**OPENING THE BLACK BOX OF UPPER ECHELONS IN CHINA: TMT ATTRIBUTES AND STRATEGIC FLEXIBILITY**

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**ABSTRACT**

Many scholars have suggested that strategic flexibility is a critical firm capability to survive in today’s competitive arena. But, where does strategic flexibility come from? We examine the relationships between top management team’s socio-psychological attributes (shared vision, social integration and political ties) and strategic flexibility, which we decompose into organizational flexibility and technological flexibility. We further examine how the level of competitive intensity can moderate the relationships. We test our hypotheses in a sample of 227 firms from China. We find that organizational flexibility mediates the impact of TMT social integration and political ties on technological flexibility. Our results extend previous research by highlighting the importance of TMTs socio-psychological attributes in driving technological flexibility, through the mediating impact of organizational flexibility.

**INTRODUCTION**

To survive in hypercompetitive business environments, firms must embed strategic flexibility in their competitive actions (Eisenhardt, 1989) that enable them to introduce new products and process technologies effectively and rapidly to build temporary competitive advantages (Nerkar and Roberts, 2004; Cotrell and Nault, 2004). The decision to take strategic actions to make the firm more strategically flexible typically originates in the top management team (TMT) (Wiersema and Bantel, 1992). As the principal decision-making unit of the firm, TMT members’ information acquisition and processing capabilities and subsequent interpretation of environmental changes critically influence strategic decisions such as the decision to make the firm more strategically flexible to achieve a better fit with its market environment (Dutton and Duncan, 1987; Tushman and Romanelli, 1985; Staber and Sydow, 2002; Teece, Pisano, and Shuen, 1997). An increased strategic flexibility will be reflected in an enhanced ability of existing technologies and manufacturing systems to create and introduce new products that meet the changes in the marketplace (Debruyne et al, 2002; Verganti, 1999).

Following Hambrick, Cho and Chen (1996), we consider a firm’s TMT to be a critical antecedent of a firm’s competitive behavior. A recent stream in the upper echelon research literature that is particularly relevant to this study focuses on fine-grained aspects of socio-psychological processes such as the degree of social integration of team members (Smith et al, 1994; Simsek et al, 2005), communication frequency and quality (Smith et al, 1994), consensus on organizational objectives i.e. a ‘shared vision’ (Bourgeois, 1980; Iaquinto and Fredrickson,1997; Knight et al, 1999; Markoczy, 2001) or relational processes with external actors (Geletkanycz and Hambrick, 1997; Peng and Luo, 2000). In this study we believe that in order to understand how firms can adapt to environmental changes, we must study the socio- psychological processes of interaction among members of the TMT (Bantel and Jackson, 1989; Thomas et al, 1993). More specifically, we focus on TMT-based socio-psychological processes that make decision-making more flexible and as a consequence, make the firm more adaptable by increasing its strategic flexibility. By flexibility in the decision-making process we refer to the extent to which TMT members explore new ideas and assumptions about their firm and its changing strategic context (Nutt, 1993; Sharfman and Dean, 1997) in order to inform their strategic decisions and actions. As prior research observed, firms adapt rarely in the absence of flexible decision making by top management (Mintzberg and McHugh, 1985). The central premise of the paper is that strategic flexibility can be fruitfully examined by studying TMT-based socio-psychological processes that make strategic decision making more flexible.

In this study we examine the impact of three TMT-based processes grounded in social psychology: a TMT’s shared vision, social integration, and social interactions with government officials, with the decision to make the firm more strategically flexible to respond to competitive and market changes. Furthermore, building on Sanchez’s (1995) concept of strategic flexibility which he defines as a firm’s ability to respond to changes in its competitive environment, we propose that strategic flexibility can be decomposed into two constituent parts; 1) organizational flexibility which corresponds broadly to Sanchez’s concept of coordination flexibility; and 2) technological flexibility which corresponds broadly to Sanchez’s concept of resource flexibility. Moreover, we believe that for firms to be technologically flexible they first need to have a flexible organization structure in place, that is, organizational flexibility mediates the impact of TMT attributes on technological flexibility. Finally, we seek to examine what TMT attributes are most effective in influencing strategic flexibility when competitive conditions change. In sum, we seek to address the following research questions: Do TMT-based socio-psychological processes enhance technological flexibility through a firm’s organizational flexibility?; and; How does competitive intensity moderate these relationships?

These issues are explored in a sample of 227 firms based in China. The Chinese marketplace provides an ideal setting to test our conceptual model for several reasons. For instance, studies on strategic flexibility have almost exclusively been conducted in a US or European context. There is a need to expand this research across different cultural and economic contexts. Moreover, China has become one of the most competitive markets in the world where the competitive advantage of firms is time-dependent and ephemeral, and any advantage gained by a firm will be negated sooner rather than later by competitors (Li et al, 2008). Such a business environment is often characterized as hypercompetitive in the sense that competitors must move quickly to build advantages and erode the advantages of their rivals (D’Aveni, 1994). In this setting, firms need to have a high degree of flexibility in resource allocation and the coordination of resources and activities (Birkinshaw and Gibson, 2004; Zhou and Wu, 2010) to initiate and respond to competitors’ actions. Therefore, China provides a perfect backdrop to study the salient factors affecting firms’ strategic flexibility (Peng, 2003). In addition, with a strong cultural preference for collectivism, risk aversion, and interpersonal relationships with business and government officials (Peng and Luo, 2000), the socio-psychological processes governing Chinese managers’ behavior may exert a unique impact on strategic flexibility. And finally, competition represents an interesting aspect of Chinese culture which emphasizes social harmony (Zhao et al, 2012).

