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RESEARCH ARTICLE

Top management team demographic-faultline strength and strategic change: What role does environmental dynamism play?

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Research summary: Drawing on the demographic faultline perspective and the concept of attribute-specific faultlines, we investigate the effect of top management team (TMT) relationship-related (gender, age, educational level) and task-related (functional background, tenure) faultline strengths on strategic change. In a panel study (2003–2015), we find that TMT relationship-related faultline strength (especially educational-level) negatively influences strategic change whereas TMT task-related faultline strength positively affects strategic change. Environmental dynamism reduces the negative effect of TMT gender and educational-level faultline strengths on strategic change while in fact revealing a notable positive effect between TMT age-faultline strength and strategic change. Additionally, environmental dynamism strengthens the positive effects of task-related TMT faultline strength on strategic change. We offer theoretical and practical implications to both the demographic faultlines and upper echelons research domains.

Managerial summary: Top management teams (TMTs) in firms can fracture into subgroups based on demographic characteristics (e.g., age, gender, and education level) as well as based on task-related characteristics (e.g., functional background, and tenure). We call the former relationship-related faultlines and the latter task-related faultlines. We predict and find that stronger relationship based faultlines hinders between subgroup cohesion, reducing TMTs' ability to initiate strategic change. We also predict and find that stronger task-related faultlines facilitate inter-subgroup knowledge-sharing, improving TMTs' ability to initiate strategic change. We find that environmental dynamism reduces the negative effect of most relationship-related faultlines (except age where this effect is positive) on strategic change, while strengthening the positive effect of task-related faultline strengths on strategic change.

KEYWORDS

demographic faultline strength, environmental dynamism, gender and diversity in organizations, strategic change, upper echelons theory

1 | INTRODUCTION

Based on the upper echelons theory perspective (Hambrick, 2007; Hambrick & Mason, 1984), research in strategic management has long recognized the important role the demographic composition of top management teams (TMTs) plays in affecting a firm's overall strategic direction (e.g., Bantel & Jackson, 1989; Hambrick, Humphrey, & Gupta, 2015). Previous research grounded in upper echelons theory contributes to the understanding of how the knowledge base available from firms having heterogeneous TMTs, compared to those with homogeneous TMTs, result in changing strategic decisions. However, this work has underutilized social psychology theories to better understand subgroup relations shaped by TMT composition. Since subgroup relations based on individual attributes may determine how TMT members socially interact with each other and exchange knowledge (Georgakakis, Greve, & Ruigrok, 2017; Hutzschenreuter & Horstkotte, 2013; Van Knippenberg, Dawson, West, & Homan, 2010), examining subgroupings in TMTs may improve an understanding of how their composition affects strategic decisions. Hence, the current research goes beyond the existing research on TMT composition by addressing the relatively underexplored area of *how subgroupings (manifested as the strength of faultlines) in TMTs influence strategic decisions.*

Although the majority of existing research on TMT composition focuses on investigating the independent effects of TMT heterogeneity based on a demographic attribute (e.g., functional heterogeneity) on strategic decisions (e.g., Cho & Hambrick, 2006; Wiersema & Bantel, 1992), TMT scholars have begun to draw on demographic faultline theory (Lau & Murnighan, 1998), which recognizes the importance of relationships among multiple demographic attributes in affecting subgroup formation in TMTs (e.g., Ndofor, Sirmon, & He, 2015). Demographic faultline theory argues that because multiple demographic attributes may simultaneously affect the formation of subgroups within a team, the alignment of these attributes splinters a team into subgroups that are likely to trigger conflicts and may diminish the team's decision-making quality (Thatcher & Patel, 2012). Demographic faultlines conceptually explain subgroup dynamics more precisely and have shown greater effects on team outcomes than those found for demographic heterogeneity (Thatcher & Patel, 2012). Thus, we examine how TMT faultlines influence strategic decision-making.

We propose that the relationship between TMT faultlines and strategic decisions can be better understood by adopting social psychology views, in particular subgroup theory (Carton & Cummings, 2012). These views suggest that, in forming subgroups based on individual attributes, TMTs should realize that some attributes should be treated differently (Jehn, Northcraft, & Neale, 1999).

Salient attributes splitting a team into subgroups can be based on relationship-related attributes that include easily identifiable, visual, or class-based markers (e.g., gender). Faultlines that are based on such relationship-related attributes often trigger team conflict (Carton & Cummings, 2012). Conversely, if salient attributes creating faultlines are task-related (e.g., tenure), such faultlines foster information processing with positive implications for improved decision-making (Cooper, Patel, & Thatcher, 2014). Research on group faultlines has highlighted this notable distinction between relationship- and task-related faultlines (Bezrukova, Jehn, & Zanutto, 2009; Homan, van, Van Kleef, & De Dreu, 2007). Yet, most existing studies on TMT faultlines assume only one overall faultline within a TMT (Georgakakis et al., 2017 *in press* for exception). We go beyond the dominant perspective that assumes the existence of only one overarching faultline drawing on the concept of *attribute-specific faultlines* (i.e., an attribute serves as the basis for faultlines) (e.g., gender faultlines, tenure faultlines, etc.) (Chung et al., 2015). This allows us to examine the extent to which different types of faultlines based on each demographic attribute contribute to TMT strategic decision-making and respond to Bromiley and Rau's (2016) call for a deeper inquiry of TMT faultline effects.

Our focal strategic-decision variable is strategic change, which we define as change in a firm's strategic direction via reallocating its resources along multiple strategic components (Quigley & Hambrick, 2012). Studying strategic change rather than firm performance enables strategic management scholars to look more closely at the executive-level direct and more proximal influences (Andrevski, Richard, Shaw, & Ferrier, 2014; Nakauchi & Wiersema, 2015; Oehmichen, Schrapp, & Wolff, 2017; Stewart & Amason, 2017). Thus, the upper echelons demography becomes critical in the influence of strategic change (Triana, Miller, & Trzebiatowski, 2014).

We also note, however, that the effects of TMT faultline strength on strategic change are not always observed; such effects may be reinforced or diminished, hinging on external contexts. One contextual factor that may moderate TMT faultline-strength effects on strategic change is environmental dynamism, defined as the rate of unpredicted change within a focal company's industry (Dess & Beard, 1984). Environmental dynamism may affect the interactions of TMT members (Cooper et al., 2014; Lin, Dang, & Liu, 2015) because when members share a common goal of competing (or surviving) in an uncertain environment, such dynamism should redirect their attention to the group as a whole ("us") from attending salient relationship-related attributes that divide groups into "we versus them." In sum, we investigate these independent faultline effects across firms as well as within the environmental context they operate employing a sample consisting of top management teams (TMTs) in 1,393 Chinese firms spanning a period from 1998 to 2015.

2 | THEORY AND HYPOTHESES

2.1 | Demographic faultlines within TMTs

Upper echelons theory has been a predominant theoretical framework in understanding the relationship between TMT composition and strategic decisions (see Certo, Lester, Dalton, & Dalton, 2006; Joshi, Liao, & Roh, 2011 for reviews). In fact, a survey of TMT literature (Hambrick, 2007) reveals that not only CEO attributes (Nakauchi & Wiersema, 2015), but also TMT composition affects a host of organizational outcomes (Carpenter & Fredrickson, 2001; Dezsö & Ross, 2012; Michel & Hambrick, 1992). While the value of the upper echelons theory remains important in providing a theoretical underpinning regarding TMT composition effects on firm outcomes, recent research has proposed that scholars should pay closer attention to subgroupings within a TMT instead of team heterogeneity to more fully understand team dynamics (e.g., Cooper et al., 2014). Social categorizations within a team often arise out of associations among multiple attributes consistent with faultline theory (Lau & Murnighan, 1998), contrary to research on TMT heterogeneity assuming that social categorization for each attribute operates independently.

