Abstract

Purpose – This paper aims to explore the relationship between top management team bricolage and performance and also examines unit ambidexterity’s mediating role. More essentially, to understand the black box of organizational knowledge dynamism, a multilevel moderated mediating model is established by exploring the effects of two firm-level moderators, namely, potential absorptive capacity and realized absorptive capacity.

Design/methodology/approach – To test the cross-level moderated mediation model, this study used multisource data from 90 R&D units in 45 Taiwanese manufacturing firms through two-wave surveys and retrieving the archival data for assessing unit performance.

Findings – This study’s evidence revealed that unit-level ambidexterity mediates the effect between firm-level top management teams’ (TMT) bricolage and unit-level performance. This study also found that firm-level potential absorptive capacity positively moderates the effect between firm-level TMT bricolage and unit-level ambidexterity. Moreover, firm-level realized absorptive capacity strengthens the indirect relationships between firm-level TMT bricolage and unit-level performance via unit-level ambidexterity. The findings shed light on how and why TMT bricolage influences unit ambidexterity and performance in knowledge-intensive sectors.

Originality/value – This paper adds to the existing knowledge-based theory literature by disentangling the association between top management team bricolage and unit performance and identifying the pivotal role of absorptive capacity at both the firm and unit levels.

Keywords Top management team, Bricolage, Performance, Ambidexterity, Absorptive capacity, Knowledge-based theory

Paper type Research paper

Introduction

Bricolage, the strategical activity of “making do by integrating current resources at hand for solving novel problems and pursuing new opportunities” (Baker and Nelson, 2005, p. 333), has long been regarded as the key to continuous improvement with resource constraints and organizational responsiveness to environmental volatility. From an evolutionary perspective (Campbell, 1997), resource scarcity is the selecting mechanism that destroys firms incapable of combining heterogeneous resources to explore new opportunities or respond to external contingencies. A growing body of research found that bricolage contributes to organizational performance through agile mobilization and creative agglomeration over the limited resources. According to Busch and Barkema (2021), bricolage is a heuristics-based mechanism for knowledge creation through which bricoleurs learn from their improvisational experience and develop the practices for scaling up the value of underused resources and creating a firm’s unique market position. Although the theoretical lens of bricolage has been extensively used to scrutinize how a startup firm’s
growth and survival are affected by entrepreneurs’ knowledge structure toward resource identification and combination (Davidsson et al., 2017; Guo et al., 2016), the extant research has long neglected the vital importance of top management teams’ (TMTs) bricolage behavior to an established organization’s performance (Andersen, 2008; Burgers et al., 2014).

Bricolage is the strategic posture of TMTs to combine the heterogeneous resources at hand and improvise in the highly uncertain environment where market competitions are intensified by resource scarcity and institutional constraints (Crupi et al., 2021; Davidsson et al., 2017; Davis et al., 2013). Firm bricolage, which stems from TMT’s knowledge-informed decisions for resource deployment and tactical agility, may facilitate the personnel’s exploration and exploitation activities in innovation for strengthening firm competitiveness and surviving external volatility (Kraus and Boucknen, 2014; Dezi et al., 2021). Specifically, TMT bricolage is the top management’s endeavor to address resource constraints’ threats. It thus may inspire work units’ capabilities to redefine the available resources, generate new solutions and explore emerging market opportunities (Kammerlander et al., 2020). Through rejuvenating work units’ ambidextrous capability, which centers on exploratory and exploitative innovation (Benner and Tushman, 2003; Tushman and O’Reilly, 1996). TMT bricolage may serve as a stimulus to work unit performance (Bechky and Okhuysen, 2011; Wu and Wu, 2016). Surprisingly, little work has investigated the role of unit ambidexterity as the organizational learning mechanism that converts TMT bricolage’s impact into enhanced unit-level performance.

TMT bricolage is the strategic maneuver of resources for solving new problems, thereby generating various new knowledge, know-how, expertise and learning capabilities (Zahra, 2021). Essentially, firm-level bricolage produces knowledge and experience that contribute to unit-level ambidexterity through sharpening employees’ knowledge absorption and the competence in adapting to radical changes of the markets (Birkinshaw et al., 2016). Indeed, at the heart of unit ambidexterity are exploring new opportunities and exploiting extant advantages (March, 1991). Therefore, unit ambidexterity may serve as a learning pathway that amplifies the knowledge benefit generated by TMT bricolage and mediates the bricolage–performance relationship. Empirical research has indicated that bricolage is the catalyst for innovation activities (Getnet et al., 2019; Guo et al., 2016) and corporate entrepreneurship (An et al., 2018). However, the relationship between TMT bricolage and organizational ambidexterity has not been empirically established. Likewise, despite the growing importance of bricolage in organizational research (Baker and Nelson, 2005; Bechky and Okhuysen, 2011; Wu and Wu, 2016), evidence is too rare to properly explain how R&D unit ambidexterity impacts unit performance (Gibson and Birkinshaw, 2004; Tushman and O’Reilly, 1996). We contend that knowledge-based theory (KBT) can be used to interpret R&D unit ambidexterity why mediates the relationship between TMT bricolage and unit performance. KBT indicates creating, integrating and implementing unique knowledge to maintain competitive advantages in a firm (Donate and Guadamillas, 2011; Grant, 1996; Zahra, 2021). The dynamic knowledge management processes that conduct sustainable learning will benefit a firm’s internal and external knowledge experimental integration (i.e. bricolage) to further boost organizational ambidexterity and performance (Dezi et al., 2021; Latilla et al., 2019; Servantie and Rispal, 2018).

Particularly, there are mixed findings of bricolage’s boundary effects on performance outcomes. Senyard et al. (2014) argued that the various benefits of bricolage on innovation might be attenuated by negative boundary effects (e.g. wasted effort, operational inefficiencies and lack of strategic synergy). In contrast, the work of An et al. (2018) implies that creating and implementing knowledge may play a key role in amplifying the bricolage’s positive effects on exploratory innovation and exploitative innovation.

The primary problem is the difficulty in integrating the highly various knowledge obtained from TMT bricolage (Dezi et al., 2021; Venugopal et al., 2020). The broad spectrum of
knowledge induced by TMT bricolage, ranging from market intelligence to scientific discovery and technological breakthroughs, requires knowledge integration practices to harness the power of cross-functional knowledge obtained within and outside the organization (Amankwah-Amoah and Adomako, 2021). Superior performance is underpinned by knowledge as a source of differentiation through which a firm synthesizes available resources and knowledge to create unique value for its clients (Amankwah-Amoah and Adomako, 2021; Stenholm and Renko, 2016). Following Grant’s (1996) KBT, we contend that firm-level absorptive capability is the key for the work unit to benefit from new knowledge generated by the TMT’s bricolage effort.

The existing literature has identified potential absorptive capacity and realized absorptive capacity as the two dimensions of an organization’s ability to absorb and use new external knowledge (Zahra and George, 2002); specifically, potential absorptive capacity indicates a firm’s ability to capture and internalize knowledge from external sources, whereas realized absorptive capacity determines the organizational efficacy in identifying the approach to transforming external knowledge into new insights. Within an established organization, TMT bricolage entails identification of under-utilized resources, cross-functional information flow and inter-divisional resource mobilization for boosting strategic improvisation. The TMT’s bricoleur behavior may encourage unit workforce to engage in ambidextrous innovation activities by exposing the employees to novel knowledge and resources outside their work unit (Amankwah-Amoah and Adomako, 2021; Zahra, 2021). Therefore, a firm’s potential absorptive capacity may enable a work unit to internalize the exogenous resources and integrate it with the endogenous knowledge to reach the simultaneous equilibrium between exploitative and explorative innovations.

On the other hand, unit ambidexterity is a knowledge-intensive process that transforms the efforts in exploration and exploitation into continuous innovation and superior performance. Without employees’ ability to leverage and capitalize on the knowledge that has been absorbed, the work unit may hardly reap the benefit of ambidextrous activities to achieve better performance. Hence, realized absorptive capacity is integral to knowledge sharing among a firm’s work units for orchestrating the new cognitive schema, introducing changes to existing processes and forging a unique competitive position (Zahra and George, 2002).

