus middle management self-interest'. *Strategic Management Journal,* **7**, 313-27.

Hambrick, D. C. (1994). 'Top Management groups: A conceptual collaboration and reconsideration of the team label'. In Staw, B. M. and Cummings, L. L. (Eds), *Research in Organizational Behavior.* Greenwich, CT: JAI, 171-214.

Hambrick, D. C. (2005). 'Upper echelons theory: Origins, twists and turns and lessons learned'. In Smith, K. G. and Hitt, M. A. (Eds), *Great minds in management: The process of theory development*. Oxford: Oxford University Press, 109-27.

Hambrick, D. (2007). 'Upper echelons theory: An update'. *Academy of Management Review*, **32**, 334–43.

Hambrick, D. C. and Mason, P. A. (1984). 'Upper echelons: The organization as a reflection of its top managers'. *Academy of Management Review* **9**, 193-206.

Hambrick, D. C. and Wowak, A. J. (2021). 'Strategic leadership'. In Duhaime, I., Hitt M. A. and Lyles, M. (Eds), *Strategic management: State of the field and its future*. Oxford: Oxford University Press, doi:10.1093/oso/9780190090883.001.0001.

Harrison, J. S., Boivie, S., Sharp, N. Y. and Gentry, R. J. (2018). 'Saving face: How exit in response to negative press and star analyst downgrades reflects reputation maintenance by directors'. *Academy of Management Journal*, **61**, 1131-57.

Heide, M., Grønhaug, K. and Johannessen, S. (2002). 'Exploring barriers to the successful implementation of a formulated strategy'. *Scandinavian Journal of Management*, **18**, 217-31.

Hickson, D. J., Miller, S. J. and Wilson, D. C. (2003). 'Two options in managing the implementation of strategic decisions'. *Journal of Management Studies,* **40**, 201-18.

Hiller, N. J., Day, D. V. and Vance, R. J. (2006). 'Collective enactment of leadership roles and team effectiveness: A field study'. *The Leadership Quarterly,* **17**, 387-97.

Hiller, N. J., DeChurch, L. A., Murase, T. and Doty, D. (2011). 'Searching for outcomes of leadership: A 25-year review'. *Journal of Management,* **37**, 1137-77.

Hitt, M. A., Ireland, R. D. and Hoskisson, R. E. (2020). *Strategic management: competitiveness and globalization*. Cengage Learning. Boston, MA: Cengage.

Hitt, M. A., Beamish, P. W., Jackson, S. E. and Mathieu, J. E. (2007). 'Building theoretical and empirical bridges across levels: Multilevel research in management'. *Academy of Management Journal*, **50**, 1385–99.

Hitt, M. A., Jackson, S. E., Carmona. S., Bierman, L., Shalley, C. E. and Wright, M. (2017). 'The imperative for strategy implementation'. In Hitt, M. A., Jackson, S. E., Carmona, S., Bierman, L., Shalley, C. E. and Wright, M. (Eds), *Oxford handbook of strategy implementation*. New York: Oxford University Press, 101-26.

Hitt, M. A., Sirmon, D. G., Li, Y., Ghobadian, A., Arregle, J. L. and Xu, K. (2020). 'Institutions, industries and entrepreneurial versus advantage-based strategies: how complex, nested environments affect strategic choice'. *Journal of Management and Governance*, **25**, 147–88.

Holmes Jr, R. M., Hitt, M. A., Perrewe, P. L., Palmer, J. C. and Molina-Sieiro, G. (2021). 'Building cross-disciplinary bridges in leadership: Integrating top executive personality and leadership theory and research'. *The Leadership Quarterly*, **32**, 1048-62.

Howard, G. S. (1994). 'Why do people say nasty things about self-reports?'. *Journal of Organizational Behavior*, **15**, 399-404.

Hu, L. T. and Bentler, P. M. (1999). 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives'. *Structural Equation Modeling: A Multidisciplinary Journal*, **6**, 1-55.

James, L. R., Demaree, R. G. and Wolf, G. (1993). 'rwg: An assessment of within-group interrater agreement'. *Journal of Applied Psychology,* **78**, 306-209.

Kerrissey, M., Mayo, A. T. and Edmondson, A. C. (2020). 'Joint problem-solving orientation in fluid cross-boundary teams'. *Academy of Management Discoveries*, **7**, 381-405.