Faultline research generally asserts that strong faultlines are likely to drive the formation of social identity-based subgroups and, as such, provoke dysfunctional conflicts within a team (e.g., Bezrukova, Thatcher, Jehn, & Spell, 2012). However, recent research on faultlines suggests that not all types of faultlines create negative consequences (Bezrukova et al., 2009; Carton & Cummings, 2012; Chung et al., 2015). When faultlines are created based on relationship-related attributes (e.g., gender) these are associated with potentially conflicting socio-cultural values and beliefs. Social identity-based subgroups then emerge and result in detrimental effects on team outcomes. However, when faultlines are formed based on task-related attributes (e.g., functional background) these reflect a variety of knowledge and expertise. Knowledge-based subgroups then emerge and consequently benefit team learning and decision-making outcomes.

We define the strength of relationship faultlines as the extent to which social identity subgroups are strongly formed based on a focal relationship-related attribute (e.g., gender, age, or educational level), and the strength of task-related faultlines as the extent to which knowledge-based subgroups are strongly formed based on a focal task-related attribute (e.g., functional background or tenure). For example, using gender as a focal attribute, faultlines between male and female subgroups are strongest in the following situations: (1) when male TMT members are similar in age, educational level, functional background, and tenure (i.e., high demographic similarity within a male subgroup), (2) when female TMT members are similar in these characteristics (i.e., high demographic similarity within a female subgroup), and (3) when such characteristics are dissimilar between male and female subgroups (i.e., high between subgroup dissimilarity). Therefore, the strength of attribute-specific faultlines (or faultline strength for each attribute) refers to the degree to which faultlines based on a focal attribute are prominent in a work unit by computing the *overall* alignment between this focal attribute and the other attributes (Chung et al., 2015). Thus, attribute-specific faultlines is likely to capture the *likelihood* of subgroup formation based on the focal attribute (e.g., gender).

The concept of the strength of attribute-specific faultlines is consistent with the original concept of faultlines (Lau & Murnighan, 1998), which includes all demographic attributes under consideration simultaneously. By analyzing all TMT faultline-strength variables together—in this study we create five faultline-strength indices—we can explore "relative" effects of different faultline-strength variables. This approach allows organizations to identify more influential demographic attributes when forming subgroups in a TMT and to improve understanding of how faultlines in a TMT promote or inhibit strategic decisions.

2.2 | Relationship-related and task-related faultline-strength effects on strategic change

Research on diversity in TMTs has long seen diversity as a double-edged sword that can be seen both via an optimistic and a pessimistic lens (Bunderson & Van der Vegt, 2018; Hambrick, Davison, Snell, & Snow, 1998). Research on TMT faultlines, however has only recently begun to accept this view (e.g., Carton & Cummings, 2012). Drawing on social identity theory (Ashforth & Mael, 1989; Tajfel & Turner, 1986) and social-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), the pessimistic perspective suggests that members in a TMT compare themselves with others through a process of social comparison and classify themselves and others into social categories using salient characteristics such as gender, age, and social status. Through this process, team members are likely to perceive ingroup favoritism toward people in the same social identity group and outgroup discrimination toward people in other social identity groups, which consequently stimulates inter-group conflicts. In contrast, building upon information-processing perspectives (Gibson & Vermeulen, 2003; Homan et al., 2007), the optimistic perspective proposes that different demographic characteristics are likely to make a broad range of knowledge, experiences, and information available to a team and bring diverse problem-solving perspectives. As a result, diverse knowledge and information are likely to enhance careful analyses of problems, use available information more effectively, and expand and consider alternative solutions and views.

Grounded in the pessimistic view of diversity, we argue that relationship-related faultlines that are formed around a socio-cultural demographic attribute serve as potential dividing lines detrimental to relationships between subgroups (Choi & Sy, 2010; Chung et al., 2015). Socio-cultural demographic attributes such as gender, age, and educational level are easily noticed due to visual, accent-based, or class-based markers regardless of the situation (Hutzschenreuter & Horstkotte, 2013; Milliken & Martins, 1996). Socio-cultural differences tend to be associated with potentially conflicting societal values as well as with societal beliefs that may associate higher/lower status or competence to some social categories and not others (DiTomaso & Bian, 2018; DiTomaso, Post, & Parks-Yancy, 2007). For example, sociologists have long examined educational attainment or level as a social status feature, which is a source of feeling dissimilar from others with different educational levels (Andersson, 2018; Sewell & Hauser, 1972), while strategic management scholars have found that being different in terms of educational level from one's executive team increases the likelihood of turnover (Jackson et al., 1991). In addition, members in a subgroup based on a socio-cultural attribute share similar historical and social experiences and have notable individual differences and past experiences. Therefore, faultline strength based on a socio-cultural attribute (i.e., gender, age, or educational level) is likely to increase communication within an identity-based subgroup due to similarity attraction (e.g., males), while reducing communication across identity-based subgroups (e.g., males vs. females) (Sawyer, Houlette, & Yeagley, 2006; Van Knippenberg, De Dreu, & Homan, 2004).

This communication pattern may not only increase individuals' identification with their own subgroup, but it could also expand rifts with members from different subgroups, leading to an increased likelihood for inter-subgroup relationship conflict (Lau & Murnighan, 1998; Simons & Peterson, 2000). Because strong relationship-related faultlines are likely to reduce inter-subgroup communication, they interfere with knowledge and information sharing within TMTs, whereas weak relationship-related faultlines are not likely to cause such interference (Hutzschenreuter & Horstkotte, 2013). When making strategic changes, TMTs should solve complex problems that often require tolerance for multiple perspectives and a willingness to share new ideas. They also should delve into options and alternatives and engage in in-depth discussions. However, when TMTs have strong relationship-related faultlines, communication and knowledge-sharing across subgroups are likely to be lessened due to relationship conflicts. In contrast, when faultline strength is weak along a relationship-related attribute (e.g., gender), schisms based on the attribute are unlikely to be salient, which in turn decreases the likelihood of a negative effect on strategic change (Polzer, Crisp, Jarvenpaa, & Kim, 2006). We propose:

Hypotheses 1a–1c. *TMT relationship-related faultline strength (i.e., (a) gender, (b) age, and (c) educational-level faultline strength) decreases strategic change.*

Drawing on the optimistic view, we argue that task-related faultlines occur when individual attributes are aligned based on a task-related attribute (e.g., functional background and tenure), which is often considered representative indicator of knowledge, skill, and abilities (KSAs) (Cooper et al., 2014; Horwitz & Horwitz, 2007). Because members in a knowledge-based subgroup (e.g., engineers) possess similar professional backgrounds, they are likely to be colleagues that share and support each other's perspectives and expertise rather than be socially or culturally attached (Chung et al., 2015; Ying, 2014). In addition, members in a knowledge-based subgroup have the viewpoint that other knowledge-based subgroups provide the team with access to greater aggregated knowledge (Gibson & Vermeulen, 2003). Thus, knowledge-based subgroups are likely to seek out information from subgroups with different expertise (Chung & Jackson, 2013). Accordingly, knowledge-based subgroups are less likely to experience relationship conflict (Jehn et al., 1999); instead, they (e.g., manufacturing background) are more likely to share knowledge across subgroups rather than solely within their own subgroup, which results in healthy debate and increased overall creativity in decision-making (Chung et al., 2015).