Following the above-mentioned flow of reasoning, we draw upon KBT (Grant, 1996; Nickerson and Zenger, 2004; Spender, 1996) to investigate how TMT bricolage exerts impact on unit performance through unit ambidexterity’s mediating effect, which is moderated by the organization’s absorptive capacity. Our conceptual framework is shown in Figure 1. This paper contributes to the current dialogues in knowledge management research by clarifying the role of TMT bricolage as a critical improvisational capability of firm executives to deal with resource constraints. Through practicing bricolage and strategic improvisation, TMTs may cultivate work units’ ambidexterity to solve the threats of organizational inertia, which have long been regarded as a prevalent conundrum resulting from a firm’s strategic path dependence and routine rigidity (Gilbert, 2005; Tushman and O’Reilly, 1996).
More importantly, the TMT bricolage’s benefits to performance may accrue as the organizations are endowed with the absorptive capacity for integrating, reorganizing and using the new knowledge that is generated along with the TMTs’ improvisational decisions (Cohen and Levinthal, 1990; Kogut and Zander, 1992; Leal-Rodríguez et al., 2014).

Theory and hypotheses

Knowledge-based theory

Knowledge capital is the essential intangible asset that not only affects a firm’s short-term performance but also how an organization responds to a dynamic environment with ambidexterity-centered strategic posture for long-term sustainability (Dezi et al., 2021; Duong et al., 2022; Santoro et al., 2021). Having its theoretical origin in the resource-based view (Spender, 1996), KBT emphasizes that firms’ competitive advantages arise from creating, integrating and implementing unique knowledge in an organization (Donate and Guadamillas, 2011; Grant, 1996; Zahra, 2021). KBT may serve as a theoretical framework to interpret the dynamic knowledge management processes in understanding how a firm establishes ambidexterity and absorptive capacity in response to external uncertainty (Martín-de Castro et al., 2011). Organizational knowledge is both a resource (Grant, 1996; Nickerson and Zenger, 2004) and a set of procedures for the strategic deployment of the resources (Kogut and Zander, 1992; Spender, 1996). Following the rationale of KBT, we contend that TMT bricolage is the reconstruction of existing knowledge resources for creating a sustainable competitive advantage that is difficult to imitate and be substituted.

More importantly, KBT implies that top management’s bricolage behavior encourages the subordinates to identify new ways to exploit the readily available knowledge for exploring the solutions to emerging problems. At the heart of TMT bricolage are the experimental integration of resources and the effectual mindset that underscores learning from actions and experiences (Latilla et al., 2019; Servantie and Rispal, 2018). Nevertheless, to maximize an organization’s efficacy in knowledge management, firm absorptive capacity holds an integral part in intra-organizational knowledge transfer, appropriation and aggregation (Grant, 1996). The KBT emphasizes the importance of knowledge integration but does not elaborate on the intellectual conduit that allows personnel to receive, assimilate and transform new knowledge into contextualized expertise for exploitative and explorative innovations (Duong et al., 2022). The dynamic knowledge management processes that conduct sustainable learning will benefit a firm’s internal and external knowledge acquisition, leverage, integration, absorption, transfer and utilization to further boost organizational ambidexterity and performance (Dezi et al., 2021). For instance, bricolage is described as “experimentation, integration of resources (including knowledge) by easily used to produce novel projects” (Servantie and Rispal, 2018). Bricolage including learning by doing, knowledge acquisition such as know-how and technology capabilities, plays an important role for knowledge specialization in organizational survival (Latilla et al., 2019).

Hypotheses development

Planning and improvisation are at the two extremes of an organizational leader’s decision-making spectrum. Strategic planning emphasizes the importance of prediction and optimization, aims to execute well-conceived schemes and ensures expected return through the precise allocation of resources and efficient operation for decreasing risks. On the contrary, at the heart of improvisation are experimentation and exploration and strategic agility, which leverages accessible resources to identify the feasible approach to either grasping new opportunities or solving new problems (Baker et al., 2003; Baker, 2007). However, with the increasing uncertainty and volatility in the global markets, a TMT bricolage-oriented posture in decision-making has started to profoundly affect an organization’s responsiveness to the rapid external transformations in technology, politics,
economics and social environments (Davidsson et al., 2017; Davis et al., 2013; Neely et al., 2020).

Superior position in the organizational hierarchy enables TMTs to have the overview of their firm’s general operation and more access to external industrial dynamics, allowing them better knowledge about how to decompose and restructure available resources to build competitive advantages. From the evolutionary view (Campbell, 1997), TMTs can play the role of “selective bricoleurs,” who are capable of making bricolage-centered decisions (Baker and Nelson, 2005). TMT bricolage has been found to stimulate innovation by avoiding resource waste and investing resources in the R&D units that may generate instant competitive advantages to the firm or solve urgent problems at hand (Senyard et al., 2014).

Five theoretical rationales underpin our assertion of the relationship between TMT bricolage and unit ambidexterity. First, TMT bricolage is a strategic posture that sparks a series of knowledge-intensive endeavors (Kogut and Zander, 1992; Spender, 1996), including making do with whatever resources at hand and arousing organization members’ behavioral integrations for ambidexterity-oriented activities (Simsek et al., 2005). These TMTs perform improvisations to build a consensus from a dynamic environmental market (Benner and Tushman, 2003; Brown and Duguid, 1991; Lévi-Strauss, 1966) to create the enhancers of identification and reconfiguration for opportunities (Baker et al., 2003). Second, TMT bricolage embodies their open mindset for restructuring and integrating the firm’s existing resources and knowledge to search, verify and grasp new opportunities in a resource-limited context (Luo and Bu, 2018). But a firm that aims to encourage unit ambidexterity may also lack resources (Gupta et al., 2006). For instance: too few employees in a firm; employees who are dislocated in inappropriate units; or out-of-date capabilities of these employees. As such, we contend that TMTs will more selectively use bricolage, which will economize the resources of firms and focus on producing more unit exploration and exploitation strength. Third, TMT bricolage can boost unit ambidexterity and acquire profits by risk-taking and when these firms experience sudden and rapidly facing environmental changes. Fourth, Chen et al. (2021) contend that TMT behavioral integration will promote innovation through transferring knowledge. Finally, Venugopal et al.’s (2020) study indicated that balanced ambidexterity and combined ambidexterity can mediate the relationship between TMT behavioral integration and performance. The handle practice seems not to solve March’s (1991) origin conceptual problem of ambidexterity such as an organization simultaneously both exploration and exploitation rather than either exploration or exploitation (trade-off). Following recent scholars’ (Junni et al., 2020; Mom et al., 2019; Wang and Rafiq, 2014) way, ambidexterity was considered as a second-order construct to effectively handle the concept of ambidexterity.

Recent research (Bechky and Okhuysen, 2011; Wu and Wu, 2016) posits that TMT bricolage will promote ambidexterity. Moreover, bricolage implies that opportunities have already been recognized by workers but an organization needs to explore and exploit them (An et al., 2018, p. 50). Similarly, few results show that more TMT bricolage will perform a more positive impact on innovation (Senyard et al., 2014), corporate entrepreneurship (An et al., 2018) and survival (Stenholm and Renko, 2016).