Kozlowski, S. W. J. and Bell, B. S. (2013). 'Work groups and teams in organizations: Review update'. In Schmitt, N. and Highhouse, S. (Eds), *Handbook of psychology: Industrial and organizational psychology*. London: Wiley, 412-69.

Lance, C. E., Butts, M. M. and Michels, L. C. (2006). 'Four Commonly Reported Cutoff Criteria What Did They Really Say?'. *Organizational Research Methods,* **9**, 202-20.

Lawler III, E. E. (1990). *Strategic pay: Aligning organizational strategies and pay systems*. San Francisco, CA: Jossey-Bass.

Lee. E. and Puranam, P. (2016). 'The implementation imperative: Why one should implement even imperfect strategies perfectly'. *Strategic Management Journal,* **37**, 1529-46.

LePine, J. A., Piccolo, R. F., Jackson, C. L., Mathieu, J. E. and Saul, J. R. (2008). 'A meta-analysis of team processes'. *Personnel Psychology,* **61**, 273-307.

Ling, Y., Simsek, Z., Lubatkin, M. H. and Veiga, J. F. (2008). 'The impact of transformational CEOs on the performance of small-to medium-sized firms: Does organizational context matter?', *Journal of Applied Psychology,* **93**, 923-34.

Little, T. D., Cunningham, W. A., Shahar, G. and Widaman, K. F. (2002). 'To parcel or not to parcel: Exploring and weighing the merits'. *Structural Equation Modeling,* **9**, 151-73.

Lynch, S. E. and Mors, M. L. (2019). 'Strategy implementation and organizational change: How formal reorganization affects professional networks'. *Long Range Planning,* **52**, 255-70.

Marks, M. A., Mathieu, J. E. and Zaccaro, S. J. (2001). 'A temporally based framework and taxonomy of team processes'. *Academy of Management Review* **26**, 356-76.

Mayer, K. J. and Sparrowe, R.T. (2013). 'Integrating theories in AMJ articles'. *Academy of Management Journal,* **56**, 917-44.

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E. and Cannon-Bowers, J. (2000). 'Shared mental on team process and performance'. *Journal of Applied Psychology,* **85**, 273-83.

Miller, S. (1997). 'Implementing strategic decisions: Four key success factors'. *Organization Studies*, **18**, 577-602.

Mintzberg H., Ahlstrand, B. and Lampel, J. (2005). *Strategy safari.* New York: Free Press.

Noble, C. H. (1999). The eclectic roots of strategy implementation research. *Journal of Business Research*, **45**, 119-34.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. and Podsakoff, N. P. (2003). 'Common method biases in behavioral research'. *Journal of Applied Psychology,* **88**, 879-903.

Quigley, T. J. and Hambrick, D. C. (2015). 'Has the "CEO effect" increased in recent decades? A new explanation for the great rise in America's attention to corporate leaders'. *Strategic Management Journal,* **36**, 821–30.

Raes, A. M., Heijltjes, M. G., Glunk, U. and Roe, R. A. (2011). 'The interface of the top management team and middle managers'. *Academy of Management Review,* **36**, 102-26.

Rosenberg, J. M., Xu, R. and Frank, K. A. (2019). *konfound: Quantify the robustness of causal inferences [R package]*. https://jrosen48.github.io/konfound/

Samimi, M., Cortes, A. F. anderson, M. H. and Herrmann, P. (2020). 'What is strategic leadership? Developing a framework for future research'. *The Leadership Quarterly*, doi.org/10.1016/j.leaqua.2019.101353.

Schaap, J. I. (2012). 'Toward strategy implementation success: An empirical study of the role of senior-level leaders in the Nevada gaming industry'. *UNLV Gaming Research and Review Journal,* **10**, 13-37.

Schendel, D. E. and Hofer, C. W. (1979). *Strategic management: A new view of business policy and planning*. Boston, MA: Little, Brown.

Simsek, Z., Veiga, J. F., Lubatkin, M. H. and Dino, R. N. (2005). 'Modeling the multilevel determinants of top management team behavioral integration'. *Academy of Management Journal,* **48**, 69-84.