We hope to add to the important research stream on strategic flexibility in three distinct ways. First, this study is to our knowledge the first study to examine TMT processes and their impact on strategic flexibility in an emerging country setting. More specifically, the present inquiry sheds light on how a set of team-level socio-psychological processes facilitate or hamper organizations’ ability to attain an appropriate degree of strategic flexibility to respond to opportunities and threats in the Chinese market environment. Second, this inquiry decomposes strategic flexibility into two constituent components, and posits that organizational flexibility precedes technological flexibility and serves as a mediator between TMT socio-psychological attributes and technological flexibility. And third, we demonstrate how competitive intensity acts as an important moderating factor between TMT process attributes and organizational flexibility.

**LITERATURE REVIEW**

The first conceptualizations of strategic flexibility originated in the works on the diversified product-market matrix which argued that the same system of resources may be deployed in different ways as a result of a firm’s ability to quickly spot opportunities and redeploy existing resources to address these opportunities with different (new) products (Ansoff,

1965). Based on Ansoff’s matrix, researchers gradually realized that flexible strategic thought and organizational practices are imperative to attain strategic flexibility (Ulrich and Wiersema, 1989). Later, Sanchez used the term strategic flexibility “to denote firm abilities to respond to various demands from dynamic competitive environments” (Sanchez, 1995: p. 138).

Several empirical studies examined the determinants of strategic flexibility. Prior research has indicated two possible sets of determinants of strategic flexibility: first, determinants pertaining to a flexible structural design (Akgun, Keskin, and Byrne, 2012; Lei et al, 1996; Sanchez and Mahoney, 1996); and second, new managerial capabilities required to facilitate strategic flexibility (Volberda, 1996). Flexible structural design refers to structures that enable strategic flexibility so that the firm’s strategic posture can maintain a fit with changes in the environment (Sanchez, 1995). Flexible organizational structures require a flexible decision making mechanism, low levels of formalization and highly permeable organizational boundaries (Overholt, 1997).

The second set of determinants is related to top management capabilities that are necessary to succeed in a fast changing, dynamic market environment. The upper echelon stream of research suggested that a broad knowledge base and heterogeneity in the backgrounds and experiences of top executives is a key requirement for decision-making flexibility and attaining strategic change (Wiersema and Bantel, 1992; Hambrick, 1997). The psychological attributes of top executives influence their strategic choices through a three stage filtering process of information search, selective perception and interpretation of information (Finkelstein and Hambrick, 1996; Hiller and Hambrick, 2005). These activities determine in part how executives search and scan their external competitive environments (Hambrick, 2007), what information they attend to and what information they ignore to inform their strategic decisions (Finckelstein and Hambrick, 1996; Datta, Rajagopalan and Zhang, 2003). More recently, scholars have advanced arguments rooted in social psychology to analyze how interactions among TMT members can affect strategic decision making flexibility and organizational outcomes (Carmeli and Schaubroeck, 2006; Hambrick, 1994; Simsek et al., 2005; Li and Zhang, 2002). Hambrick (1994) noted that “the possibility that organizational inertia and maladaptation are sometimes due to the failure of top management groups to operate as coherent, collaborative information processing and decision-making units” (p.188). The research stream on TMT behavioral integration for instance argues that behaviorally integrated TMTs are characterized by intense interaction that facilitates the acquisition, processing and interpretation of information that lead to collaboratively based solutions and decisions (Carmeli and Schaubroeck, 2006). Therefore, it is imperative that flexible thought at the TMT level is required to attain the strategic flexibilities at both organizational and technological front.

An important study examining the relationship of decision-making flexibility in a NPD context, demonstrated that long-term orientation, strategic planning and political behavior served as strong determinants of decision-making flexibility (Kandemir and Acur, 2012). Furthermore, this study found that proactive strategic decision-making flexibility had a positive impact on both the strategic performance of the firm and the fit of the NPD program with market demands. However, the Kandemir and Acur study did not explicitly test the relationship between strategic decision flexibility induced by socio-psychological processes at the TMT level and actual measures of strategic flexibility. In addition, the present study is agnostic about the type of strategic decision-making (proactive versus reactive) considered and is set in China as opposed to the Kandemir and Acur’s study which uses a European sample and has the NPD program as unit of analysis.

**THEORETICAL FRAMEWORK**

Figure 1 presents our conceptual model, highlighting the pivotal roles that TMT shared vision, social integration and ties to government officials play in affecting the degree of technological flexibility, through the mediating impact of organizational flexibility. In addition, Figure 1 illustrates how the intensity of the competitive environment may moderate the relationship between TMT interaction processes and the degree of organizational flexibility that firms can achieve.

<<Insert Figure 1 about here>>

In this study we integrate upper echelon theory with elements of the information processing perspective of the firm to theorize how pertinent TMT process variables can influence organizational flexibility, which in turn affects technological flexibility.

**TMT Shared Vision, Social Integration and Ties to Government Officials**

To identify and understand the conditions under which firms adapt to their environment by becoming more flexible, we look into the flexibility of core decision-making at the TMT level. We suggest that TMT-based socio-psychological processes may affect the flexibility of TMT decision-making and lead to informed choices on how to make the firm flexible to adapt to environmental changes. Early research by Hambrick and Mason (1984) on the upper echelon framework argues that an organization’s strategic choices of which the degree of strategic flexibility is an important example, are reflections of the attributes of the members of the top management team. More specifically, they claim that demographic attributes of the TMT members are “determinants of strategic choices, and through these choices, of organizational performance” (p. 197). However, the framework faced severe criticism from scholars arguing that measuring demographic differences in the TMT “assumes that demographic predictors are correlated with presumed intervening processes, which remain in the black box” (Priem et al, 1999: p. 936).