Crupi et al. (2021) argue that higher-level bricolage will stimulate lower-level innovation. In line with previous studies (Crupi et al., 2021), we argue that bricolage is a multilevel phenomenon. However, there are no multilevel studies regarding bricolage and innovation/performance. Therefore, we adopt multilevel research to address this gap. Moreover, scholars (Desa and Basu, 2013; Visscher et al., 2018; Senyard et al., 2014) argue that TMT bricolage can occur in the field of innovation activities. Recent studies (Desa and Basu, 2013; Visscher et al., 2018) assert that TMT bricolage is a facilitating activity while weighing the investment costs of units to achieve unit ambidexterity (Jansen et al., 2012) and is not subject to the context of resource-constrained firms. Past evidence (Gibson and Birkinshaw, 2004) has already revealed that unit ambidexterity is related to performance.
We argue that when TMTs engage in bricolage using existing resources to manage the procedures through leading by example, unit ambidexterity and then performance are more likely to be driven by a firm because they tend to share more high-quality assets, technology and knowledge to support their units. Also, bricolage leads TMTs to have greater loyalty to knowledge and then promoting the possibility of ambidexterity and subsequent performance growth. Accordingly, we synthesize:

**H1.** Unit-level ambidexterity mediates the influence between firm-level TMT bricolage and unit-level performance.

From the economists’ perspective (Hayek, 1945; Martin and Scott, 2000), innovation is the problem of knowledge production, distribution and coordination. Firms’ competitive advantage stems from the differentiated product offerings and agile strategic deployment, which rely heavily on the organizational institution established for transforming specialist knowledge owned by individual members into a pool of corporate intellectual resources (Grant, 1996). Indeed, organizational growth is rooted in the intangible firm-specific knowledge that enables the company to add unique values to the market (Spender, 1996). A firm’s knowledge production and absorption activities are conducive to market advantages by creating knowledge asymmetry among suppliers, competitors and customers (Grant, 1996). As stipulated by KBT, firms must coordinate the integration of different streams of tacit knowledge to explore new opportunities and exploit the existing internal capabilities. A firm’s absorptive capacity is at the heart of organizational learning processes. Studies (Crupi et al., 2021; Zahra, 2021; Zahra et al., 2009; Zhou et al., 2022) also indicate that bricoleurs absorb external organization’s implicit professional knowledge, skills, abilities and others (i.e. human capital) by using social networks (i.e. social capital) to enhance innovation and performance because understanding the resources (e.g. knowledge) of the local environment.

For incumbent firms, bricolage is regarded as a learning way that participates in “give and take” by interacting among bricoleurs rather than merely through personal capacities (Baker and Nelson, 2005). Bricolage must be synergized and transformed from the external resources of a firm (i.e. absorptive capacity) to benefit its internal environment (e.g. technologies or markets) (Nambisan, 2013). In other words, firm-level absorptive capacity benefits firm-accumulated knowledge that in the past was dispersed among managers. At the same level of bricolage, the accumulated knowledge through firm-level absorptive capacity will benefit a firm to obtain, synthesize, transform and use novel external knowledge. Thus, we argue that these TMTs experience supportive boundary conditions (i.e. external resources of a firm such as absorptive capacity) that may enhance executing authority for knowledge simultaneously adjust ways and effects to benefit the relationship between TMT bricolage and unit outcomes.

Absorptive capacity, which relies on its talent of connecting technology-based capabilities (Mowery et al., 1996), traces back into a time-lagged knowledge procedure of R&D investment and knowledge consolidation (Tsai, 2001). In this knowledge procedure (Kogut and Zander, 1992; Spender, 1996), TMT bricolage and absorptive capacity play vital roles to be restructured into a knowledge platform with future development that is difficult to imitate and is transformed into products and services that enable profit units to pursue innovative advantages and unit performance through sustainable knowledge learning (Cohen and Levinthal, 1990; Kogut and Zander, 1992). Expanding and improving external potential absorptive capacity holds an integral part in knowledge procedures for the following reasons. First, potential absorptive capacity enables organizations to discover the value of externally generated knowledge and effectively manage external partners (Aliasghar et al., 2019; Lewin et al., 2010). Second, potential absorptive capacity facilitates the assimilation of external knowledge and internalizes it to match intra-firm contingencies (Lewin et al., 2010). Finally, organizations with potential absorptive capacity can better conduct innovation activities by using previous experiences (Aliasghar et al., 2019; Lewin et al., 2010).
et al., 2010; Zahra and George, 2002). Past studies have also shown that potential absorptive capacity enables a firm to acquire externally different types of novel knowledge and assimilate knowledge to facilitate organizational ambidexterity (Limaj and Bernroider, 2019).

Potential absorptive capacity, as a crossover knowledge creation capability, helps firms obtain knowledge from external stakeholders and synthesize gained knowledge to achieve ambidexterity (Patel et al., 2015; Tsai, 2001; Zahra and George, 2002) by seeking outstanding and novel answers to solve difficulties and desires for sustainable firms (Hurley and Hult, 1998; Titus et al., 2011). Furthermore, potential absorptive capacity is considered as a style of learning culture (Wang, 2008) that stimulates the generation and consolidation of knowledge to a higher degree. Firms with greater potential absorptive capacity are better able to doubt and consolidate individual cognitions from previous learning in dynamic surroundings (Sinkula et al., 1997) and discover “real knowledge” (Wang, 2008) in the “learning by doing” procedure of bricolage, which gives them more chances for exploring novel and exploiting modern opportunities. Higher levels of TMT bricolage mixed with potential absorptive capacity coordinate strengthen toward merging various knowledge to increase reorganizational uncertainty in the value-creating of knowledge elements (Fleming and Sorenson, 2001; Girotra et al., 2007; Sorenson and Fleming, 2004; Taylor and Greve, 2006). Thus, we contend that potential absorptive capacity may act as an enhancer of TMT bricolage and unit ambidexterity. If a firm’s acquisition and assimilation of external knowledge are weaker, the firm’s members will be unable to absorb knowledge of technologies and markets, value creation and organizational ambidexterity (Ritala and Hurmelinna-Laukkanen, 2013). Following the arguments raised above, we infer that potential absorptive capacity will positively moderate the positive influence between TMT bricolage and unit ambidexterity. Therefore, we posit:

**H2.** Firm-level potential absorptive capacity positively moderates the effect between firm-level TMT bricolage and unit-level ambidexterity.

KBT can be used to explain how firms that have realized absorptive capacity can strengthen positive outcomes in units. From KBT, a firm that is lacking in realized absorptive capacity finds it hard to convert and integrate external novel knowledge and internal existing knowledge to stimulate innovation and then performance in organizational procedures and practices (Kotabe et al., 2011; Lev et al., 2009; Zahra and George, 2002). The acquisition and assimilation of knowledge, a crucial organizational procedure, must be used through the integration, reorganization, transformation and utilization of knowledge assets to promote performance (Chirico and Salvato, 2008; Leal-Rodrı́guez et al., 2014).

Patel et al. (2015) argue that realized absorptive capacity will consolidate a firm’s existing resource bases to improve ambidexterity and thereby performance by selectively integrating, transforming, using and allocating different novel resources for products and services. Patel et al. (2015) further assume that realized absorptive capacity will positively enhance the positive effect between the variation of innovation and performance. We argue that TMT bricoleurs with positive thinking effectively maximize the use of materials from anywhere to “operant resources.” When a firm has a “transformation and utilization capacity (i.e. realized absorptive capacity),” it will be able to enhance the cycle of operant resources and transform it into a variety of resource types for various situations, transforming “intangible to tangible,” “tangible to intangible,” “abstract to concrete,” “concrete to abstract,” creating new types of resources and values and turning disadvantages into advantages through resetting resources (Canhoto et al., 2016; Vargo and Lusch, 2004). Previous results have also demonstrated that realized absorptive capacity influences performance (Kotabe et al., 2011; Lev et al., 2009). We suggest that it is possible for a unit with high realized absorptive capacity to favorably create a knowledge foundation and then profit growth. Moreover, it is possible for a unit with high absorptive capacity to use novel knowledge to enhance its business efficacy. Thus, we infer that realized absorptive
capacity will positively moderate the positive influence between TMT bricolage and unit performance through the intermediate effect of unit ambidexterity. Accordingly, we propose:

\[ H3. \] Firm-level realized absorptive capacity positively moderates the effect between firm-level TMT bricolage and unit-level performance through unit-level ambidexterity.