Consistent with this conceptual argument, we expect that firms with strong task-related TMT faultlines are more likely to increase the likelihood of strategic change compared to firms with weak task-related TMT faultlines. TMT members within knowledge-based subgroups are more likely to be open to different knowledge and expertise and value the contributions of subgroup members whose knowledge base differs from theirs. In addition, a knowledge-based subgroup in a TMT serves as a cohort group, which builds a trusting and comfortable environment conducive to sharing critical KSAs each other (Carton & Cummings, 2012). This may also increase the likelihood for strategic change, because different knowledge and expertise tend to increase TMTs' willingness to seek out and consider new strategic options. Indeed, diverse perspectives lead to “a perception of the feasibility of change and a momentum towards change” (Wiersema & Bantel, 1992, p. 93). In sum, we argue that the strength of TMT task-related faultlines formed around either functional background or tenure fosters strategic change.

Hypotheses 2a and 2b. *TMT task-related faultline strength (i.e., (a) functional background and (b) tenure faultline strength) increases strategic change.*

2.3 | The moderating role of environmental dynamism

Reviews on TMT literature propose that the effects of TMT demographic composition on firm outcomes are more evident when considering the context in which the TMT is embedded (Joshi et al., 2011; Joshi & Roh, 2009; Stewart & Amason, 2017). When an organizational environment necessitates greater information-processing, TMTs reconcile and integrate their knowledge, which is otherwise less likely to occur (Nielsen & Nielsen, 2013). In line with this body of research, we contend that although the alignment of demographic attributes (i.e., faultlines) in a TMT is likely to create a subgroup, the subgroup formation based upon such an alignment does not always produce the same effect due to reduced (or enhanced) identity salience in some organizational contexts. Since the strength of faultlines refers to the configuration of team members' demographic attributes, faultlines should not be automatically equated with subgroups—that is, faultlines are probable subgroups (Carton & Cummings, 2012; Chung et al., 2015). Depending on factors that make faultlines more (or less) salient, the effect of certain faultlines is likely to become more pronounced (Lau & Murnighan, 1998).

In our research, we suggest that the level of environmental dynamism represents a critical contextual factor that amplifies or weakens the effect of TMT faultline strength on strategic change. Environmental dynamism represents the magnitude and frequency of environmental change, as well as irregularity in patterns of environmental change (Cooper et al., 2014; Miller & Shamsie, 1996). Dynamic environments require extensive monitoring, along with creativity and agility in decision-making from their TMTs (Cannella, Park, & Lee, 2008; Girod & Whittington, 2017; Hambrick et al., 2015). Thus, numerous studies have found that diversity within the TMT, the availability of broad perspectives is essential to compete in a dynamic environment (Glick, Miller, & Huber, 1993; Hambrick et al., 1998; O'Reilly & Flatt, 1989).

Consistent with this view, we argue that when faultline strength exists in firms, a TMT operating within a dynamic environmental context will require members to adopt a greater sense of task and goal interdependence (Hambrick et al., 2015), which has implications for weakening the negative effects of relationship-related faultline strength in terms of strategic change. Environmental dynamism helps reduce social identity-based bias stemming from a strong relationship-related faultline while promoting inter-subgroup collaboration. Since the demands of a dynamic environment shift TMT members' attention from the "we versus them" distinction to "us" in order to achieve the common goal of ensuring firm survival that meets the demands of a complex environment (Cooper et al., 2014; Rico, Sánchez-Manzanares, Antino, & Lau, 2012), dynamism makes the subgroup distinction associated with a relationship-related faultline less salient (Rico et al., 2012).

In addition, relationship-related faultlines can render information-based human capital advantages in TMTs. For example, within a dynamic environment, strong gender faultlines can provide unique knowledge and information previously unexploited for competitive advantage (Lauring & Selmer, 2012). Thus, a dynamic environment will allow for more elaboration (i.e., integrated information processing) through the curtailing of social-categorization processes theorized to arise from relationship-related faultline strength (van Knippenberg et al., 2004). Differences in specific socio-cultural attributes such as gender, age, or educational level provide a wealth of useful knowledge for strategic change initiatives. In this regard, we argue that environmental dynamism, considered an important contingency in the TMT heterogeneity literature (Hmieleski & Ensley, 2007), should be examined as a moderating mechanism in the association between relationship-related faultline strength and strategic change.

With regard to task-related faultline strength, we propose that its positive relationship to strategic change would be further strengthened under a dynamic environment. A dynamic environment stimulates managerial action (Gordon, Stewart, Sweo, & Luker, 2000; Kech & Tushman, 1993) and inspires TMT members to foster a schema for continuous strategic change (Rajagopalan & Spreitzer, 1997). Since dynamic environments demand a broader range of knowledge from their TMT cohorts to handle ever-changing situations (Gordon et al., 2000), TMTs with stronger task-related faultlines possess the necessary knowledge required to undertake strategic changes (Yamak, Nielsen, & Escriba-Esteve, 2014). A dynamic environment, with its requirement for increased task interdependence among top managers (Lawrence & Lorsch, 1967), provides a context in which knowledge exchange across knowledge-based subgroups can be exploited for competitive advantage. In contrast, we contend that the positive relationship between the strength of task-related faultlines and strategic change would be weakened under a stable environment. In such an environment we expect TMT members to not recognize the need for engagement in information exchange intensively—because less monitoring and creative decision-making is required (Hambrick et al., 2015). In sum, we posit that firms with strong TMT task-based faultlines will execute more strategic change if they compete in a dynamic environment than stable environment. The following hypothesis emanates:

Hypotheses 3a–3c. *The negative relationships between relationship-related TMT faultline strengths (i.e., (a) gender, (b) age, (c) educational level faultline strength) and strategic change are weaker in a dynamic environment rather than in a stable environment.*

Hypotheses 4a and 4b. *The positive relationships between task-related TMT faultline strengths (i.e., (a) functional background and (b) tenure faultline strength) and strategic change are stronger in a dynamic environment rather than in a stable environment.*

3 | METHODS

3.1 | Data collection

We compiled a panel data of Chinese manufacturing firms to test our hypotheses. We limited our sample to Chinese manufacturing firms that are publicly listed on the Shanghai Shenzhen and Stock Exchanges, because these exchanges systematically track and make available information on such firms' TMT characteristics. We define TMT membership by considering the CEO and senior executives to be TMT members if the latter directly reports to the CEO and are responsible for making strategic choices for the firm. Such executives include, for example, executive directors, managing directors, functional directors, and vice presidents (Guadalupe, Hongyi, & Wulf, 2014). We extracted TMT characteristics (e.g., gender) from the Corporate Governance Database in the China Stock Market and Accounting Research (CSMAR) database, a leading data provider focusing on Chinese companies publicly listed on the stock exchanges. We initially extracted firm-level financial information (e.g., total assets, net income) and other data (e.g., number of employees and ownership structure) from annual reports of each publicly listed Chinese company during the 2003–2015 period. However, to calculate the environmental dynamism variable, we began with the prior 5 years. For example, we extracted 1998–2001 data to compute environmental dynamism for 2003. Therefore, the publicly listed Chinese company data ultimately obtained was from 1998 to 2015. We then matched different databases based on a unique stock code identifier. The final sample contained 7,229 firm-years observations consisting of 1,393 firms.