To further elucidate the impact of the TMT on strategic choices firms make, and open up the black box, Smith et al. (1994) stressed that scholars should emphasize team processes by which TMT members influence organizational decisions. Social psychology has a long tradition of examining interactions among group members (Smith et al, 1994). Several authors have shown that team-based processes have a significant impact on TMT decision-making flexibility and strategic choices (Bourgeois and Eisenhardt, 1988; Eisenhardt, 1989; Eisenhardt and Bourgeois,

1988; Smith et al, 1994; Semski et al, 2005). Prior research in social psychology has studied process variables in group research such as conformity (Berkowitz and Daniels, 1963), consensus on goals and shared visions (Dess and Origer, 1987; Homburg et al, 1999; Priem, 1990), conflict (Ensley, Pearson, Amason, 2002; Ensley and Pearson, 2005), social integration (Simsek et al, 2005; Lubatkin et al, 2006; Smith et al, 1994), and interaction with members outside the group (Geletkanycz and Hambrick, 1997; Park and Luo, 2001). Consistent with this prior research we identified three TMT process variables that capture most of these socio-psychological processes: 1) A shared vision among TMT members; 2) TMT social integration; and 3) interaction with government officials. The last TMT process variable is especially relevant in the Chinese context where interaction with government officials can provide information and facilitate resource exchanges that affect decision-making flexibility (Peng and Luo, 2000; Shu, Page, Gao and Jiang, 2012). Indeed, the Chinese government still has considerable power to allocate scarce resources, approve projects, steer industrial policy and constantly interferes in micro-level commercial activities (Peng and Luo, 2000; Ring, Bigley, D’Aunno, Khanna, 2005).

**Information Processing Perspective**

We utilize the information processing perspective as an overarching framework for describing and better understanding the critical fit between the salient TMT attributes and their impact on the degree of flexibility. In this study, we argue that opening up TMT decision making by effectively acquiring, sharing and transforming data into information through interaction between TMT members and with external parties make TMTs more apt to recognize the value of new ideas and approaches, makes decision making more flexible, and facilitates organizational adaptation through strategic flexibility.

Information processing in organizations is generally defined as including the gathering of data, the transformation of data into information, and the communication and utilization of information for the purpose of enacting organizational action triggered by changes in environmental conditions (Galbraith, 1973; Tushman & Nadler, 1978). For a macro-level study like this one, the difficulty of directly measuring detailed information-processing phenomena between members of the TMT requires a different approach to applying the information- processing perspective. Instead this study uses information processing more as an abstract intervening concept to aid in positing relationships between key salient attributes of the TMT and strategic flexibility (Egelhoff, 1982).

Decision making by the TMT on how to make the firm more adaptable is, like most decision making by top management, an exercise in information processing (O’Reilly, 1983). Flexible decision processes are open to diverse information sources and perspectives from inside and outside the TMT (Smart and Vertinsky, 1977; Tushman and Andersson, 1986). Overall, decision making that is open to novel perspectives and utilizes a variety of information sources is more likely to produce the types of decisions that facilitate organizational adaptation by enhancing a firm’s strategic flexibility (Sharfman and Dean, 1997).

**Strategic Flexibility**

Research into the concept of strategic flexibility has blossomed over the past three decades and the concept itself is generally understood to denote an organization’s various abilities to respond effectively to changes in a firm’s competitive marketplace (Sanchez, 1995). Strategic flexibility provides firms with a range of strategic options to successfully respond to threats or opportunities brought on by changing environmental conditions (Sanchez, 1995; Birkinshaw and Gibson, 2004) by having access to flexible resources such as flexible manufacturing systems, rapid prototyping technologies; and by having flexible coordination capabilities to reconfigure and rapidly deploy these flexible resources to produce new or modified products.

Consistent with prior conceptualizations of the strategic flexibility construct (Nadkarni and Narayanan, 2007; Sanchez, 1995) that stress resource flexibility and coordination flexibility we decompose the strategic flexibility construct into two distinct parts: organizational flexibility (Liu, Li, and Wei, 2009; Tamayo-Torres, Ruiz-Moreno, Verdu, 2010) and technological flexibility (Pagell and Krause, 2004; Tamayo-Torres et al, 2010). In our study the organizational flexibility construct corresponds with Sanchez’s coordination flexibility and is defined as a firm’s ability to find new or alternative uses for resources by changing communication patterns between units; to re-formulate current strategies quickly to respond to changes in the market environment; and to quickly respond to changes by re-arranging working relationships. The technological flexibility construct corresponds with Sanchez’s resource flexibility construct and is defined as the ability of the manufacturing system to effectively produce a wide variety of different, new products; to offer new products quickly with changes in production tasks and to effectively implement minor changes in current products to meet changing customer needs.

However, investments in technologies that facilitate technological flexibility, like Advanced Manufacturing Technologies (AMT), Flexible Manufacturing Systems (FMS), Process/Product Modularity, CAD/CAM and 3D-Manufacturing are unlikely to pay off without changes in a firm’s organizational design (Lei, Hitt, and Goldhar, 1996; Schilling, 2000; Jacobs et al, 2010). Scholars propose a design that includes characteristics of both “loose coupling” (Orton and Weick, 1990; Akgun et al, 2012) and an open systems, modular perspective (Daft and

Lewin, 1993), the characteristics that enhance the information flow within and outside of the firm. These characteristics are both hallmarks of a firm’s organizational flexibility. As the variety of tasks (creation of new products or processes) in a firm increases as demanded by the TMT, the number of potential connections and communications among different units increases rapidly, and the articulation of organizational parts by a set of predetermined coordination routines becomes more complicated (Hage, Aiken, and Marrett, 1971). The decision makers within the firm are therefore more likely to rely on continuous flows of information (feedback or mutual adjustment) as a way of coordinating the different units in the firm (March and Simon, 1958; Thompson, 1967; Andersen, 2002). Therefore, we argue that organizational flexibility should precede technological flexibility, and serve as a mediating factor between the TMT socio-psychological processes and technological flexibility.