### Methods

#### Samples

Taiwanese manufacturing firms are recognized worldwide as innovation drivers (Ministry of Economic Affairs, 2019), we have chosen to use them as the sample source for our study. We identified top revenue 100 manufacturing firms as our population pool from the Taiwan Economic Journal (TEJ) database and sent a letter to the CEOs of those firms, inviting them to participate in our study. We gained permission from the CEOs of 84 firms. The CEO of each firm requested that their human resources officers assist us by distributing surveys to CEOs, Chief Technology Officers (CTOs) or Chief Operating Officers (COOs) from 84 headquarters; 193 TMTs from 84 headquarters; and 336 managers and 672 employees from 168 R&D units.

We collected multilevel and multiple source data questionnaires at two different times to measure the common method variance (CMV) (Podsakoff et al., 2003). At Time 1, firm-level TMT bricolage was estimated by TMTs, firm-level potential absorptive capacity was estimated by CEOs, CTOs or COOs and unit-level environmental dynamism and environmental competitiveness were estimated by employees in R&D units. At Time 2, unit-level ambidexterity was administered by managers R&D units and firm-level realized absorptive capacity was administered by CEOs, CTOs or COOs. Finally, we followed these scholars’ (Jansen et al., 2006; Junni et al., 2020; Tsai, 2001) unit performance measurement to select return on investment (ROI) and return on equity (ROE) from the TEJ database after one and two years lag at Time 2 surveys (i.e. 2017 and 2018). Deleting unreturned and invalid samples, we acquired valid surveys from 45 firms with participation as follows: CEOs, CTOs or COOs (53.57%); 90 TMTs’ (46.63%); and 180 managers (53.57%) and 360 employees (53.57%) from 90 R&D units. The average tenure for the surveyed groups in these firms is 12.98 years (s.d. = 10.21) for CEOs; 10.71 years (s.d. = 4.82) for TMTs; 6.67 years (s.d. = 5.50) for managers; and 4.89 years (s.d. = 3.05) for employees. The average size of full-time employees in R&D units was 31.28 (s.d. = 21.72). Sample distribution about firms and respondents are presented in Tables 1 and 2.

#### Measures

Measures were back-translated from English to Chinese (Brislin, 1980). All items used five-point scales. Items of measures see the Appendix.

**Table 1** Sample distribution about firms

| Characteristics             | Classification         | N   | (%)  |
|-----------------------------|------------------------|-----|------|
| Manufacturing industry sectors | Traditional manufacturing | 20  | 44.4 |
|                            | High-technology manufacturing | 25  | 55.6 |
| Firm age                   | 10 years below          | 8   | 17.8 |
|                            | 11–20 years             | 8   | 17.8 |
|                            | 21–30 years             | 21  | 46.7 |
|                            | 30 years above          | 8   | 17.8 |
| Total                      |                        | 45  | 100.0|
Firm-level TMT bricolage. The definition of bricolage is as “making do by applying combinations of the resources at hand to novel problems and opportunities (Baker and Nelson, 2005, p. 333)”. Three dimensions of bricolage: making do, use of existing resources at hand and resource combinations applied to novel problems and opportunities. Eight items were sourced from Senyard et al. (2014) (α = 0.81). A one-factor structure showed good fit (χ²/df = 4.08, p = 0.000, comparative fit index (CFI) = 0.90; Tucker–Lewis index (TLI) = 0.90; root mean square error of approximation (RMSEA) = 0.08; standardized root mean square residual (SRMR) = 0.08). Following Bliese (2000), the viability of the constructs formed via aggregation were supported (r_wg) = 0.90, ICC(1) = 0.44, ICC(2) = 0.61; F(44, 45) = 2.59, p = 0.001).

Unit-level unit ambidexterity. In total, 14 items were sourced from Jansen et al. (2006). Following previous studies (Junni et al., 2020; Wang and Rafiq, 2014), unit-level unit
Ambidexterity was considered as a second-order construct, including exploratory innovation ($\alpha = 0.79$) and exploitative innovation ($\alpha = 0.77$). Exploratory innovation refers to the degree to which units develop novel knowledge and innovations for new customers or markets (Jansen et al., 2006). Exploitative innovation refers to the degree to which units use current knowledge to meet the needs of current customers (Jansen et al., 2006). A higher-order structure comprising two dimensions showed good fit ($\chi^2/df = 3.32$, $p = 0.000$; CFI = 0.90; TLI = 0.90; RMSEA = 0.08; SRMR = 0.07). The viability of the constructs formed via aggregation were supported ($r_{wg(i)} = 0.94$, ICC(1) = 0.31, ICC(2) = 0.64; $F(89, 90) = 1.63$, $p = 0.011$).

**Firm-level potential absorptive capacity.** Potential absorptive capacity refers to acquire and assimilate new external knowledge (Jansen et al., 2005). Nine items were sourced from Jansen et al. (2005) ($\alpha = 0.74$). A one-factor structure revealed good fit ($\chi^2/df = 1.80$, $p = 0.007$; CFI = 0.90; TLI = 0.90; RMSEA = 0.07; SRMR = 0.08).

**Firm-level realized absorptive capacity.** Realized absorptive capacity refers to transformation and exploitation of new external knowledge (Jansen et al., 2005). In total, 12 items were sourced from Jansen et al. (2005) to measure firm-level realized absorptive capacity ($\alpha = 0.74$). A one-factor structure showed good fit ($\chi^2/df = 2.02$, $p = 0.000$; CFI = 0.90; TLI = 0.90; RMSEA = 0.08; SRMR = 0.08).

**Control variables**

We covariate the confounding factors of TMTs’ research including unit size, unit age, unit managers’ educational years, environmental dynamism, environmental competitiveness, firm size, firm age, firm TMT size, firm TMT tenure and firm TMT educational years (Simsek et al., 2005).

**Unit-level environmental dynamism.** Environmental dynamism refers to the degree of change and the instability of the external environment (Jansen et al., 2006). Five items were sourced from Jansen et al. (2006) ($\alpha = 0.72$). A one-factor structure showed good fit ($\chi^2/df = 5.17$, $p = 0.000$; CFI = 0.93; TLI = 0.90; RMSEA = 0.07; SRMR = 0.04). The viability of the constructs formed via aggregation were supported ($r_{wg(i)} = 0.81$, ICC(1) = 0.35, ICC(2) = 0.91; $F(89, 270) = 3.68$, $p = 0.000$).

**Unit-level environmental competitiveness.** Environmental competitiveness refers to the degree to which a unit’s external environment is characterized by fierce competition that is reflected in the number of competitors and the number of areas in which there is competition (Jansen et al., 2006). Four items were sourced from Jansen et al. (2006) ($\alpha = 0.70$). A one-factor structure showed good fit ($\chi^2/df = 0.74$, $p = 0.479$; CFI = 0.99; TLI = 0.99; RMSEA = 0.03; SRMR = 0.01). The viability of the constructs formed via aggregation were supported ($r_{wg(i)} = 0.78$, ICC(1) = 0.42, ICC(2) = 0.85; $F(89, 270) = 3.93$, $p = 0.000$).

**Analytical strategies**

We used previous studies’ procedures (Preacher et al., 2016; Preacher et al., 2010; Rialti et al., 2019) to test the multilevel moderated mediation model. Mplus 7.4 (Muthén and Muthén, 2015) was used as an analytical approach for testing our multilevel moderated mediation model. Also, Monte Carlo estimates the confidence intervals (CIs) of conditional indirect effects and simple slope tests in the model (Preacher et al., 2016; Preacher et al., 2010). The unstandardized coefficients of the structural equation model (Mai et al., 2021) were reported.