Sirmon, D. G. (2021). 'Extending the microfoundations of capability development and utilization: The role of agentic technology and identity-based community'. In Duhaime, I., Hitt, M. A. and Lyles, M. (eds), *Strategic Management: State of the Field and Its Future.* New York: Oxford University Press, doi:10.1093/oso/9780190090883.001.0001.

Sirmon, D. G., Hitt, M. A. and Ireland, R. D. (2007). 'Managing firm resources in dynamic environments to create value: Looking inside the black box'. *Academy of Management Journal,* **32**, 273-92.

Skivington, J. E. and Daft, R. L. (1991). 'A Study of Organizational Framework and Process Modalities for the Implementation of Business-level Strategic Decisions'. *Journal of Management Studies*, **28**, 45-68.

Slater, S. F. and Olson, E. M. (2000). 'Strategy type and performance: The influence of sales force management'. *Strategic Management Journal*, **21**, 813-29.

Smith, K. G., Smith, K. A., Olian, J. D., Sims Jr, H. P., O'Bannon, D. P. and Scully, J. A. (1994). 'Top management team demography and process: The role of social collaboration and communication'. *Administrative Science Quarterly,* **39**, 412-38.

Sole, D. and Edmondson, A. (2002). 'Situated knowledge and learning in dispersed teams'. *British Journal of Management*, **13**, S17-S34.

Spector, P. E. (1994). 'Using self-report questionnaires in OB research: A comment on the use of a controversial method'. *Journal of Organizational Behavior*, **15**, 385-92.

Sull, D., Homkes, R. and Sull, C. (2015). 'Why strategy execution unravels—and what to do about it'. *Harvard Business Review*, **93**, 57-66.

Sunding, L. and Odenrick, P. (2010). 'A method for action research interventions to improve joint problem solving in operational teams in the Swedish construction industry'. *Qualitative Research in Accounting and Management*, **7**, 97-123.

Tawse, A. and Tabesh, P. (2021). 'Strategy implementation: A review and an introductory framework'. *European Management Journal,* **31,** 22-33.

Teachman, J. D. (1980). 'Analysis of population diversity measures of qualitative variation'. *Sociological Methods and Research,* **8**, 341-62.

Teece, D. J. (2014). 'The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms'. *Academy of Management Perspectives*, **28**, 328-52.

Uhl-Bien, M. and Graen, G. B. (1992). 'Self-management and team-making in cross-functional work teams: Discovering the keys to becoming an integrated team'. *The Journal of High Technology Management Research*, **3**, 225-41.

Uzzi, B. (1996). 'The sources and consequences of embeddedness for the economic performance of organizations: The network effect'. *American Sociological Review,* **61**, 674-98.

Uzzi, B. (1997). 'Social structure and competition in interfirm networks: The paradox of embeddedness'. *Administrative Science Quarterly*, **42**, 35-67.

Venkatraman, N. and Ramanujam, V. (1986). 'Measurement of business performance in strategy research: a comparison of approaches'. *Academy of Management Review,* **11**, 801-14.

Wageman, R. (1995). 'Interdependence and group effectiveness'. *Administrative Science Quarterly,* **40**, 145-80.

Wageman, R. (2001). 'The meaning of interdependence'. In Turner, M. E. (Ed), *Groups at work: Theory and research*. Mahwah, NJ: Erlbaum, 197-217.

Wei, L. Q. and Wu, L. (2013). 'What a diverse top management team means: Testing an integrated model'. *Journal of Management Studies,* **50***,* 389-412.

Weiser, A. K., Jarzabkowski, P. and Laamanen, T. (2020). 'Completing the adaptive turn: An integrative view of strategy implementation'. *Academy of Management Annals*, **14**, 969-1031.

Wiersema, M. F. and Hernsberger, J. S. (2021). 'Top management teams'. In Duhaime, I., Hitt, M. A. and Lyles, M. (Ed.), *Strategic management: State of the field and its future*. Oxford: Oxford University Press, doi:10.1093/oso/9780190090883.001.0001.

Wooldridge, B. and Floyd, S. W. (1989). 'Research notes and communications strategic process effects on consensus'. *Strategic Management Journal,* **10***,* 295-302.