**Organizational Flexibility as a Mediator between TMT and Technological Flexibility**

**TMT shared vision.** A TMT’s shared vision encompasses the collective goals and objectives to which all senior management members subscribe to (Tsai and Ghoshal, 1998). In addition, a shared vision serves as a unifying expression of an organization’s future trajectory (Larwood et al, 1995; Tsai and Ghoshal, 1998). TMT shared vision is shaped and maintained through social interaction between TMT members (Priem, 1990). A shared set of objectives and goals can provide a common language platform, which eliminates miscommunications and enhances opportunities for exchanging resources and ideas freely (Larwood et al, 1995; Nahapiet and Ghoshal, 1998). Therefore a TMT shared vision should improve decision making flexibility. Moreover, TMTs with a shared vision are in a position to continuously engage in the acquisition of boundary-spanning information, and develop a common understanding based on this information to inform strategic decisions and actions (Slater and Narver, 1995), including the organizational flexibility. In contrast, TMT’s lacking a shared vision would be characterized by passionate and highly committed members that would pull the organization in different directions resulting in decision gridlock instead of decision making flexibility. Indeed, divergent and conflicting interpretations by different members of the TMT of the organization and its situational context are likely to hinder the acquisition of large amounts of information on which to base decisions.

In addition, a shared visionfacilitates a loosely coupled organizational structure and holds it together as a set of shared goals, which will be the only effective way of establishing coordination and control (Orton and Weick, 1990). We thus can view a TMT shared vision as a bonding mechanism that helps the reconfiguration and integration of organizational structures and resources, necessary to increase organizational flexibility (Tsai and Ghoshal, 1995).

Organizational flexibility in turn facilitates technological flexibility. Organizational flexibility enables the firm to dismantle old routines and redesign new ones for the purpose of coordinating and re-arranging existing resources to offer new products or implement incremental changes to existing products (Staber and Sydow, 2002). Higher degrees of organizational flexibility imply the presence of a “loosely coupled” system of units and activities that support the simultaneous existence of responsiveness and distinctiveness, reduces interdependencies and provides the firm with the ability to seamlessly redefine its product strategies, reconfigure new chains of product or process creation resources, and redeploy chains of existing resources in support of redefined product strategies (Lei et al, 1996; Sanchez, 1995; Shimizu and Hitt, 2004). Higher degrees of organizational flexibility also suggests that the firm can be viewed as a more open, modular system that facilitates product and process modularity which enables the rapid and easy development of a wide range of new product/processes or the modification of existing ones (Sanchez, 1995; Jacobs et al, 2010). Hence we expect:

*Hypothesis 1: Organizational flexibility mediates the relationship between TMT shared vision and technological flexibility, such that an increase in TMT shared vision leads to an increase in organizational flexibility, which in turn leads to an increase in technological flexibility.*

**TMT social integration.** Social integration of TMT members refers to the “attraction to the group, satisfaction with other members of the group, and social interaction among group members” (O’Reilly et al, 1989: p. 22). Social integration is directly related to the social relationships among senior team members (Smith et al, 1994). Social integration between members of the TMT breeds trust and enhances task-related collaboration (Wiersema and Bantel, 1992). With respect to task-related processes, more socially integrated TMTs are better in synchronizing the team’s social and task processes, including the quality and effectiveness of information exchange (Hambrick, 1994; Simsek et al, 2005). In effect, such synchronization increases the “opportunity for feedback and error correction and synthesis of different points of view” (Tushman and Nadler, 1978: p. 618).

Further, a TMT that is socially well-integrated will be more capable of taking, in a timely fashion, decisive action in competitive and challenging external situations (Che, Lin and Michel,

2010). Prior research has indicated that socially integrated TMTs are more likely to swiftly deal with conflicts among TMT members (Ensley and Pearce, 2001) and perform well in ambiguous circumstances (Eisenhardt and Bourgeois, 1988). Because of the high stakes in the competitive and turbulent Chinese market environment and the lack of established ground rules, initiating a strategic action such as making the firm more organizationally flexible may generate substantial conflict (Hambrick et al, 1996; Ensley et al, 2002) and impose greater demands for coordination and collaboration among TMT members (Smith et al, 1994). A socially integrated TMT will be in a position to meet these demands since organizational costs for negotiating and monitoring will be drastically reduced (Smith et al, 1994). Therefore socially integrated teams will make the decision-making process more flexible and enhance a firm’s ability to decisively initiate and enact an appropriate degree of organizational flexibility.

In contrast, TMTs that are not well socially integrated tend to emphasize group maintenance issues, that is, spend a lot of time and energy working out conflicts, negotiating etc., rather than on task-oriented behaviors (Eisenhardt and Bourgeois, 1988), reducing the likelihood that swift and appropriate action will be taken to make the firm more organizationally flexible.

As suggested before, firms that have higher degrees of organizational flexibility are in a strong position to ensure that implementations that engender technological flexibility are successful. Efforts to achieve high degrees of technological flexibility are unlikely to succeed unless the organizational system is more “loosely coupled” and adopts an open, modular approach, i.e. is organizationally flexible (Lei, Hitt, and Goldhar, 1996). We suggest that:

*Hypothesis 2: Organizational flexibility mediates the relationship between TMT social integration and technological flexibility, such that an increase in TMT social integration leads to an increase in organizational flexibility, which in turn leads to an increase in technological flexibility.*

**TMT political ties.** *Guanxi*, defined as interpersonal social relationships of TMT members with government or corporate leaders carry with them implicit reciprocal obligations and exchanged favors to fulfill particular goals (Luo, 2003; Park and Luo, 2001; Peng, 2003) and serve as an important form of social capital in China. Gu, Hung, and Tse (2008) has suggested that different types of *guanxi* exist that have a differential impact on business operations and outcomes. In our study we focus on *guanxi* with government officials (Luo and Chen, 1996; Li and Zhang, 2007). TMT members cultivate ties with government officials and manipulate *guanxi* for the purpose of meeting particular goals such as obtaining critical resources or government approvals for permits, licenses etc. (Wang, Feng, Liu, and Zhang, 2011). Besides access to critical resources, TMT members with strong ties to government officials will be privy to inside information about government policy intent, industry reforms, market trends and business opportunities (Davies, Leung, Luk, and Wong, 1995). However, the information disseminated by government officials may be ambiguous and un-codified, leading to potential confusion (Gu, Hung, and Tse, 2008). TMTs with political ties however are in a position to decode information and assign meaning to potential changes in the jurisdiction’s profile, its market characteristics, and government policy intents (Peng and Luo, 2000). Political ties therefore help firms correctly interpret relevant information that enable them to anticipate and initiate the necessary changes to respond to changing conditions (Li and Zhang, 2007). In sum, TMTs with strong social ties to government officials are therefore knowledgeable about upcoming changes in the market, regulatory and possibly competitive environment, which improves the flexibility of their decision making and puts them in a position where they can initiate plans to enhance their firm’s organizational flexibility.