3.2 | Measures

3.2.1 | Dependent variable

Strategic change measures the extent to which a firm's financial resource allocation to important strategic components changes over time (Finkelstein & Hambrick, 1990). If a firm reallocates its resources among strategic components over time, it may be interpreted as the firm has engaged in strategic change (Oehmichen et al., 2017). Consistent with previous work (Finkelstein & Hambrick, 1990; Oehmichen et al., 2017; Triana et al., 2014), we computed a composite measure of strategic change using six strategic allocation dimensions: (a) advertising intensity (advertising/sales), (b) research and development (R&D) intensity (R&D/sales), (c) plant and equipment upgrades (new plant and equipment/gross plant and equipment), (d) nonproduction overhead (selling, general, and administration [SG&A] expenses/sales), (e) inventory levels (inventory/sales), and (f) financial leverage (debt/equity). These dimensions reflect a firm's specific strategic profiles that are likely to be controlled and monitored by top executives (Finkelstein & Hambrick, 1990). We extracted the values of the abovementioned dimensions from CSMAR's Corporate Financial Statements and Corporate Financial Index Analysis sub-Databases to calculate the ratios. Next, for each dimension, we calculated the absolute value of the difference between the ratio in the prior year (year $t-1$) and the ratio in the current year (year t). We then standardized these values by industry based on Finkelstein and Hambrick (1990), meaning that we subtracted the industry average from the absolute value and then divided it by the standard deviation for each dimension. Since resource allocation decisions in a firm may be affected by industry-level differences, we standardized the variance scores for each previously specified dimension by industry (Karaevli & Zajac, 2013). Finally, we averaged the six standardized values to obtain the overall composite measure of strategic change.

3.2.2 | Independent variables

Our independent variables are five TMT-based faultline-strength indices computed using gender, age, educational level, functional background, and tenure. Similar to past research and theory (Bezrukova et al., 2009; Carton & Cummings, 2012; Chung et al., 2015), we classified gender, age, and educational-level faultline strengths into relationship-related faultline indices. We then classified functional-background and tenure faultline strengths into two task-related faultline indices. Unlike educational background (e.g., an engineering degree) which had been classified as a task-related attribute in many studies (see Horwitz & Horwitz, 2007), we categorized educational level as a relationship-related attribute. Education level is one of the strongest factors that determines subjective social status (Andersson, 2018) and may represent socioeconomic status consistent with Chinese contexts (Weis & Dolby, 2012) reflecting Confucian values of a strong emphasis on education (Chen & Chung, 1994).

Drawing on Shaw (2004), we first created categorical indicators of attributes when calculating faultline strength. The categorical indicators of gender, educational level, functional background, and tenure are classified as follows: gender (male or female); educational level ((a) high school or below, (b) college, (c) university, (d) master's degree, and (e) Ph.D. see Zhu, 2013); functional background (service roles [sales, marketing, and customer service jobs]; production roles [manufacturing, supply chain, and production jobs], and support roles [human resources, finance, and law]); and TMT tenure ((a) less than 3 years; (b) 3 years but less than 6 years; and (c) more than 6 years; see Chung et al., 2015). Following Erickson (2009), we classified age into four groups: (a) individuals born from 1928 to 1945 (Traditionalists); (b) individuals born from 1946 to 1960 (Boomers), (c) Generation X—individuals born from 1961 to 1979; and (d) Generation Y—individuals born from 1980 to 1995.

A faultline-strength score indicates the degree to which TMT members could be arranged into potential subgroups based on the focal attribute (e.g., gender). The score accounts for the degree of *similarity* of TMT members' other attributes (e.g., gender, age, educational level, functional background, and tenure), with each subgroup based on the focal attribute, and the degree of *dissimilarity* of TMT members' other attributes between different subgroups (e.g., men, women) (Chung et al., 2015). For each of our five faultline-strength measures, we calculated subgroup internal alignment in two steps (Choi & Sy, 2010; Jiang, Jackson, Shaw, & Chung, 2012; Shaw, 2004). First, we calculated an internal alignment score for all five attributes on which our TMTs may have formed. Using gender as an example, subgroup internal alignment reflects the women's similarity on other relevant attributes and the men's similarity on relevant attributes. The first part of the formula for calculating the internal alignment of the female subgroup is: $\text{IA}_{\text{f/edu/obs}} = \Sigma(O_{\text{fi}} - E_{\text{fi}})^2/E_{\text{fi}}$, where $\text{IA}_{\text{f/edu/obs}}$ is the observed female-alignment index across educational-level categories, O_{fi} is the observed number of females in the ith education category, and E_{fi} is the expected number of males in the ith education category assuming random distribution. The overall internal subgroup-alignment index was calculated based on the average internal alignment in the target (e.g., gender) subgroup across each of the other attributes. Second, we calculated the cross-subgroup alignment index that indicated the strength of dissimilarity between subgroups (e.g., males vs. females). The cross-product approach used frequency counts of subgroup members in each attribute category and provided an index of the extent to which there were "match-ups" between subgroup members in each category. For example, to determine the strength of faultlines based for gender, we specifically examined the cross-subgroup alignment across all non-redundant pairings of the female vs. male subgroups. Faultline strength (FLS) for each attribute (e.g., gender TMT faultline strength) was then computed as the product of internal subgroup alignment (IA) and the reciprocal of cross-subgroup alignment (Shaw, 2004). The values of these faultline strength measures are well distributed between zero and one.

3.2.3 | Moderating variable

Environmental dynamism was computed using industry gross revenues. We regressed log-transformed industry gross revenues in a focal year using industry gross revenues of the previous five consecutive years and used the standard error of the regression slope as environmental dynamism (Keats & Hitt, 1988; Pathak, Hoskisson, & Johnson, 2014). For example, we first tracked back to obtain the industry-level gross revenues during the 1998–2002 period to compute environmental dynamism in 2003. We then regressed industry gross revenues in 2003 using the previous 5 years (i.e., 1998, 1999, 2000, 2001, and 2002). The standard error of the regression slope was used as the measure of environmental dynamism in 2003.

3.2.4 | Control variables

We controlled for several firm-level variables that were potentially relevant to strategic change. First, prior studies suggest that ownership structure affects organizational outcomes (Tuschke & Sanders, 2003). Thus, we controlled for a firm's ownership structure that includes state ownership and foreign ownership. We measured *state ownership* by the ratio of state-owned capital divided by the total capital. We measured *foreign ownership* by the ratio of foreign-owned capital divided by the total capital. We additionally controlled for *firm age*, as previous studies have found that firms may become more bureaucratic and inert over time, thus losing their capacity to quickly adapt to changing circumstances (Barron, West, & Hannan, 1994). We measured *firm age* by the number of years from firm establishment. We also included *firm size,* measured as the log of the number of employees, as firm size negatively relates to strategic change (Zhang, 2006). In addition, consistent with Zhang (2006), we controlled for return on assets (ROA) (the ratio of net income divided by total assets) to rule out the potential effect of prior firm performance on strategic change decisions.

In addition, we controlled for TMT-level variables such as *TMT average tenure,* because TMTs with shorter tenure have been shown to be more likely to engage in strategic change than TMTs with longer tenure (Wiersema & Bantel, 1992). We also controlled for *TMT power disparity*, because this tends to affect TMT group dynamics and firm outcomes (Smith, Houghton, & Hood, 2006; Stewart & Amason, 2017). We measured TMT average tenure as average tenure of TMT members in the TMT (not in the organization). We operationalized TMT power disparity by calculating the coefficient of variation of salary across all TMT members.