TABLE I Descriptive Statistics Means, Standard Deviations, and Correlations [a]

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Rater 2	0.18	0.39										
2. Rater 3	0.29	0.46	-0.30									
3. Industry 2	0.02	0.15	0.13	0.07								
4. Industry 3	0.02	0.15	-0.07	-0.10	-0.02							
5. Industry 4	0.12	0.33	0.11	0.01	-0.06	-0.06						
6. Industry 5	0.08	0.28	-0.03	0.00	-0.05	-0.05	-0.11					
7. Industry 6	0.16	0.37	-0.03	-0.20	-0.07	-0.07	-0.16	-0.13				
8. Industry 7	0.42	0.50	-0.02	0.15	-0.13	-0.13	-0.03	-0.26	-0.37			
9). Industry 8	0.01	0.11	-0.05	-0.07	-0.02	-0.02	-0.04	-0.03	-0.05	-0.09		
10. Firm age (mos.)	247.08	223.86	-0.13	-0.06	0.02	-0.03	-0.04	0.00	0.20	-0.15	0.08	
11. Firm size (f/t E'ees)	154.14	363.61	-0.05	0.15	-0.06	-0.06	-0.06	0.08	0.04	-0.13	0.00	0.34
12. Team size	4.70	2.06	-0.16	0.03	-0.13	-0.05	-0.05	0.19	0.14	-0.21	0.07	0.01
13. Team tenure	121.19	89.78	0.11	-0.14	0.05	-0.10	0.01	-0.03	-0.23	0.13	-0.02	0.30
14. Age	47.07	11.05	0.05	-0.06	0.09	-0.20	0.17	-0.08	-0.05	-0.16	-0.04	0.19
15. Gender (2=Female)	1.31	0.47	0.22	-0.09	0.23	-0.11	0.15	-0.02	-0.15	0.05	-0.07	-0.09
16. Race	1.46	1.09	-0.11	0.07	0.01	0.08	0.01	-0.13	0.09	0.00	-0.05	-0.02
17. Education (5=Bachelors)	5.05	1.16	-0.02	-0.10	0.20	-0.01	-0.11	0.10	0.07	-0.01	-0.10	0.08
18. Level of TMT interdependence	3.67	0.44	0.28	-0.30	0.19	0.08	-0.10	0.06	0.12	-0.18	0.06	0.12
19. Intensity of TMT joint problem solving	3.78	0.60	0.05	0.07	0.13	0.03	-0.02	-0.03	-0.15	0.02	0.19	-0.13
20. Quality of TMT strategy implementation coordination	3.68	0.50	0.10	-0.14	0.03	0.12	-0.18	0.05	-0.05	0.13	0.03	0.13
21. Firm performance	4.71	1.19	-0.11	0.07	-0.21	0.08	-0.13	0.02	0.10	0.04	-0.08	0.07

[a]*Note. N = 83 Teams.*

TABLE I Descriptive Statistics Means, Standard Deviations, and Correlations [a] (Continued)

	Mean	SD	11	12	13	14	15	16	17	18	19	20	21
1. Rater 2	0.18	0.39											
2. Rater 3	0.29	0.46											
3. Industry 2	0.02	0.15											
4. Industry 3	0.02	0.15											
5. Industry 4	0.12	0.33											
6. Industry 5	0.08	0.28											
7. Industry 6	0.16	0.37											
8. Industry 7	0.42	0.50											
9). Industry 8	0.01	0.11											
10. Firm age (mos.)	247.08	223.86											
11. Firm size (f/t E'ees)	154.14	363.61											
12. Team size	4.70	2.06	0.55										
13. Team tenure	121.19	89.78	-0.13	-0.12									
14. Age	47.07	11.05	-0.04	0.02	0.07								
15. Gender (2=Female)	1.31	0.47	-0.08	-0.23	-0.01	0.05							
16. Race	1.46	1.09	-0.04	-0.01	0.14	0.10	0.14						
17. Education (5=Bachelors)	5.05	1.16	-0.20	-0.27	0.11	0.09	-0.06	0.05					
18. Level of TMT interdependence	3.67	0.44	0.04	0.06	-0.03	-0.04	0.09	0.17	-0.04				
19. Intensity of TMT joint problem solving	3.78	0.53	-0.06	0.01	-0.09	0.02	0.09	0.09	0.08	0.27			
20. Quality of TMT strategy implementation coordination	3.69	0.50	-0.12	-0.02	0.08	-0.03	0.15	0.08	0.09	0.35	0.49		
21. Firm performance	4.71	1.19	0.10	0.10	-0.07	0.13	-0.05	-0.07	-0.14	-0.04	0.10	0.31	