As before, we argue that the impact of TMT political ties on technological flexibility will be channeled through a firm’s organizational flexibility. In order to attain an appropriate degree of technological flexibility for the purpose of creating and producing new products/processes to meet changes in the market environments, firms’ are required to implement an appropriate degree of organizational flexibility. Hence we posit that:

*Hypothesis 3: Organizational flexibility mediates the relationship between TMT political ties and technological flexibility, such that an increase in TMT political ties leads to an increase in organizational flexibility, which in turn leads to an increase in technological flexibility.*

**Contingent Impact of Competitive Intensity**

In intensely competitive environments, firms must be nimble and flexible to respond to changes (D’Aveni, 1994) and TMTs with better functioning socio-psychological processes are more flexible in their decision making. This will enhance a firm’s ability to adapt to new competitive realities in the operating environment.

**TMT shared vision.** In this study we argue that under conditions of high competitive intensity, the impact of TMT shared vision on organizational flexibility is stronger than under low competitive intensity. Competitive intensity refers to the degree of competition that firms face in their industry. A higher degree of competitive intensity corresponds with greater rivalry among incumbents and typically manifests itself through price wars, more advertising and product introductions, added services and generally more transactions (Li, Poppo and Zhou, 2008).

Under conditions of high competitive intensity, the frequency whereby informational inputs are needed and be shared among TMT members to facilitate decision making is much higher in order for the firm to benefit from short-lived opportunities that are inherent to dynamic, competitive environments (Ensley, Pearson, and Amason, 2002). Particularly under such conditions, individual TMT members may have conflicting or contradictory visions about the future of the firm. TMT’s with a shared vision developed a common platform for information and resource exchange where a set of shared objectives contribute to a collective understanding of how TMT members might resolve contradictory agendas in a timely and effective manner (Orton and Weick, 1990; Sinkula, Baker, and Noordewier, 1997) that increase decision making flexibility. The more effective processing of information and resulting decision making flexibility by TMT will enable the firm to adapt its organizational structure to the changing conditions in the marketplace (Galbraith, 1974). Under these more competitive and uncertain conditions new information becomes important to facilitate adjustments in subunit structure and coordination and control mechanisms (Tushman and Nadler, 1978).

In contrast, in the absence of strong competitive pressures in the marketplace, a shared vision among TMT members may cause senior executives to engage in information acquisition and sharing that does not challenge or disturb the status quo (Van Ginkel and Knippenberg, 2008), and consequently will lead to lower levels of organizational flexibility. Hence we expect that:

*Hypothesis 4: Competitive intensity positively moderates the relationship between TMT shared vision and organizational flexibility.*

**TMT social integration.** In general, we anticipate TMTs that get along well, aim for consensus, avoid or resolve conflicts, and that use informal communication methods will be more open to change, more competent in creative problem solving, and more capable to take decisive strategic action (Eisenhardt and Bourgeois, 1988).

Under conditions of increased competition, where the need to acquire, share and interpret external information is more acute, socially integrated TMTs working as a cohesive team, are better able to exchange relevant and timely information to enact organizational flexibility (Tushman and Nadler, 1978) and attain more flexibility in its decision making process (Sharf and Dean, 1997). Indeed, Hambrick (1998) suggested that TMT social integration facilitates implementation of organizational change triggered by e.g. more intense competitive conditions, with TMT members serving as advocates for change. He argues that TMT members of a socially integrated team effectively and efficiently disseminate information throughout the organization to support the need for challenging the status quo. In line with these prior studies, we argue that under conditions of high competition that demand changes at the organizational level to respond to competitors’ actions, socially integrated TMTs serve as “advocates for change” (Hambrick,

1998) or “internal change agents” (Birkinshaw, Hamel, and Mol, 2008) that can effectively enact organizational adaptation to make the firm more flexible. Therefore we expect:

*Hypothesis 5: Competitive intensity positively moderates the relationship between TMT social integration and organizational flexibility.*

**TMT political ties.** Increased competitive intensity results in more constraints in terms of pricing of products and services and has a punishing effect on inefficient business practices. In such an environment, the value of political ties of the TMT is diminished for several reasons. First, as competition intensifies, information transferred through (political) ties becomes redundant, which decreases the information benefits of access, timing, and referrals brokered through ties (Burt, 1997). Second, in highly competitive markets, firms need market-related information to cope with changing customer needs, competitor moves and changes in strategies to forecast future competitive scenarios (Wang et al, 2011). Third, information that government agencies provide is aggregated and dated, such that this kind of information becomes less valuable in highly dynamic, competitive markets (Glazer and Weiss, 1993). Therefore, under conditions of intense competition, the information obtained through political ties offers limited insights into how firms should adapt their organization, i.e. enact organizational flexibility, to meet changing environmental conditions. Hence we expect that:

*Hypothesis 6: Competitive intensity negatively moderates the relationship between TMT political ties and organizational flexibility.*

**METHODOLOGY**

**Data**

Our survey instrument, with Likert scales, includes questions about firm characteristics, TMT attributes and firm flexibility (i.e. organizational and technological flexibility). The questionnaire was completed by relevant personnel such as the company’s president, general manager and other executives (deputy general manager or strategic development manager).