Finally, we controlled for the *year* effect by generating year dummy variables and for a set of *industry dummy* variables to control for industry effects.

3.3 | Econometrical model

To use the panel data econometric model, the data are presented in firm-year observation units. The fixed effects and random effects are the most common models that can control for the unobserved effects and partially solve for the endogenous issue. Hausman's (1978) specification test was used to detect whether a fixed and random effects model is best. The Hausman test was not significant for our fixed effect models and hence we chose to use random-effects models.

Moreover, time-specific factors such as government interventions or economic downturns might also affect strategic change (Certo & Semadeni, 2006). Including time dummy variables in panel data models with a large N (number of firms) and a relatively small T (time periods) is useful to reduce such effects (Certo & Semadeni, 2006). Thus, besides implementing the random-effects model to deal with the omitted variables (Baltagi, 2013), we also included a set of dummy variables for each year. In addition, strategic change can affect the faultline strength of TMT characteristics. To overcome such circumstances, all the explanatory variables are lagged behind the dependent variable to account for reverse-causality effects. In testing the main effects of TMT faultline strength on strategic change as well as moderation of environmental dynamism, we regressed the independent variables (e.g., TMT gender-faultline strength), the moderator when applicable, and control variables at year t (e.g., 2003) against the dependent variable, strategic change, at year $t + 1$ (e.g., 2004).

3.4 | Correcting for sample-induced endogeneity

Individual executives may be specifically selected into a TMT because they possess specific background characteristics (e.g., a TMT member may be appointed into the TMT due to her educational level or functional experience), which may affect the strength of faultlines in TMTs. Omitting this selection step may introduce sample-induced endogeneity (see Certo, Busenbark, Woo, & Semadeni, 2016) that could affect our results. In order to correct the sample-induced endogeneity, we followed Certo et al. (2016) and adopted the Heckman selection model. In the Heckman two-stage model, the first-stage uses a probit model to estimate the probability of an observation entering a sample, and the second stage predicts the ultimate dependent variable. The process uses the first-stage analyses to create a selection parameter—that is, the inverse Mills ratio to account for potential biases that may result from non-randomness. This selection parameter is included in the second stage to account for potential sample-induced biases. Following Certo et al. (2016), we included two variables in the first stage—*TMT size* (measured as the number of TMT members) and *shared functional background*—that do not appear in the second stage. These two variables, known as exclusion restrictions, influence the probability of members' joining the TMT and also that such members become part of subgroups within a TMT. These two variables, however, do not influence the ultimate dependent variable—strategic change. The larger is the team size, the more opportunity to select TMT members with specific characteristics that fit specific subgroups. Additionally, group size itself may also affect subgroup formation, because in larger teams, members are less likely to spend time with each individual member and thus develop mutual trust and emotional bonds (Carton & Cummings, 2012).

Shared functional background, which indicates the extent TMT members' functional work experience is similar, also influences the probability of members' joining subgroups, because individuals with the same functional experience as existing members may be more likely to be asked to join. A TMT tends to select a new member who is similar to the team in function and experience. Indeed, research reveals that social connections emanating from a shared functional background are important in China because individuals tend rely on their own networks to recruit new firm members (DiTomaso & Bian, 2018). Similar to Colombo and Rabbiosi's (2014) measure of technological similarity among different firms, we developed a measure of shared functional background to capture functional experience similarity among TMT members. We computed shared functional background via the following steps. First, we extracted TMT members' functional work experiences from their resumes and classified them into eight functional categories (production, R&D, finance, management & administration, marketing, law, HR, and general; see Cooper et al., 2014). We then operationalized shared functional background as an index with three categories (from 1 to 3). The index took the value 1 (minimum value) when no TMT members have overlapping functional experience across the eight functional backgrounds. The index took the value of 2 when TMT members have some overlapping and some non-overlapping functional backgrounds. For example, if three TMT members had prior work experience in production and two members had prior work experience in HR, the value of shared functional background was 2. The index took the value of 3 (maximum value) when all TMT members shared the same functional work experience in at least one function from the eight functional backgrounds, and the TMT members did not have partially overlapping functional work experience. For example, if all TMT members had work experience in production and partially overlapping work experience existed in other functions, the value of shared functional background was 3.

As noted, *TMT size* and *shared functional background,* the two exclusion restrictions, should significantly influence the probability of an observation appearing in the sample, but should not be significantly associated with the ultimate dependent variable of interest—strategic change (see Certo et al., 2016). As reported in Table 1, the results revealed that TMT size and shared functional background are statistically appropriate exclusion restrictions. These restrictions were not significantly correlated with strategic change (see Table 1). In addition, TMT size ($\beta = 0.120$, $p = 0.000$, $SE = 0.010$) and shared functional background ($\beta = 0.246$, $p = 0.000$, $SE = 0.043$) influence the probability of an observation appearing in the sample (results available upon request). The first-stage regression model generated an Inverse Mill's ratio. In the second stage, we included it in the analyses to correct potential sample-induced selection bias.

4 | RESULTS

Table 1 shows the summary statistics and correlation table of the variables used in the analyses. We conducted a variance inflation factor (VIF) in which the maximum VIF value is 1.37, the minimum VIF value is 1.03 and the mean VIF value is 1.17. All independent variables are mean-centered before creating the interaction terms (Aiken & West, 1991).

Hypotheses 1a, 1b, and 1c predict that the strength of relationship-related TMT faultlines based on each focal attribute—gender, age, and educational level—is negatively related to strategic change. Of the three focal attributes, we found strongest effects for educational level (H1c). Specifically, the coefficient of TMT educational-level faultline strength is negative and statistically significantly ($\beta = -0.077$, $p = 0.000$, $SE = 0.015$, 95% CI [−0.107–0.047] in Model 2). Ceteris paribus, high educational-level faultline strength (one *SD* above the mean) leads to a 2.58% decrease of strategic change. Furthermore, the effect size for educational level is a non-trivial effect size if we take a close look at the extent to which a company changes strategic allocation, which is obtained by computing the absolute values of strategic allocation changes of six dimensions, standardizing them by industry, and averaging them. To examine the practical significance, we utilize a company example from our data for one *SD* above the mean (high faultline strength) with corresponding strategic change for the faultline strength change. Company X that has high educational level faultline strength (one *SD* above the mean) shows 9.24% absolute values of strategic allocation changes on average (i.e., each of six dimensions is −15.63, −24.95, −9.82, 0, 0, 5.01, respectively). Next, regarding H1a, we find that the coefficient of TMT gender-faultline strength (H1a) is negative and marginally statistically significant ($\beta = -0.029$, $p = 0.071$, $SE = 0.016$, 90% CI [−0.061–0.002] in Model 2), thus lending weak support for H1a. However, based on an anonymous reviewer recommendation, we found stronger results for gender faultline main effects when removing the other four faultlines and isolating its effect on strategic change independently (i.e., $p = .013$). Nevertheless, we consider the gender faultline main effect to be modest at best. Also, we found that the coefficient of TMT age-faultline strength is positive and not statistically significant ($\beta = 0.024$, $p = 0.132$, $SE = 0.016$, 95% CI [−0.007 0.056] in Model 2), lending no support for H1b.