[a]*Note. N = 83 Teams.*

Accepted Manuscript
Version of record at: https://doi.org/10.1111/joms.12838

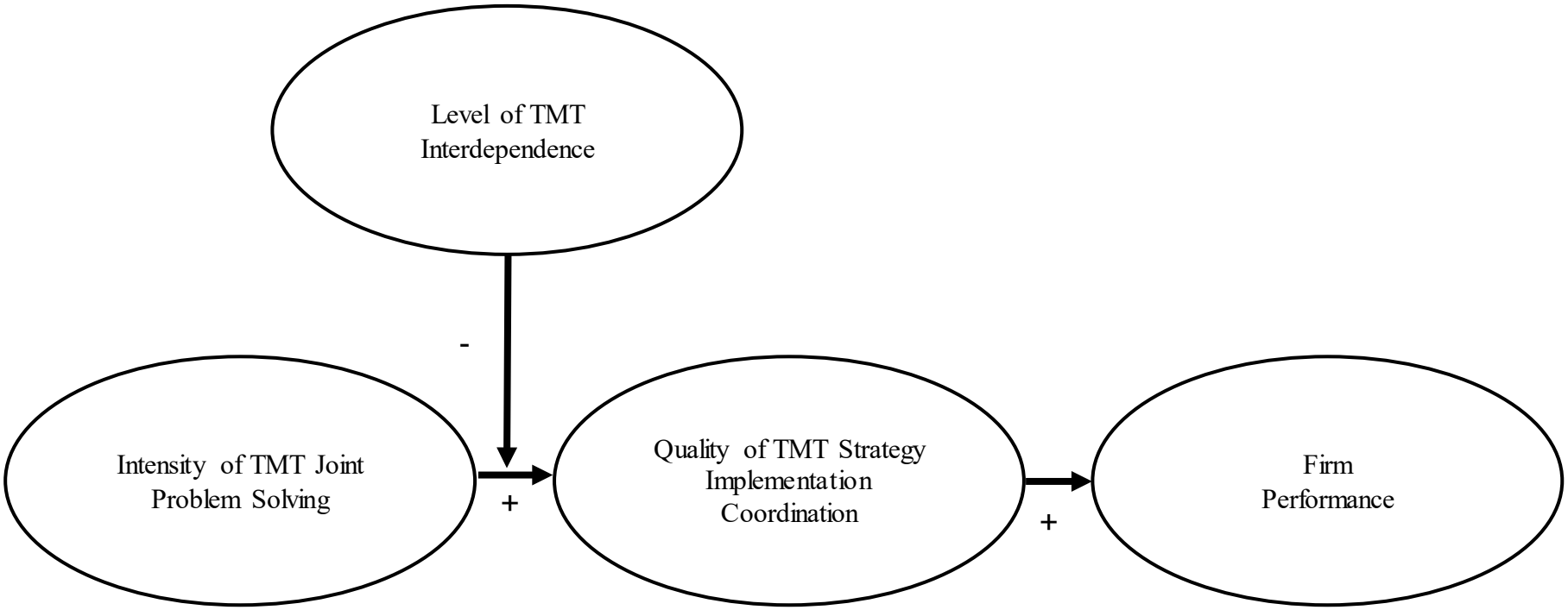

FIGURE 1 Proposed Theoretical Model

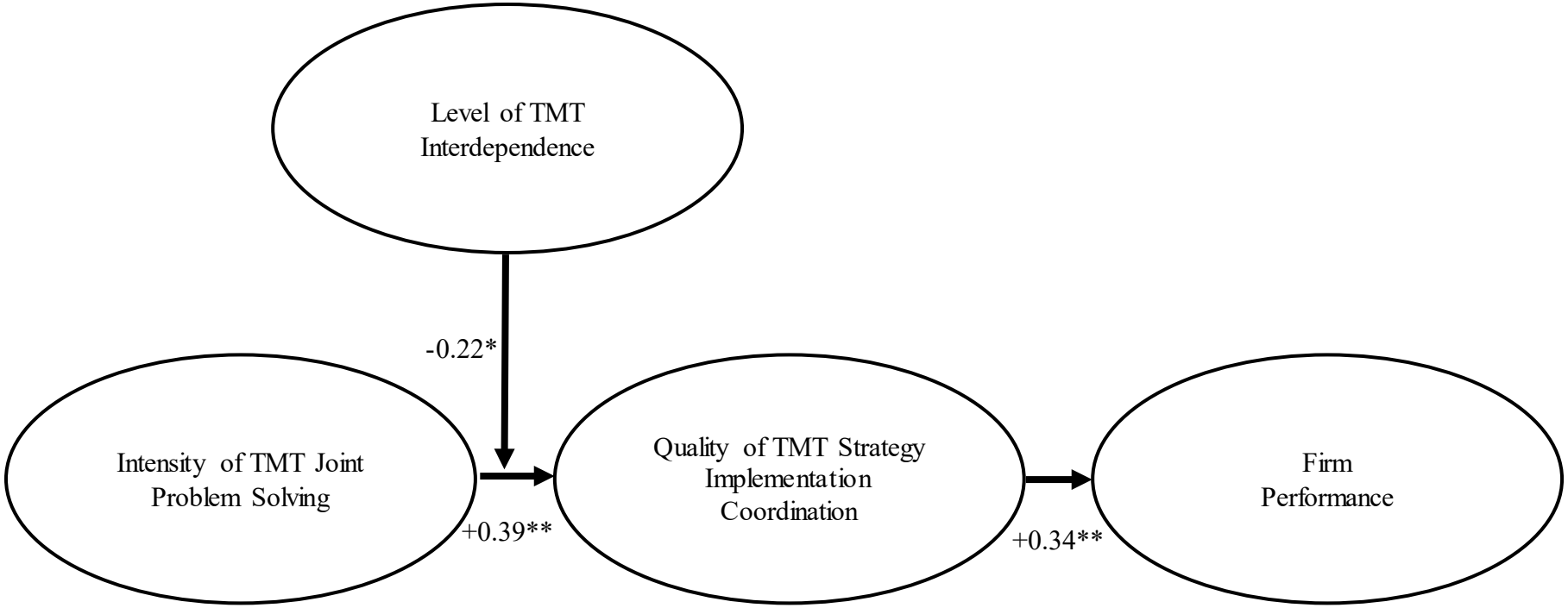

FIGURE 2 Structural Equation Model

Accepted Manuscript
Version of record at: https://doi.org/10.1111/joms.12838

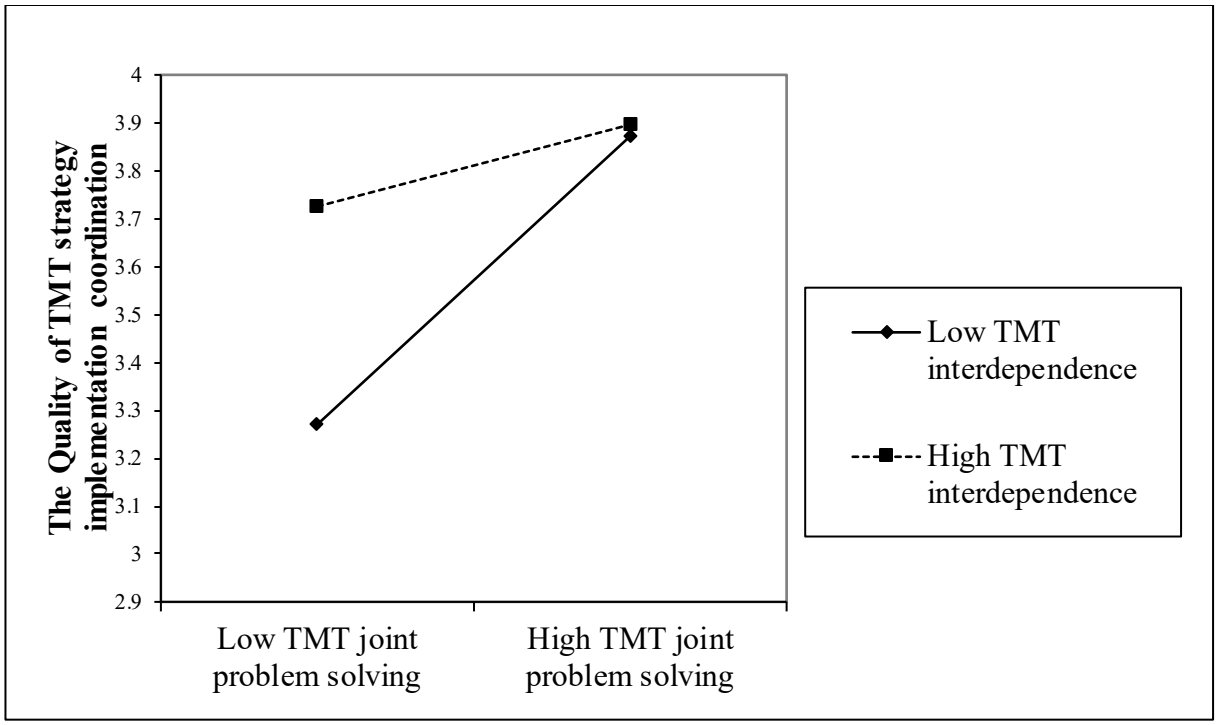

FIGURE 3 Level of the level of TMT interdependence as a moderator of the relationship between the intensity of TMT joint problem solving on the quality of TMT strategy implementation coordination (Unstandardized)

Accepted Manuscript
Version of record at: https://doi.org/10.1111/joms.12838

APPENDIX

Quality of TMT strategy implementation coordination *The senior management team . . .*	*Goal specification measure* 1. ... understands our organizational goals and strategies. 2. ... relies on clearly defined metrics to assess progress on organizational goals and strategies. 3. ... links senior management team goals with strategic direction of the organization. *Tracks and monitors progress* 4. ...monitors events and conditions outside the team that influence progress on organizational goals and strategies. 5. ...seeks timely feedback from stakeholders about how well the team is meeting organizational goals and strategies. 