**Results**

Correlations are shown in Table 3.
### Table 3: Means, standard deviations and correlations

| Variable                                      | M    | SD   | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   |
|-----------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| **Unit-level**                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1. Unit size                                  | 31.28| 21.72| –    |      |      |      |      |      |      |      |      |      |      |      |
| 2. Unit age                                   | 11.49| 7.19 | –0.10| –    |      |      |      |      |      |      |      |      |      |      |
| 3. Unit managers in unit tenure               | 6.67 | 5.50 | –0.26| 0.48***|      |      |      |      |      |      |      |      |      |      |
| 4. Unit managers’ educational years           | 16.32| 1.82 | –0.02| 0.07 | –0.10| –    |      |      |      |      |      |      |      |      |
| 5. Environmental dynamism                     | 3.66 | 0.48 | –0.08| –0.06| 0.17 | –0.27***|      |      |      |      |      |      |      |      |
| 6. Environmental competitiveness             | 3.94 | 0.56 | 0.12 | –0.18| 0.08 | –0.32***| 0.50***|      |      |      |      |      |      |      |
| 7. Unit exploration                           | 3.96 | 0.39 | 0.36***| 0.01 | 0.01 | –0.20 | 0.02 | 0.18 | –    |      |      |      |      |      |
| 8. Unit exploitation                          | 3.97 | 0.40 | 0.25***| –0.06| –0.03| –0.12 | 0.14 | 0.23***| 0.49***|      |      |      |      |      |
| 9. Unit ROI (2017)                            | 0.06 | 0.59 | 0.31**| –0.04| –0.07| –0.17 | 0.05 | 0.18 | 0.51***| 0.55***|      |      |      |      |
| 10. Unit ROE (2017)                           | 0.00 | 0.58 | 0.30**| –0.03| –0.05| –0.18 | 0.06 | 0.19 | 0.53***| 0.57***| 0.61***|      |      |      |
| 11. Unit ROI (2018)                           | 0.07 | 0.56 | 0.32**| –0.04| –0.06| –0.17 | 0.07 | 0.20 | 0.54***| 0.58***| 0.63***| 0.62***|      |      |
| 12. Unit ROE (2018)                           | 0.01 | 0.58 | 0.33**| –0.05| –0.07| –0.18 | 0.08 | 0.21 | 0.52***| 0.56***| 0.60***| 0.59***| 0.64***|      |
| **Firm-level**                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1. Firm size                                  | 3471.03 | 9478.86| –    |      |      |      |      |      |      |      |      |      |      |      |
| 2. Firm age                                   | 21.59 | 12.68| 0.28***| –    |      |      |      |      |      |      |      |      |      |      |
| 3. Firm TMT size                              | 40.55 | 147.31| 0.43***| 0.42***|      |      |      |      |      |      |      |      |      |      |
| 4. Firm TMT in team tenure                    | 10.71 | 4.82 | 0.31**| 0.62**| 0.29**| –    |      |      |      |      |      |      |      |      |
| 5. Firm TMT educational years                 | 16.66 | 1.61 | 0.05 | –0.10| 0.23***| –0.03 | –    |      |      |      |      |      |      |      |
| 6. CEO tenure                                 | 12.98 | 10.21| 0.27**| 0.49***| 0.24***| 0.45***| 0.11 | –    |      |      |      |      |      |      |
| 7. TMT bricolage                              | 3.76 | 0.52 | –0.18| –0.24***| –0.34***| –0.09 | –0.30***| –0.34***|      |      |      |      |      |      |
| 8. Potential absorptive capacity              | 3.54 | 0.39 | –0.05| –0.25***| –0.13 | –0.16 | –0.19 | –0.35***| 0.38***| –    |      |      |      |      |
| 9. Realized absorptive capacity               | 3.47 | 0.36 | –0.04| 0.06 | –0.15 | 0.07 | –0.17 | –0.08 | 0.37***| 0.46***|      |      |      |      |

**Notes:** *p < 0.05, **p < 0.01, ***p < 0.001
The overall model fit indices of Table 4 show the data well ($\chi^2/df = 3.36, p = 0.000$; CFI = 0.98; TLI = 0.93; RMSEA = 0.08; SRMR = 0.08). $H1$ proposed that unit-level ambidexterity moderates the effect between firm-level TMT bricolage and unit-level performance. First, firm-level TMT bricolage was significantly associated with unit-level performance (2017 ROI: $b = 0.32, p = 0.046, 95\% CI = [0.01, 0.63]$, 2017 ROE: $b = 0.30, p = 0.047, 95\% CI = [0.01, 0.59]$; 2018 ROI: $b = 0.29, p = 0.038, 95\% CI = [0.02, 0.56]$, 2018 ROE: $b = 0.31, p = 0.039, 95\% CI = [0.02, 0.60]$). Second, firm-level TMT bricolage was significantly associated with unit-level ambidexterity ($b = 0.19, p = 0.035, 95\% CI = [0.02, 0.36]$). Third, unit-level ambidexterity was significantly associated with unit-level performance (2017 ROI: $b = 0.74, p = 0.000, 95\% CI = [0.63, 0.85]$, 2017 ROE: $b = 0.94, p = 0.000, 95\% CI = [0.82, 1.05]$; 2018 ROI: $b = 0.81, p = 0.000, 95\% CI = [0.76, 0.85]$; 2018 ROE: $b = 0.65, p = 0.000, 95\% CI = [0.47, 0.83]$). Finally, we examined that the indirect effects of unit-level ambidexterity were significant (2017 ROI: $b = 0.14, p = 0.020, 95\% CI = [0.02, 0.27]$; 2017 ROE: $b = 0.18, p = 0.024, 95\% CI = [0.03, 0.33]$; 2018 ROI: $b = 0.15, p = 0.032, 95\% CI = [0.01, 0.30]$; 2018 ROE: $b = 0.12, p = 0.046, 95\% CI = [0.01, 0.23]$). Therefore, $H1$ was supported. The result echoes prior studies’ arguments (Bechky and Okhuysen, 2011; Wu and Wu, 2016; Gibson and Birkinshaw, 2004) to demonstrate that unit-level ambidexterity mediates the effect between firm-level TMT bricolage and unit-level performance.

$H2$ stated that firm-level potential absorptive capacity positively moderates the influence between firm-level TMT bricolage and unit-level ambidexterity ($b = 0.21, p = 0.000, 95\% CI = [0.17, 0.24]$). We also conducted simple slope tests (Cohen et al., 2003). The difference impacts of firm-level TMT bricolage on unit-level ambidexterity at “low (mean $– 1$ s.d.)” and “high (mean + 1 s.d.)” levels of firm-level potential absorptive capacity was significant ($t = 2.67, p = 0.009, high: 0.27, p < 0.01, 95\% CI = [0.10, 0.44]$, low: 0.11, $p > 0.05, 95\% CI = [– 0.07, 0.29]$). The difference impacts of unit-level ambidexterity on unit-level performance at low and high levels of firm-level realized absorptive capacity was significant ($2017 \text{ ROI}: t = 8.47, p = 0.000, high: 0.33, p < 0.001, 95\% CI = [0.10, 0.56]$), low: 0.15, $p > 0.05, 95\% CI = [– 0.04, 0.34]$). The difference impacts of unit-level ambidexterity on unit-level performance at low and high levels of firm-level realized absorptive capacity was significant ($2018 \text{ ROI}: t = 8.47, p = 0.000, high: 0.33, p < 0.001, 95\% CI = [0.10, 0.56]$), low: 0.15, $p > 0.05, 95\% CI = [– 0.04, 0.34]$). The difference impacts of unit-level ambidexterity on unit-level performance at low and high levels of firm-level realized absorptive capacity was significant ($2018 \text{ ROI}: t = 8.47, p = 0.000, high: 0.33, p < 0.001, 95\% CI = [0.10, 0.56]$), low: 0.15, $p > 0.05, 95\% CI = [– 0.04, 0.34]$).

$H3$ postulated that firm-level realized absorptive capacity positively moderates the effect between firm-level TMT bricolage and unit-level performance through unit-level ambidexterity (2017 ROI: $b = 0.53, p = 0.000, 95\% CI = [0.17, 0.24]$; 2017 ROE: $b = 0.31, p = 0.0006, 95\% CI = [0.12, 0.49]$; 2018 ROI: $b = 0.17, p = 0.000, 95\% CI = [0.09, 0.25]$; 2018 ROE: $b = 0.83, p = 0.006, 95\% CI = [0.24, 1.42]$). The difference impacts of unit-level ambidexterity on unit-level performance at low and high levels of firm-level realized absorptive capacity was significant ($2017 \text{ ROI}: t = 8.47, p = 0.000, high: 0.33, p < 0.001, 95\% CI = [0.10, 0.56]$, low: 0.15, $p > 0.05, 95\% CI = [– 0.04, 0.34]$).