Hypotheses 2a and 2b predict that the task-related faultline strength in TMTs is positively related to strategic change. The coefficient of TMT functional-background faultline strength is positive and statistically significant ($\beta = 0.241$, $p = 0.000$, $SE = 0.018$, 95% CI [0.205 0.276] in Model 2). We also found that the coefficient of TMT tenure faultline strength is positive and statistically significant ($\beta = 0.076$, $p = 0.000$, $SE = 0.012$, 95% CI [0.052 0.101] in Model 2). These results provide

TABLE 1 Summary and correlation matrix

	Variables	Mean	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	Strategic change $t + 1$	−0.024	0.156	1.000							
(2)	State ownership	0.462	0.499	−0.004	1.000						
(3)	Foreign ownership	0.051	0.220	−0.018	−0.151	1.000					
(4)	Firm age	12.030	5.642	0.016	0.135	0.025	1.000				
(5)	Firm size	7.634	1.170	−0.125	0.309	−0.008	0.160	1.000			
(6)	Return on assets	0.035	0.068	−0.166	−0.126	0.060	−0.129	0.031	1.000		
(7)	TMT average tenure	5.606	5.294	−0.098	0.121	−0.016	0.371	0.170	−0.028	1.000	
(8)	TMT power disparity	0.391	0.251	0.027	−0.170	0.051	0.050	−0.017	0.010	−0.095	1.000
(9)	Gender faultline	0.091	0.113	−0.023	−0.169	0.006	0.006	−0.112	0.052	−0.040	0.099
(10)	Age faultline	0.129	0.119	0.003	0.143	−0.015	0.040	0.110	−0.043	0.028	0.039
(11)	Educational-level faultline	0.225	0.134	−0.028	−0.029	0.006	0.033	0.020	−0.024	0.006	0.036
(12)	Functional background faultline	0.186	0.103	0.154	−0.073	−0.011	0.029	0.073	0.031	−0.025	0.052
(13)	Tenure faultline	0.151	0.144	0.104	−0.051	−0.037	0.008	0.024	0.004	0.004	−0.039
(14)	Environmental dynamism	0.113	0.097	0.015	0.088	0.003	−0.131	0.047	0.001	−0.124	−0.022
(15)	TMT size	6.927	2.701	0.006	0.082	−0.002	0.023	0.300	0.032	−0.030	0.139
(16)	Shared functional background	1.402	0.500	−0.015	0.069	−0.014	0.177	0.082	0.006	0.137	−0.088

	Variables	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(9)	Gender faultline	1.000							
(10)	Age faultline	−0.026	1.000						
(11)	Educational-level faultline	0.135	0.263	1.000					
(12)	Functional background faultline	0.246	0.238	0.360	1.000				
(13)	Tenure faultline	0.032	0.109	0.270	0.347	1.000			
(14)	Environmental dynamism	−0.085	0.047	−0.033	−0.022	−0.073	1.000		
(15)	TMT size	0.090	0.157	0.153	0.218	0.027	−0.068	1.000	
(16)	Shared functional background	−0.084	−0.007	−0.016	0.004	0.060	−0.053	−0.096	1.000

Industry and year are omitted. All correlations above |0.023| are significant at $p < 0.05$, two-tailed.

support for Hypotheses 2a and 2b. Regarding the statistical effect of these estimates, ceteris paribus, high functional-background faultline strength (one *SD* above the mean) leads to a 4.86% increase of strategic change and high tenure faultline strength (one *SD* above the mean) leads to a 2.07% increase of strategic change. Again, these effect sizes of the task-related faultline strength estimates are nontrivial as described below using the company examples from the data. Company Y with high functional-background faultline strength (one *SD* above the mean) shows 18.94% absolute values of strategic allocation changes on average (i.e., each of six dimensions is −28.67, −16.96, −9.4, −22.84, 18.24, 17.54, respectively). Company Z with high tenure faultline strength (one *SD* above the mean) shows 34.50% absolute values of strategic allocation changes on average (i.e., each of six dimensions is 30.32, 46.77, 5.82, 23.95, 22.38, 77.74, respectively).

Hypotheses 3a, 3b, and 3c predict that environmental dynamism will moderate the association between TMT faultline strength and strategic change such that any previous negative (or null in the case of age-faultline strength) effect from relationship-related faultline strength indices would be diminished resulting in potential positive effects. Table 2 shows the coefficient of the relevant interaction terms. Importantly, the coefficient of the interaction term, TMT gender-faultline strength × environmental dynamism, is positive and statistically significant ($\beta = 0.328$, $p = 0.043$, $SE = 0.162$, 95% CI [0.010 0.645] in Model 4) along with significant interaction coefficient effects for TMT age-faultline strength × environmental dynamism ($\beta = 0.394$, $p = 0.016$, $SE = 0.163$, 95% CI [0.075 0.713] in Model 4), and significant interaction coefficients for TMT educational-level faultline strength × environmental dynamism ($\beta = 2.648$, $p = 0.000$, $SE = 0.176$, 95% CI [2.304 2.993] in Model 4), which supports Hypotheses 3a, 3b, and 3c.

Hypotheses 4a and 4b predict that environmental dynamism will moderate the association between TMT faultline strength and strategic change such that any positive effect from task-related faultline strength indices would be elevated in organizations competing in dynamic environments. Table 2 shows the coefficient of the relevant interaction terms. TMT functional-background faultline strength × environmental dynamism ($\beta = 0.771$, $p = 0.000$, $SE = 0.194$, 95% CI [0.392 1.151] in Model 4), and TMT tenure-faultline strength × environmental dynamism ($\beta = 0.420$, $p = 0.001$, $SE = 0.131$, 95% CI [0.163 0.677] in Model 4), which supports H4a and 4b.

To facilitate the interpretation, we conducted slope analyses (interaction plots available from authors upon request). We find that the gradients of the slopes at the high level of environmental dynamism is not significant, for gender faultline strength (t value $= -0.009$, $p = 0.993$) but is positive and significant for age-faultline strength (t value $= 2.613$, $p = 0.009$), educational level faultline strength (t value $= 8.235$, $p = 0.000$), functional background faultline strength (t value $= 12.491$, $p = 0.000$), and tenure faultline strength (t value $= 6.647$, $p = 0.000$). However, at the low level of environmental dynamism (i.e., stability), we find the slope gradients are significant and negative for the strengths of gender faultlines (t value $= -2.722$, $p = 0.007$) and of educational level (t value $= -15.148$, $p = 0.000$) but not for age faultlines (t value $= -0.844$, $p = 0.399$) and significant but less positive for the strengths of functional faultlines (t value $= 5.634$, $p = 0.000$) and tenure faultlines (t value $= 2.293$, $p = 0.022$). Furthermore, although both line slopes are positive in functional background and tenure faultline strength plots, simple slopes test reveal that the lines significantly differ from one another within each plot for functional background (t value $= 12.822$, $p = 0.000$) and tenure (t-value $= 6.561$, $p = 0.000$).