In order to construct a large and valid dataset, we first scanned a range of data sources to identify firms for the sample frame, and then employed a random sampling approach to collect data. Based on this approach, a sample was drawn from various data sources including the Economic Development Zone in Shanxi Province, the Fudan University Alumni Association, and the Zhejiang University Alumni Association. The associations’ networks ensure access to appropriate respondents, facilitate accuracy in the interpretation of the survey instrument, and

assure data quality. We requested the administrators and staff in the three organizations above to randomly distribute questionnaires to the directors of firms, located in Shanxi Province and China's Yangtze River Delta Region such as Shanghai, Hangzhou, Nanjing, Wuxi, and Ningbo, to respond to our survey. Due to budgetary constraints, we randomly selected 900 ventures from the three organizations, 230 firms come from the Economic Development Zone in Shanxi Province, 350 firms come from the Fudan University Alumni Association, and 320 firms come from the Zhejiang University Alumni Association. We implemented the survey through surface mail which includes a personalized letter, the survey, and a return envelope with an individually typed return address. From the initial mailing, 55 mailing packages were returned due to undeliverable addresses or names, reducing the sample size to 845. After sending follow-up letters, we received a total of 181 completed and usable questionnaires, representing a response rate of 20.11%. To increase the response rate, we conducted an additional wave of surveys to seek participation of the rest of non-responding firms using priority mail. After a follow-up, we received an additional 46 completed and usable questionnaires from this second data collection effort. The total usable surveys were 227 (a total response rate of 25.22%).

The final sample consists of 227 firms. Among them, 65 firms (28.63%) come from the Economic Development Zone in Shanxi Province, 87 firms (38.33%) come from the Fudan University Alumni Association, and 75 firms (33.04%) come from the Zhejiang University Alumni Association. About 74 firms (32.6%) operate in the high-tech industry (IT hardware and software, pharmacy, etc.), 72 firms (31.7%) are in traditional manufacturing (mechanical engineering, textiles, materials etc.), 13 firms (5.73%) in real estate (construction, developer, etc.), 68 firms (29.52 %) in services industries (transportation, financial services, etc.). Regarding the ownership structure, among the 227 firms in the sample, 44 are state-owned, 8 collective-owned, 105 privately-owned, 68 foreign-owned, and 2 owned by other types of owners. In addition, among the 227 firms, 38 of them are no more than 5 years old, 58 are between 6 and 10 years old, 44 are between 11 and 15 years old, 20 are between 16 and 20 years old, and 67 are more than 20 years old. Also, among the 227 firms, 45 of them have no more than 50 employees, 28 have between 51 and 100 employees, 56 have between 101 and 500 employees, 23 have between 501 and 1000 employees, and 75 have more than 1000 employees.

**Study Measures**

Appendix A presents the scale items used to measure each construct. Deleted items are marked in the table by an asterisk. The end points for each scale item ranged from 1 (Strongly Disagree) to 6 (Strongly Agree) for all activities pertaining to TMT socio-psychological processes, organizational flexibility, and technological flexibility.

**Independent variables.** *TMT shared vision* is based on a five-item scale developed by Tsai and Ghoshal (1998) and Sinkula, Baker, and Noordewier (1997). The items assess the extent to which TMT members share a common purpose, vision, and goals within an organization. Our confirmatory factor analyses led us to drop one problematic item. The reason for dropping the item may be due to the fact that it is reverse coded. *TMT social integration* is adapted from a seven-item scale developed by O’Reilly et al. (1989) and Smith et al. (1994). The items in this scale address whether TMT members engage in processes to get together, cooperate, and care for each other. In this case our confirmatory factor analyses led us to drop three problematic items. Two of the three items dropped are reverse coded and this may be the reason. The third dropped item may be due to the fact that defense of other members against criticism may not be a strong indicator of social integration because it all depends on what kind of the criticism it is. *TMT political ties* is adapted from a one-item scale developed by Collins and Clark (2003).

**Dependent variable.** Technological flexibility is adapted from a four-item scale developed by Tamayo-Torres et al. (2010) and Pagell and Krause (2004). The items in this scale address whether the firm’s technology and manufacturing system enables variety in the development and production of new products and existing products (new product and product mix flexibility).

**Mediating variable.** Organizational flexibility is based on a four-item scale developed by Liu, Li, and Wei (2009), Zolin, Kuckertz, and Kautonen (2011), and Tamayo-Torres, Ruiz- Moreno, and Verdu (2010). These items address the extent to which the firm can easily adapt its structure to adjust information, resources and structural relationships. Based on our confirmatory factor analyses, one item from this scale was dropped because the word operating mode may not directly be linked to the organizational flexibility.

**Moderating variable.** The moderator variable considered in this study is competitive intensity, and is a four-item scale variable adapted from Jaworski and Kohli (1993). This variable measures the presence of price wars in the industry, the speed by which competing product introductions or price changes can be matched in the industry, and the relatively strength of competitors in the industry. Two items are dropped because they were too general to describe the competition in the environment.

**Control variables.** The control variables include firm age measured by five levels, firm size measured by five levels, and TMT size as the number of executives, firm location by a dummy variable of whether the company headquarters is located in inner regions in China or along the coast, and the industry growth variable measured by four levels. From the behavioral decision making standpoint, organizational size and age have long been considered impediments to decision making and strategic flexibility as it affects the way how organizations interact with the environment and should therefore be included as control variables (Kelly and Amburgey, 1991; Debruyne, Frambach, and Moenaert, 2010). TMT size is important to control for since larger TMTs can reduce information processing load (Henderson and Fredrickson, 1996) although it may affect conflicts within the team and subsequently affect decision making (Amason and Sapienza, 1997). Finally, China is a rapidly developing country and the growth is uneven between the coastal and inner (middle and western regions) areas. Thus, geographic location and stage of industry growth may affect levels of local competition and therefore the need for strategic flexibility (Yang, Wang, Zhu and Wu, 2012).