Following Edwards and Lambert’s (2007) arguments, we further examined whether our proposed framework is a first and second moderated mediation model. Table 5 robust checks the research findings of $H2$ and $H3$. We separately present these effects including first, second and first second moderated mediation to repeat confirm the empirical results of $H2$ and $H3$. We also plotted a band of indirect effects at the value of moderators...
| Part A: Direct effect (unstandardized estimates) |
|-----------------------------------------------|
| Firm-level TMT bricolage Unit-level unit ROI (2017) | 0.32* 0.16 0.01 0.63 |
| Firm-level TMT bricolage Unit-level unit ROE (2017) | 0.30* 0.15 0.01 0.59 |
| Firm-level TMT bricolage Unit-level unit ROI (2018) | 0.29* 0.14 0.02 0.56 |
| Firm-level TMT bricolage Unit-level unit ROE (2018) | 0.31* 0.15 0.02 0.60 |
| Firm-level TMT bricolage Unit-level unit ambidexterity | 0.19* 0.09 0.02 0.36 |
| Unit-level unit ambidexterity Unit-level unit ROI (2017) | 0.74*** 0.06 0.63 0.85 |
| Unit-level unit ambidexterity Unit-level unit ROE (2017) | 0.94*** 0.06 0.82 1.05 |
| Unit-level unit ambidexterity Unit-level unit ROI (2018) | 0.81*** 0.02 0.76 0.85 |
| Unit-level unit ambidexterity Unit-level unit ROE (2018) | 0.65*** 0.09 0.47 0.83 |

| Part B: Indirect effect (unstandardized estimates) |
|--------------------------------------------------|
| Firm-level TMT bricolage Unit-level unit ambidexterity | 0.14* 0.06 0.02 0.27 |
| Firm-level TMT bricolage Unit-level unit ambidexterity | 0.18* 0.08 0.03 0.33 |
| Firm-level TMT bricolage Unit-level unit ambidexterity | 0.15* 0.07 0.01 0.30 |
| Firm-level TMT bricolage Unit-level unit ambidexterity | 0.12* 0.06 0.01 0.23 |

| Part C: Moderated effect (unstandardized estimates) |
|------------------------------------------------------|
| Firm-level potential absorptive capacity Unit-level unit ambidexterity | 0.02 0.02 0.02 0.06 |
| Firm-level potential absorptive capacity Unit-level unit ambidexterity | 0.21*** 0.02 0.17 0.24 |
| Firm-level potential absorptive capacity Unit-level unit ambidexterity | 0.03 0.07 0.11 0.17 |
| Unit-level unit ambidexterity Firm-level potential absorptive capacity Unit-level unit ROI (2017) | 0.53*** 0.11 0.31 0.76 |
| Unit-level unit ambidexterity Firm-level potential absorptive capacity Unit-level unit ROI (2017) | 0.04 0.03 0.02 0.11 |
| Unit-level unit ambidexterity Firm-level potential absorptive capacity Unit-level unit ROI (2017) | 0.31*** 0.09 0.12 0.49 |
| Unit-level unit ambidexterity Firm-level potential absorptive capacity Unit-level unit ROI (2017) | 0.06 0.04 0.02 0.13 |
| Unit-level unit ambidexterity Firm-level potential absorptive capacity Unit-level unit ROI (2017) | 0.04 0.03 0.02 0.11 |

| Part D: Unit-level unit ambidexterity |
|-------------------------------------|
| Moderator (Firm-level potential absorptive capacity) | Estimate SE\(b\) LLC\(c\) ULC\(c\) |
| 2 | 0.03 0.10 0.16 0.22 |
| 1 | 0.11 0.09 0.07 0.29 |
| 0 | 0.19* 0.09 0.02 0.36 |
| 1 | 0.27** 0.09 0.10 0.44 |
| 2 | 0.35*** 0.09 0.18 0.52 |

| Part E: Unit-level unit ROI (2017) |
|------------------------------------|
| Moderator (Firm-level realized absorptive capacity) | Estimate SE\(b\) LLC\(c\) ULC\(c\) |
| 2 | 0.06 0.14 0.11 0.23 |
| 1 | 0.15 0.10 0.04 0.34 |
| 0 | 0.24*** 0.06 0.03 0.45 |
| 1 | 0.33*** 0.04 0.10 0.56 |
| 2 | 0.42*** 0.07 0.17 0.67 |

| Part F: Unit-level unit ROE (2017) |
|-----------------------------------|
| Moderator (Firm-level realized absorptive capacity) | Estimate SE\(b\) LLC\(c\) ULC\(c\) |
| 2 | 0.02 0.11 0.30 0.34 |
| 1 | 0.13 0.08 0.13 0.39 |
| 0 | 0.24*** 0.06 0.04 0.44 |
| 1 | 0.35*** 0.05 0.21 0.49 |
| 2 | 0.46*** 0.07 0.38 0.54 |

| Part G: Unit-level unit ROI (2018) |
|-----------------------------------|
| Moderator (Firm-level realized absorptive capacity) | (continued) |
with 95% CI to confirm that conditional indirect effects existed (Wiedemann et al., 2009). The conditional indirect effects above zero were significant; in contrast, the conditional indirect effects below zero were nonsignificant (Part D to G in Table 5 and Figure 4). H2 and H3 were supported again.

Discussion

Following KBT, this paper investigates potential absorptive capacity as moderators of the relationship between TMT bricolage and unit ambidexterity and realized absorptive capacity as moderators of the effect between TMT bricolage and unit performance through unit ambidexterity. Our evidence revealed that unit-level ambidexterity mediates the effect

Table 4

| Estimate | SEb | LLCIc | ULCIc |
|----------|-----|-------|-------|
| 2        | 0.01| 0.03  | 0.02  |
| 1        | 0.03| 0.02  | 0.00  |
| 0        | 0.06**| 0.02 | 0.03  |
| 1        | 0.09**| 0.03 | 0.06  |
| 2        | 0.13**| 0.04 | 0.10  |

Part H: Unit-level unit ROE (2018)
Moderator (Firm-level realized absorptive capacity)

| 2        | 0.06 | 0.27 | 0.21  |
| 1        | 0.16 | 0.18 | 0.11  |
| 0        | 0.25 | 0.17 | 0.02  |
| 1        | 0.34***| 0.09 | 0.07  |
| 2        | 0.43***| 0.09 | 0.16  |

Notes: *p < 0.05, **p < 0.01, ***p < 0.001; a n = 90 at the unit level (Level 1); n = 45 at the firm level (Level 2). b SE = standard error of estimate. CI = confidence interval; LLCI = lower level of the 95% confidence interval; ULCI = upper level of the 95% confidence interval. c 50,000 times
between firm-level TMT bricolage and unit-level performance. Additionally, our evidence indicated that firm-level potential absorptive capacity positively moderates the effect between firm-level TMT bricolage and unit-level ambidexterity. Finally, our evidence demonstrated that firm-level realized absorptive capacity strengthens the indirect relationships between firm-level TMT bricolage and unit-level performance, via unit-level ambidexterity. Our research derives a more understanding of how and why TMT bricolage influences unit ambidexterity and performance in emerging economies.

Theoretical contributions

Through exploring the empirical evidence of firms and their units, we highlight and respond to researchers’ calls and dialogue with KBT, TMT, bricolage, absorptive capacity and performance. Collectively, several theoretical contributions are worth mentioning.