6. ...regularly monitors how well we are meeting our organizational strategies and goals. *Scanning internal and external systems measure (modified Mathieu* et al*., 2000)* 7. …examines and manages resources (financial, talent, technology). 8. …examines events and conditions that influence our implementation goals. 9. …ensures that everyone has access to the right information and management support to perform the implementation goals well. *Adaptation (de Jong & Elfring, 2010)* 10. …modifies the implementation goals and objectives in light of changing circumstances. 11. …reviews the approach to getting the implementation goals done. 12. …changes the implementation goals. 13. …. alters the way decisions are made in regarding the implementation goals.
Intensity of TMT joint problem solving *The senior management team . . .*	*Joint problem solving* (Hiller et al., 2006) 1. …decides on best course of action when problems arise. 2. … uses our team's combined expertise to solve problems. 3. …. develops solutions to problems. 4. … solves problems as they arise. 5. …diagnoses problems quickly. 6. ... finds solutions to problems affecting team performance. 7. … identifies problems before they arise.
Level of TMT interdependence	*Task interdependence (Barrick et al., 2007)* 1. I cannot accomplish my work without information or materials from other members of the executive management team. 2. Other members of my executive management team depend on me for information or materials needed to perform their tasks. 3. Within the executive management team, work performed by other executive management team members is dependent on another's work. 4. How other executive management team members do their work has an impact on my performance. 5. The work of the executive management team relies on or is dependent on executive management team members. *Goal interdependence (Barrick et al., 2007)* 6. My work goals come directly from the goals of the executive management team. 7. My daily work activities are based on the objectives the executive management team believes are critical. 8. I do very few activities that are not related to goals of the executive management team. 9. The work I do on most days is not related to the goals of the executive management team (reverse scored) 10. My work goals are unrelated to the objectives of the executive management team (reverse scored). *Outcome interdependence (Barrick et al., 2007)* 11. Feedback about how well I am doing my job comes primarily from information about how well the entire team is doing. 12. My performance evaluation is strongly influenced by how well my team performs. 13. Many rewards from my job (e.g., pay, promotion opportunities, etc.) are determined in large part by my contributions as a member of the executive management team. *14.* I am dependent on other executive management team members to obtain goals or obtain rewards linked to the work I do on the executive management team.