As with all self-reported data, there is a potential for common method bias resulting from a single respondent (Podsakoff et al, 2003; Podsakoff and Organ 1986). First, we use the Harman’s single-factor test in which all items from the constructs load onto factors to determine whether the majority of the variance can be account for by one general factor. The results suggest that the model does not achieve acceptable fit, suggesting that all items do not belong to any single common method factor. Second, we adopt a more rigorous approach by controlling for the

effects of an unmeasured latent method factor (Podsakoff et al, 2003). Here the items are allowed to load on their theoretical constructs as well as on the latent common method factor. The results suggest that the mode does not achieve acceptable fit either due to the negative variance. The factor loadings also indicate that none of the items have significant coefficients to the latent common method factor.

**Analyses**

To test our research hypotheses, we followed the two-step approach for structural equation modeling recommended by Anderson and Gerbing (1988). In the first step, we assessed and validated the psychometric properties of the measurement model and purified the measures. In a second step we estimated the structural equation model depicted in Figure 1.

**Measurement Model**

We began with a series of confirmatory factor analyses designed to identify problematic items. After deleting these items, we evaluated the final measurement model on four criteria: convergent validity, discriminant validity, uni-dimensionality and reliability. The results, which are summarized in Table 1, indicate that the measurement model fits the data well. In particular, the overall fit indices all exceed the critical level of 0.90 (CFI = 0.97, TLI = 0.97, IFI = 0.97). In addition, RMSEA is less than the critical level of 0.10 (RMSEA = 0.06) and the ratio χ2/ d.f. is less than 2 (χ2 = 213.06, DF = 125). The standardized loadings of all measurement items are highly significant, demonstrating adequate convergent validity.

<< Insert Table 1 about here >>

Examination of the modification indices, residuals, and overall fit indices reveal no substantial departures from uni-dimensionality. The construct reliabilities are reported in Table

1. The Cronbach Alpha’s range from 0.82 to 0.95, indicating that the measures are highly reliable. Examination of the pattern of standardized residuals further indicates that there is no deviation from the external consistency criteria of Anderson and Gerbing (1988).

To assess discriminant validity, we first computed the square root of the average variance explained for each construct (Table 1). For each construct, the relevant square root of the average variance explained is larger than the correlation between any pair of the two constructs in this study, indicating that the constructs have discriminant validity (Fornell and Larcker, 1981). In particular, our analysis clearly indicated that the three dimensions of the TMT were distinct constructs. In addition, we assessed the discriminant validity by comparing the one-factor vs. two-factor model for each pair of the constructs (Bagozzi, Yi, and Phillips, 1991). The results suggest that chi-square difference between one-factor and two-factor model in each corresponding cell is always significant at 1%. Thus, the two-factor model is always significantly better than one-factor mode, which supports discriminant validity.

**RESULTS AND DISCUSSION**

Descriptive statistics (Table 2) indicate that 5% of the firms in the sample operate in an emerging industry, 37% in a growing industry, 53% in a mature industry and another 4% in a declining industry. Firm size and age averaged 3.24 and 3.09 on a scale from 1 to 5, and the average TMT had 6.56 members. Around 33% of firms are located in China’s inner regions.

<<Insert Table 2 about here>>

To test Hypotheses 1 to 3, we run the structural equation model using the full sample along with the mediation analysis. The goodness-of-fit statistics suggest that the full structural model fits the data well. Because the theoretical model treats organizational flexibility as a mediator, we also adopted a test to verify the existence of a mediator and the associated direct, indirect, and total effects. While scholars have used the traditional method proposed by Baron and Kenny (1986) which includes four steps, Shrout and Bolger (2002) have pointed out several problems with Baron and Kenny’s (1986) approach. For example, the first step for establishing the relationship between predictor and the outcome is not necessary. Also, the Baron and Kenney method does not provide a statistical test of the magnitude and significance level of the mediating effect. Shrout and Bolger (2002) have also stressed the use of confidence intervals for assessing the significance level in testing mediating effects. Using the AMOS bootstrap method, we generate the total, direct and indirect effects. The significance of the indirect effect suggests a mediating impact. The results are shown in Table 3 and Figure 2.

<< Insert Table 3 & Figure 2 about here >>

H1 hypothesized that organizational flexibility mediates the relationship between TMT shared vision and technological flexibility. The results in Figure 2 show that TMT shared vision does not have a significant impact on organizational flexibility (β = 0.14, p > 0.10). The mediation test in Table 3 also suggests that TMT shared vision does not have significant indirect effect on technological flexibility. Thus, H1 is not supported. It is interesting to note that shared vision does have a direct and positive impact on technological flexibility (β = 0.22, p < 0.05).

In H2, we predicted that organizational flexibility mediates the relationship between TMT social integration and technological flexibility. The results in Figure 2 show that TMT social integration positively impacts organizational flexibility (β = 0.65, p < 0.01) which in turn has a positive effect on technological flexibility (β = 0.65, p < 0.01). The mediation test in Table

3 also suggest that TMT social integration’s indirect effect on technological flexibility equals to the total effect, implying that organizational flexibility fully mediates the relationship between TMT social integration and technological flexibility. Thus, H2 is strongly supported.

In H3, we hypothesized that organizational flexibility mediates the relationship between TMT political ties and technological flexibility. The results in Figure 2 show that TMT political ties positively impact organizational flexibility (β = 0.14, p < 0.01). The mediation test in Table

3 also suggests that the indirect effect of TMT politic ties on technological flexibility is significant (β =0.09, p<0.01) whereas the direct effect is not significant, implying that organizational flexibility fully mediates the relationship between TMT political ties and technological flexibility. Thus, H3 is strongly supported.