We also discuss the practical effects of these significant slopes. When holding everything constant and focusing on stable environments, a shift from one-standard deviation below the mean (i.e., 0.0807 value) to one-standard deviation above the mean (i.e., 0.0663 value) in gender faultline strength results in a 18% decrease in strategic change. Similarly, focusing on stable environments, a shift from one-standard deviation below the mean (i.e., 0.0874 value) to one-standard deviation above the mean (i.e., 0.0016 value) in educational level faultline strength results in a 98% decrease in strategic change while the same shift focusing on dynamic environments results in a 242% increase in strategic change consistent with H3c predictions. In dynamic environments we also observe notable positive effects with a shift from one-standard deviation below to above the mean for age-faultline strength (21% increase in strategic change), functional background strength (425% increase in strategic change), and tenure faultline strength (79% increase in strategic change). In summary, our results together suggest that all five faultline strength measures are positively moderated by environmental dynamism, thus lending support for Hypotheses 3 and 4 but clearly reveal that one relationship faultline strength measure (i.e., educational level faultline strength) along with one task-related faultline strength measure (i.e., functional background strength) are the strongest predictors of strategic change.

5 | DISCUSSION AND CONCLUSION

This paper sheds light on the differential effects of relationship-related and task-related TMT faultline strength on strategic change. The results using 13-year longitudinal data of Chinese manufacturing

TABLE 2 Regression results for TMT Faultline-strength effects on strategic change ($t + 1$)

	(1)		(2)		(3)		(4)	
	Strategic change *t*1							
State ownership	0.013		0.009		0.009		0.009	
	(0.005)	*0.020*	(0.005)	*0.106*	(0.005)	*0.108*	(0.005)	0.074
Foreign ownership	−0.006		−0.002		−0.002		−0.003	
	(0.009)	*0.485*	(0.008)	*0.807*	(0.008)	*0.794*	(0.008)	0.746
Firm age	0.001		0.001		0.001		0.001	
	(0.000)	*0.165*	(0.000)	*0.027*	(0.000)	*0.023*	(0.000)	0.066
Firm size	−0.014		−0.015		−0.015		−0.015	
	(0.002)	*0.000*	(0.002)	*0.000*	(0.002)	*0.000*	(0.002)	0.000
Return on assets	−0.312		−0.333		−0.333		−0.332	
	(0.034)	*0.000*	(0.033)	*0.000*	(0.033)	*0.000*	(0.032)	0.000
TMT average tenure	−0.002		−0.002		−0.002		−0.002	
	(0.000)	*0.000*	(0.000)	*0.000*	(0.000)	*0.000*	(0.000)	0.000
TMT power disparity	0.007		0.009		0.010		0.011	
	(0.007)	*0.334*	(0.007)	*0.171*	(0.007)	*0.167*	(0.007)	0.123
Inverse Mills ratio	−0.049		0.001		−0.001		−0.004	
	(0.024)	*0.038*	(0.024)	*0.963*	(0.024)	*0.965*	(0.023)	0.875
Gender faultline			−0.029		−0.028		−0.032	
			(0.016)	*0.071*	(0.016)	*0.082*	(0.016)	0.046
Age faultline			0.024		0.024		0.019	
			(0.016)	*0.132*	(0.016)	*0.147*	(0.016)	0.222
Educational level faultline			−0.077		−0.077		−0.063	
			(0.015)	*0.000*	(0.015)	*0.000*	(0.014)	0.000
Functional background faultline			0.241		0.240		0.232	
			(0.018)	*0.000*	(0.018)	*0.000*	(0.018)	0.000
Tenure faultline			0.076		0.078		0.080	
			(0.012)	*0.000*	(0.012)	*0.000*	(0.012)	0.000
Environmental dynamism					0.024		0.015	
					(0.019)	*0.219*	(0.017)	0.371
Gender faultline × environmental dynamism							0.328	
							(0.162)	0.043
Age faultline × environmental dynamism							0.394	
							(0.163)	0.016
Education faultline × environmental dynamism							2.648	
							(0.176)	0.000
Functional background faultline × environmental dynamism							0.771	
							(0.194)	0.000
Tenure faultline × environmental dynamism							0.420	
							(0.131)	0.001
Constant	0.080		0.039		0.037		0.039	
	(0.018)	*0.000*	(0.018)	*0.034*	(0.018)	*0.042*	(0.018)	0.027
Year dummy	Yes		Yes		Yes		Yes	
Industry dummy	Yes		Yes		Yes		Yes	

TABLE 2 (Continued)

	(1)	(2)	(3)	(4)
Overall R^2	0.052	0.087	0.087	0.118
Wald χ^2	234.846	502.598	504.047	722.063
Prob. > χ^2	0.000	0.000	0.000	0.000

N = 7,229. Robust standard errors clustered by firms in parentheses; *p*-values in italics. All significance tests based on two-tailed tests. Wald χ^2 due to clustered standard errors. Coefficients and standard errors have been rounded to three decimal places. We replicated analysis excluding the heterogeneity measures and results were consistent.

firms generally reveal that the strength of relationship-related faultlines negatively affect strategic change, while the strength of task-related faultlines positively relate to strategic change. For interactions, we find that a dynamic environment positively moderates the relationships between gender, age, and educational-level faultline strengths and strategic change. In addition, a dynamic (stable) environment appears to strengthen (weaken) the positive relationships between both task-related faultline strength indices and strategic change. Our study offers several contributions to research on TMT composition and strategic decisions.

5.1 | Contributions

Perhaps the most significant research contribution and implication of our findings is to extend the understanding of TMT composition drawing on the upper echelons and demographic faultline literatures. First, we contribute to TMT composition literature by deviating from the typical approach of focusing on the effect of TMT heterogeneity on firm outcomes and instead we apply a more elaborate faultline typology to better understand how different types of attribute-specific faultlines impact organizational outcomes (e.g., Bezrukova et al., 2009; Chung et al., 2015). While this faultline typology has been previously explored in a group context (e.g., Chung et al., 2015), its applicability has only been recently tested in the context of TMTs (e.g., Hutzschenreuter & Horstkotte, 2013), and our knowledge in this area is still limited. In particular, examining attributing-specific faultlines improves our understanding of how different types of faultlines based on a focal attribute in TMT have distinct influences on strategic decisions which is quite timely given the shifting demographics within TMTs. As hypothesized, we observe negative effects for gender (albeit modest) and educational-level faultline strength and positive effects for functional-background and tenure faultline strength in the TMT contexts. Accordingly, we join a recent body of research suggesting that attention should be given to different faultline types (Bezrukova et al., 2009) and to apply such assumptions in studying TMTs (Hutzschenreuter & Horstkotte, 2013), albeit in a fine-grained way (Chung et al., 2015).

Further, we theorize that the strength of task-related faultlines is beneficial for strategic change because knowledge-based subgroups allow for the psychological safety to generate new ideas and exchange knowledge within subgroups, while the strength of relationship-related faultlines reduces inter-subgroup interactions because social identity-based subgroups often provoke relationship-based conflict. By theorizing on how social identity-based versus knowledge-based subgroups distinctively influence interactions and knowledge-sharing among TMT members, we respond to Hambrick (2007) in considering whether and how demographically different TMTs are able to integrate diverse expertise, knowledge, and perspectives that exist within the team to make better decisions on a firm's strategic direction.

Second, while strategy scholars recognize the importance of studying the ways in which TMT heterogeneity affects strategic change decisions (e.g., Naranjo-Gil, Hartmann, & Maas, 2008; Wally & Becerra, 2001), the ways that faultline strengths affect strategic change are underexplored, which also makes our paper a contribution to the strategic change domain (Triana et al., 2014). We contribute to this line of study by not only distinguishing task-related versus relationship-related faultlines, but also by theorizing on how these different faultline dimensions are likely to affect strategic change. By theorizing about these different faultline dimensions we engage in a deeper inquiry of faultlines within TMTs, which Bromiley and Rau (2016) recommends as a promising approach for TMT research. Such deeper inquiry leads to a more holistic understanding of the impact of TMT faultlines on strategic decisions.