First, we echo previous studies' (Duymedjian and Ruling, 2010; Visscher et al., 2018) calls to investigate the bricolage of TMTs to understand whether the reorganization and employment of current resources and actual knowledge turn out superior innovation and performance. We demonstrate that bricolage could be used to explain that TMTs of a firm can be maximally authorized and have independent management capabilities and how to generate more exploration and exploitation to improve performance regardless of whether resources are scarce or restricted. Our results also support past researchers' (Senyard et al., 2014; Visscher et al., 2018) arguments that TMT bricolage is a useful solution for innovation to problem-solving to problem-solving or design under an uncertain situation whether in older and wealthier firms. The motivation of TMT bricolage is derived from the bounded rationality concept (Simon, 1947). Our evidence also echoes the evolutionary view (Campbell, 1997), individuals relatively choose the most effective and satisfying work method to deal with the current situation, including selective use of bricolage (Baker and Nelson, 2005), or looking for the best degree of bricolage (Senyard et al., 2014), to improve their innovation and performance in specific situations. Bricolage lets new resources to be generated through a mapping manner, and thus, organizations turn disadvantages into advantages (Baker and Nelson, 2005). Bricolage is not simply gathering or presenting...
| Part A: First stage moderated mediation effect (unstandardized estimates) | Estimate | SE | LLC | ULC |
|---|---|---|---|---|
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Unit-level unit ROI (2017) | 0.15*** | 0.02 | 0.12 | 0.19 |
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Unit-level unit ROE (2017) | 0.20*** | 0.02 | 0.15 | 0.24 |
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Unit-level unit ROI (2018) | 0.17*** | 0.01 | 0.14 | 0.19 |
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Unit-level unit ROE (2018) | 0.14*** | 0.02 | 0.10 | 0.17 |

| Part B: Second stage moderated mediation effect (unstandardized estimates) | Estimate | SE | LLC | ULC |
|---|---|---|---|---|
| Firm-level TMT bricolage $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROI (2017) | 0.10* | 0.05 | 0.01 | 0.19 |
| Firm-level TMT bricolage $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROE (2017) | 0.08* | 0.04 | 0.01 | 0.15 |
| Firm-level TMT bricolage $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROI (2018) | 0.06* | 0.02 | 0.02 | 0.10 |
| Firm-level TMT bricolage $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROE (2018) | 0.20* | 0.10 | 0.01 | 0.39 |

| Part C: First and second stage moderated mediation effect (unstandardized estimates) | Estimate | SE | LLC | ULC |
|---|---|---|---|---|
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROI (2017) | 0.11*** | 0.02 | 0.07 | 0.16 |
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROE (2017) | 0.12** | 0.04 | 0.06 | 0.18 |
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROI (2018) | 0.08*** | 0.02 | 0.04 | 0.12 |
| Firm-level TMT bricolage $\times$ Firm-level potential absorptive capacity $\rightarrow$ Unit-level unit ambidexterity $\rightarrow$ Firm-level realized absorptive capacity $\rightarrow$ Unit-level unit ROE (2018) | 0.17** | 0.06 | 0.06 | 0.28 |

| Part D: Unit-level unit ROI (2017) | Estimate | SE | LLC | ULC |
|---|---|---|---|---|
| Moderator (Firm-level potential absorptive capacity & Firm-level realized absorptive capacity) | | | | |
| $-2$ | $-0.05$ | 0.04 | $-0.17$ | 0.07 |
| $-1$ | 0.05 | 0.05 | $-0.05$ | 0.14 |
| 0 | 0.14* | 0.06 | 0.02 | 0.27 |
| 1 | 0.24** | 0.08 | 0.08 | 0.40 |
| 2 | 0.33** | 0.10 | 0.14 | 0.53 |

| Part E: Unit-level unit ROE (2017) | Estimate | SE | LLC | ULC |
|---|---|---|---|---|
| Moderator (Firm-level potential absorptive capacity & Firm-level realized absorptive capacity) | | | | |
| $-2$ | $-0.01$ | 0.06 | $-0.18$ | 0.15 |
| $-1$ | 0.08 | 0.07 | $-0.05$ | 0.22 |
| 0 | 0.18* | 0.08 | 0.03 | 0.33 |
| 1 | 0.27** | 0.09 | 0.10 | 0.45 |
| 2 | 0.37*** | 0.10 | 0.15 | 0.59 |

| Part F: Unit-level unit ROI (2018) | Estimate | SE | LLC | ULC |
|---|---|---|---|---|
| Moderator (Firm-level potential absorptive capacity & Firm-level realized absorptive capacity) | | | | |
| $-2$ | 0.00 | 0.07 | $-0.17$ | 0.16 |
| $-1$ | 0.08 | 0.07 | $-0.06$ | 0.21 |
| 0 | 0.15* | 0.07 | 0.01 | 0.30 |
| 1 | 0.23** | 0.08 | 0.06 | 0.40 |
| 2 | 0.31*** | 0.08 | 0.11 | 0.51 |
diverse and heterogeneous resources and capabilities, but also the organization must become a synchronized or coordinated organism. Bricolage is not an instrument that people would choose to use in the field; on the contrary, it is an “action mechanism,” which means that it is a concrete method to view and collect resources and develop a long-term close relationship with them (Visscher et al., 2018). Through a comprehensive inventory, the organizational resources, capabilities and services can be properly allocated to create competitive advantages (Luo and Bu, 2018).

Second, the empirical results of this study also support our arguments and previous studies (Carmeli and Halevi, 2009; Lubatkin et al., 2006) by showing that bricolage is a style of behavioral integration that influences unit ambidexterity and then promotes its performance. Moreover, our results respond to Crupi et al.’s (2021) calls to demonstrate that a multilevel

Table 5

| Part G: Unit-level unit ROE (2018) | Estimate | SE | LLCI | ULCI |
|-----------------------------------|----------|----|------|------|
| Moderator (Firm-level potential absorptive capacity & Firm-level realized absorptive capacity) |          |    |      |      |
| –2                                | 0.06     | 0.13| –0.05| 0.15 |
| –1                                | 0.08     | 0.10| –0.02| 0.16 |
| 0                                 | 0.10*    | 0.05| 0.02 | 0.18 |
| 1                                 | 0.12*    | 0.06| 0.04 | 0.21 |
| 2                                 | 0.14***  | 0.04| 0.05 | 0.26 |

Notes: *p < 0.05, **p < 0.01, ***p < 0.001; n = 90 at the unit level (Level 1); n = 45 at the firm level (level 2). SE = standard error of estimate. CI = confidence interval; LLCI = lower level of the 95% confidence interval; ULCI = upper level of the 95% confidence interval. *50,000 times

Figure 4 Indirect effects of firm-level TMT bricolage on unit-level unit performance through unit-level unit ambidexterity conditional on firm-level potential absorptive capacity and firm-level realized absorptive capacity
phenomenon will occur in firm-level TMT bricolage to enhance unit-level unit ambidexterity and sequent performance.

Third, because of our sample of large manufacturing firms, our empirical results shed light on the bricolage-driven strategy in both nascent and established firms. Bricolage is usually explored in nascent resource-constrained ordinary firms (Baker and Nelson, 2005; Senyard et al., 2014; Zahra, 2021) or incumbent social enterprises (Desa, 2012; Desa and Basu, 2013). Moreover, Busch and Barkema (2021) argue that large firms with a high degree of bricolage may possibly result in lower performance. Our empirical results also extend previous studies’ (Busch and Barkema, 2021) findings by revealing that large firms with a high degree of bricolage could result in higher performance. Our findings also offer new evidence for bricolage’s importance to the competitiveness of large established firms. Bricolage would be an origin of consolidated firms’ knowledge foundation (Duymedjian and Rüling, 2010) and makes incumbent firms learn reorganizational resources and stimulate ambidexterity and subsequent performance. Therefore, bricolage should have a long-term effect on firms rather than just be a short-term imitation method (Ferneley and Bell, 2006).

Finally, we also echo the previous studies’ arguments (Baker et al., 2003; Kotabe et al., 2011; Lev et al., 2009) by adopting KBT to examine how and why potential absorptive capacity and realized absorptive capacity act as enhancers to promote bricolage on unit ambidexterity and its performance, respectively. We advance previous studies’ views (Crupi et al., 2021; Zahra, 2021; Zahra et al., 2009), bricoleurs absorb, assimilate, integrate, reorganize, transform and use external knowledge to enhance ambidexterity and performance because understanding knowledge of the local environment. Our study also expands previous studies (Jansen et al., 2005; Patel et al., 2015; Zahra and George, 2002) to demonstrate that employing potential absorptive capacity and realized absorptive capacity as the boundary conditions of a knowledge procedure affect TMT bricolage and unit ambidexterity and TMT bricolage and unit performance through unit ambidexterity, respectively.