Third, previous research on TMT faultlines has not commonly investigated the context in which various types of faultlines will likely experience re-categorization. Based on organizational theory assumptions about the role of the environment in understanding organization phenomena, we theorize and find support that environmental dynamism reduces the potential for social categorization processes within TMTs, and thus limits the potential negative consequences of relationship-related faultline strength but unleashes the positive impact of elaboration of task-relevant information (Cooper et al., 2014; van Knippenberg et al., 2004). Furthermore, although research has emphasized the importance of the environment in studying TMT demographic faultlines (Cooper et al., 2014), the interplay of environmental dynamism and relationship-related faultlines has not been previously explored in the strategic change domain of inquiry. Therefore, by first showing that strategic change is impacted differently by both relationship- and task-related faultline-strength indices, and secondly, showing how both relationship-related faultline-strength indices to strategic change is positively moderated by environmental dynamism, we contribute not only to the upper echelons theory literature, but also to the organizational theory literature on environmental context. Our paper highlights the importance of context and points to the need for additional research related to the contextual factors that matter when exploring the impact of various *attribute-specific* faultline types.

Last, although faultlines have been theorized to operate the same in China as in other countries (e.g., United States), empirical work in China has not been abundant (for exceptions, see Chen, Wang, Zhou, Chen, & Wu, 2017; Li & Hambrick, 2005; Murnighan & Lau, 2017; Zhang, Liang, Zhang, & Qu, 2017). Indeed, our focus on the effect of TMT faultlines on strategic change in the context of Chinese firms offers a number of valuable insights. First, we focus on Chinese firm TMTs because market stakeholders such as suppliers, buyers, and competitors have begun to afford more TMT managerial discretion in strategic choice and actions than previous times (Li, Xia, & Zajac, 2018). Furthermore, China's rapid and substantial societal and economic change places major pressure on TMTs to effectively respond swiftly in volatile and dynamic environment by initiating more strategic actions (Hoskisson, Eden, Lau, & Wright, 2000; Qian, Cao, & Takeuchi, 2013). This makes our findings even more critical as it is important to understand how TMTs' faultlines based on demographic attributes affect TMT decisions regarding initiating strategic change within the environmental context in which firms compete (Peng, 2003; Wu, Si, & Wu, 2016). Navigating a dynamic environment requires TMTs to consider a broad range of options in order to adjust strategies to ensure firm/environment fit (Luo & Peng, 1999).

5.2 | Limitations and research direction

Although the contributions of this study are noteworthy, several limitations need to be elaborated. First, our findings for gender faultline strength revealed smaller effects compared to all the other significant effects observed. We believe some of this could be due to national context. Research by Post and Byron (2015) has highlighted that China has slightly less gender parity (0.6853) than the US (0.7373) within a range of firms—with the highest gender parity in Norway (0.8403) and the lowest gender parity in Pakistan (0.5478). Thus, since countries like the United States and Norway provides women slightly more equal access to resources and opportunities than China, we might expect that the relationships found here might be somewhat stronger than we have found in our sample. Nevertheless, we see much empirical promise with studying gender faultlines in China. Specifically, based on an anonymous reviewer's recommendation, we ran a model that isolated the effect of gender faultline strength's independent main effect and another with its interaction with dynamism both excluding the other four faultline measures. Not only did we find that TMT gender faultline strength significantly and negatively impacted strategic change independently (as previously discussed in results for H1a) but we also found significant positive effects of TMT gender faultline strength on strategic change at maximum levels of environmental dynamism. This finding is particularly insightful for organizations that have strong gender faultline within their TMT where other *attribute-specific faultlines* (e.g., age faultlines, educational level, functional background, tenure) are weak. In regards to age, we also did not find the negative main effect for age-faultline strength as predicted and speculate that this could be in part how we create our four generations (Erickson, 2009). Even modest disparities in how the categories are formed and how generations operate in the real world can account for not detecting hypothesized effects. Nevertheless, there is some promise with our four generation categories since we did find some predictive validity related to it when moderated by environmental dynamism.

Second, we cannot extrapolate our findings to other types of faultlines that were not measured or commonly observed within the Chinese context, such as variation across religion, as well as variation across “kinship, hometown, common schooling, or work experiences” (Xiao & Tsui, 2007, p. 4). Future research—particularly in the United States where more TMT diversity along these dimensions exists—may explore other dimensions (e.g., race, national culture) that could represent specific demographic faultlines and their associated strengths.

Last, although we have considered environmental dynamism as a moderator, other contextual factors might also offer additional insight. Barkema and Shvyrkov (2007) found the negative effects of subgroups deteriorate over time when TMT members work together and develop mutual trust. Thus, one notion is that TMT average tenure may weaken categorization resulting from faultlines. For example, TMTs with relatively long tenure allow their members time to develop deep association with each other, encouraging information sharing, whereas TMTs with a short tenure are likely to build trust within their subgroup only, greatly increasing the conflicts across subgroups. In post hoc analysis we find that TMT average tenure positively moderates the relationship between three faultline indices and strategic change: educational level, functional background, and tenure faultline strengths lending more context-based support for task than relationship-related faultlines. Thus, future research should consider the role of “time” in a multiplicity of ways when investigating faultline strength effects. In another post hoc analysis, we considered past firm performance as a moderator. One perspective is that when the firm is performing well, everyone gets along and works across faultlines. In contrast, when the firm is performing badly, TMT members opt to form cliques and the blame game arises. Specifically, we found that past firm performance positively moderates four TMT faultline effects (the negative effect for gender and educational-level faultline strength is diminished, and the positive effect for functional background and tenure faultline strength indices is elevated). This post hoc findings have implications for using past performance as a contingency factor.

Future research is needed to also advance new interesting directions. Recent research has found that a supportive and inclusive firm climate reduces some of the negative consequences of relationship-related faultline strength on loyal behavior (Chung et al., 2015), and we believe that such a climate could be an important contextual factor to examine when studying TMT faultlines as well. Dwertmann, Nishii, and van's (2016) synergy diversity climate (rather than the fairness climate) might be particularly useful for promoting knowledge exchange across subgroups with a TMT that comprise a faultline allowing for improved organizational benefits. Future research should also look at the strategy-making process as a moderating factor. In particular, a participative strategy-making process has been found to positively moderate the impact of gender diversity in management effects on firm performance (Richard, Kirby, & Chadwick, 2013) and could thus have implications for TMT faultline re-categorization and strategic change. We believe that leadership style also comes into play and that an effective leader might be able to build bridges across TMT members regardless of subgroups in such a way in which negative effects are less likely (Arnold, Arad, Rhoades, & Drasgow, 2000).

6 | CONCLUSION

Our research shows that focusing on faultlines in TMTs can improve the understanding of differential effects of relationship-related and task-related TMT composition on strategic change. Further, our research provides an improved understanding of how a contextual factor (environmental dynamism) may interact with different types of faultline strengths in moderating such relationships. Hence, given the global trend toward a workplace composed of more women, wider worker age ranges, and educational levels—as well as differences in functional backgrounds and tenures—the need for understanding the impact of such demographic differences in the upper echelons will be critical for competitiveness in the new millennium. We hope our research will motivate others to find contextual factors that not only help to offset the potential negative effects of demographic faultlines, but also reveal competitive advantages that can be realized even when faultlines emerge.

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