Our additional theoretical contribution is as follows. Lévi-Strauss’s (1966) proposed original definition of bricolage is marginalized (Duymedjian and Rüling, 2010; Visscher et al., 2018), we extend previous studies by attempting to retrieve the original definition of bricolage. In particular, managerial studies should not limit TMT bricolage to situations where resources are limited but should be linked to professional responsibilities. Bricolage is not limited to any occupational position (Visscher et al., 2018) but is related to the degree of empowering workers.

Practical contributions

Firms should develop a knowledge management platform (Dezi et al., 2021; Senyard et al., 2014) to manage knowledge flows and request human resources practitioners to conduct training for TMTs, strengthening them to engage in bricolage and promote unit ambidexterity and, subsequently, its performance. Because of our sampling pool selected from TMTs, R&D managers and R&D employees in top revenue 100 manufacturing firms. Therefore, TMTs, R&D managers and R&D employees of these firms usually need to make do at hands to try to use various untested elements of new things and to evaluate the operational capabilities and performance with competitors (Senyard et al., 2014) to solve current problems and create new solutions. TMTs will make good use of bricolage to lead the unit’s members to promote exploration, exploitation and then performance. Besides, TMTs should seek to join external connections to strengthen firms’ potential absorptive capacity and firms’ realized absorptive capacity (Jansen et al., 2005) to let their bricolage motivate more unit ambidexterity and then more performance. Studies (Crupi et al., 2021; Epler and Leach, 2021) also demonstrate that COVID-19 as a key crisis event remain positive moderate the positive relationship between bricolage and positive outcomes (i.e. innovation or performance). Therefore, we contend that more bricolage will result in higher
innovation and performance remaining in post-COVID-19. Moreover, Crupi et al. (2021) indicate that upper-level bricolage will benefit lower-level innovation and performance in post-COVID-19.

**Limitations and future directions for research**

In our study, some limitations are worth further examination. First, the research objects may be an issue. This study elected to explore TMTs and units in Taiwanese manufacturing firms, so the generalizability of the research is limited. Future researchers should examine various workers in different industries or economies (Epler and Leach, 2021; Junni et al., 2020). Second, to reduce the CMV, we already collected multilevel, multisource data and archival objective performance. Future scholars may conduct a series of longitudinal panel data or experimental manipulations to increase research robustness. Third, we demonstrated the linear relationship between TMT bricolage and outcomes. Limited findings of previous studies were mixed that there is a linear (An et al., 2018) or nonlinear (Senyard et al., 2014) relationship between bricolage and outcomes. Based on the contingent resource-based view (Aragon-Correa and Sharma, 2003), we contend that the effect between TMT bricolage and outcomes may be an S-curve assumption. Future researchers would adopt S-curve hypotheses to test the effect between TMT bricolage and outcomes. Finally, we already revealed that the boundary conditions of firms’ potential absorptive capacity and firms’ realized absorptive capacity exist between the influence of TMT bricolage and unit performance through unit ambidexterity, respectively. Future researchers could adopt different theories (e.g. dynamic capabilities theory) to discover other possible intermediate links (e.g. innovative behavior) and interveners (e.g. managerial dynamic capabilities) to address the black boxes between TMT bricolage and unit performance.

**Conclusions**

Past bricolage studies generally took a qualitative approach and showed that bricolage occurs in certain occupational positions. Our bricolage research adds to the bricolage literature by providing one of the rare empirical examples of how bricolage is not limited to occupational positions but is related to the degree of empowering workers. Our paper adds to the existing knowledge-based theory literature by disentangling the association between top management team bricolage and unit performance and identifying the pivotal role of absorptive capacity at both the firm and unit levels. At the multilevel research, we not only provided the first evidence of significant boundary conditions of potential and realized absorptive capacity occurring in the relationship between firm-level TMT bricolage and unit-level unit ambidexterity and sequent performance. We hope this study can foster more multilevel research on the joint and interference roles of bricolage and ambidexterity in stimulating unit ambidexterity and performance.

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Author affiliations
Che-Yuan Chang is based at the School of Management, National Taiwan University of Science and Technology, Taipei, Taiwan.

Yi-Ying Chang is based at the Department of Business Administration, National Taiwan University of Science and Technology, Taipei, Taiwan.

Yu-Chung Tsao is based at the Department of Industrial Management, National Taiwan University of Science and Technology, Taipei, Taiwan.

Sascha Kraus is based at the Faculty of Economics and Management, Free University of Bozen-Bolzano, Bolzano, Italy and at the Department of Business Management, University of Johannesburg, Johannesburg, South Africa.
Appendix. Items of measures

Firm-level top management teams’ bricolage

1. We are confident of our ability to find workable solutions to new challenges by using our existing resources.
2. We gladly take on a broader range of challenges than others with our resources would be able to.
3. We use any existing resource that seems useful to responding to a new problem or opportunity.
4. We deal with new challenges by applying a combination of our existing resources and other resources inexpensively available to us.
5. When dealing with new problems or opportunities, we take action by assuming that we will find a workable solution.
6. By combining our existing resources, we take on a surprising variety of new challenges.
7. When we face new challenges, we put together workable solutions from our existing resources.
8. We combine resources to accomplish new challenges that the resources were not originally intended to accomplish.

Unit-level unit ambidexterity

1. Our unit accepts demands that go beyond existing products and services.
2. We invent new products and services.
3. We experiment with new products and services in our local market.
4. We commercialize products and services that are completely new to our unit.
5. We frequently use new opportunities in new markets.
6. Our unit regularly uses new distribution channels.
7. We regularly search for and approach new clients in new markets.
8. We frequently refine the provision of existing products and services.
9. We regularly implement small adaptations to existing products and services.
10. We introduce improved, but existing products and services for our local market.
11. We improve our provision’s efficiency of products and services.
12. We increase economies of scales in existing markets.
13. Our unit expands services for existing clients.
14. Lowering costs of internal processes is an important objective.

Firm-level potential absorptive capacity

1. Our unit has frequent interactions with corporate headquarters to acquire new knowledge.
2. Employees of our unit regularly visit other branches.
3. We collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners).
4. Other divisions of our company are hardly visited.
5. Our unit periodically organizes special meetings with customers or third parties to acquire new knowledge.
6. Employees regularly approach third parties such as accountants, consultants or tax consultants.
7. We are slow to recognize shifts in our market (e.g. competition, regulation and
demography).
8. New opportunities to serve our clients are quickly understood.
9. We quickly analyze and interpret changing market demands.

**Firm-level realized absorptive capacity**

1. Our unit regularly considers the consequences of changing market demands in terms
   of new products and services.
2. Employees record and store newly acquired knowledge for future reference.
3. Our unit quickly recognizes the usefulness of new external knowledge to existing
   knowledge.
4. Employees hardly share practical experiences.
5. We laboriously grasp the opportunities for our unit from new external knowledge.
6. Our unit periodically meets to discuss consequences of market trends and new
   product development.
7. It is clearly known how activities within our unit should be performed.
8. Client complaints fall on deaf ears in our unit.
9. Our unit has a clear division of roles and responsibilities.
10. We constantly consider how to better exploit knowledge.
11. Our unit has difficulty implementing new products and services.
12. Employees have a common language regarding our products and services.

**Unit-level environmental dynamism**

1. Environmental changes in our local market are intense.
2. Our clients regularly ask for new products and services.
3. In our local market, changes are taking place continuously.
4. In a year, nothing has changed in our market.
5. In our market, the volumes of products and services to be delivered change fast and
   often.

**Unit-level environmental competitiveness**

1. Competition in our local market is intense.
2. Our organizational unit has relatively strong competitors.
3. Competition in our local market is extremely high.
4. Price competition is a hallmark of our local market.

**Corresponding author**

Yi-Ying Chang can be contacted at: y.chang@mail.ntust.edu.tw

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