To test the moderating hypotheses H4-H6, we first split the sample into two groups based on whether the firm operates in a low competition environment (N=97) or a high-competition environment (N=130). As described above, the intensity of competitive environment is measured by multiple items. Thus, we first calculated the mean value of the selected items. Then, we use the mean value to divide the sample into low vs. high competition environment groups. We then compared the unconstrained models with a series of single- constraint models, each of which forced one model coefficient to be equal across the two groups. (Anderson and Gerbing, 1988) (see Figure 3). The goodness-of-fit statistics suggest that the two- group full structural model fits the data well.

<< Insert Figure 3 about here >>

With regard to between-group differences, in H4 we hypothesized that competitive intensity positively moderates the relationship between TMT shared vision and organizational flexibility. Our analysis indicates that the relationship between shared vision and organizational flexibility is positive and higher for firms in a low competition environment (χ2(1) = 4.55, p<0.05; βlow = 0.45, p<0.01; βhigh = -0.09, p>0.10). Therefore, H4 is not supported. In H5, we hypothesized that competitive intensity positively moderates the relationship between TMT social integration and organizational flexibility. Our analysis indicates that the relationship between social integration and organizational flexibility is significantly higher for firms operating in high competition environment (χ2(1) = 3.34, p<0.10; βlow = 0.27, p>0.10; βhigh = 0.85, p<0.01). Therefore, H5 is supported.

In H6, we hypothesized that competitive intensity negatively moderates the relationship between TMT political ties and organizational flexibility. The model comparison indicates that there is no difference in the relationship between TMT political ties and organizational flexibility under either level of competitive intensity. Therefore, H6 is not supported.

We also conducted a mediation test within the two-group analysis framework. The results are also shown in Table 3. Only under the low competition condition, organizational flexibility mediates the impact of shared vision on technological flexibility. Also, in the lower competition condition, neither TMT social integration nor political ties have a direct or indirect impact on technological flexibility. In contrast, under the high competition condition, organizational flexibility mediates the effects of both social integration and political ties on technological flexibility, which is consistent with H2 and H3. Also, under the high competition condition, TMT shared vision only has a direct impact on technological flexibility. Therefore, we conclude that only under the high competition condition, the results of the mediating analysis are fairly consistent with the main effect model.

**DISCUSSION**

In this study we sought to investigate the direct and contingent impact of three salient TMT attributes on a firm’s strategic flexibility which we conceptualize as consisting of organizational and technological flexibility. We argue that organizational flexibility mediates the impact of the TMT attributes on technological flexibility. Viewing the TMT as an information processing unit that gathers, shares, and interprets environmental data and subsequently initiates steps to alter the degree of flexibility of a firm, we found some interesting results.

Considering the direct effects of the three TMT attributes on organizational flexibility, our empirical results confirm that more socially integrated TMTs and TMTs with political ties are in a better position to attain higher degrees of organizational flexibility. Consistent with the information processing theory, this result implies that these teams function as very well- integrated information processing systems that efficiently and effectively acquire, share, and interpret environmental data that allow them to make very well informed decisions as how the organization needs to be redesigned and restructured to achieve a high degree of organizational flexibility. These results confirm the benefits predicted by upper echelon theory of socially integrated TMTs and TMTs with political connections in making their decision making process more flexible (Carmeli and Schaubroeck, 2006; Smith et al, 1994) which is a pre-condition to making the firm more flexible from an organizational perspective. Moreover, our results suggest that the impact of TMT social integration and political ties on the degree of technological flexibility is strongly mediated by the degree of organizational flexibility, which would confirm Lei’s et al. (1996) theorizing on changes in organization design before implementing technologies that facilitate technological flexibility such as AMT, FMS, 3D-Manufacturing.

Socially integrated TMTs tend to be both friendly and cooperative, and members of such a team are more trusting and flexible. Highly socialized and cohesive TMTs effectively exchange information, have lower levels of internal strife or conflict, and are in a position to facilitate the adaptation of the organization to new circumstances in the market. Thus, although TMT social integration may, in extreme cases, lead to “groupthink”, very positive outcomes such as improved internal operations, and commitment to implementation can be achieved (Smith et al,1994). In general, our results suggest that socially integrated TMTs serve as effective information acquisition, sharing, and interpretation mechanisms that facilitate the speedy implementation of organizational flexibility that ultimately enhances technological flexibility.

The political ties of the TMT contribute to higher degrees of organizational flexibility and in turn technological flexibility. TMTs with strong political ties can enhance the access to and interpretation of relevant information provided by government officials in China. These *guanxi* relationships enable TMTs to effectively acquire and utilize confidential information on changes in government policy, which enhances a TMT’s decision making flexibility and informs their decisions on how to increase the degree of organizational flexibility and in turn technological flexibility to meet these changes.

Surprisingly, a TMT’s shared vision for the firm neither impedes nor facilitates the firm’s effort in attaining the desired degree of organizational flexibility. However, TMT shared vision does have a positive and direct impact on technological flexibility. Therefore, this result suggests that TMT’s shared vision can impact the implementation of flexibility in product development, technologies, and product lines directly. One plausible reason for this finding is that the vision of the firm can be realized directly through different product and technology mixes, and newer products that are superior in meeting customer needs.

With regard to the contingent role of competitive intensity, our results suggest that TMT’s socio-psychological processes can serve as more or less effective antecedents to strategic flexibility. First, intense competition amplifies the positive impact of TMT social integration on the degree of organizational flexibility consistent with our expectations. That is, TMTs that get along well, aim for consensus, quickly resolve conflicts, and use informal communication techniques will be more open to change and more competent in creative problem solving under highly competitive conditions in line with upper echelon theory (Chen et al, 2010). Under intense competitive conditions, TMT’s need to acquire, process and share more information to enhance their decision making flexibility in order to adjust their structural coordination and control mechanisms i.e. organizational flexibility, and in turn, their technological flexibility. A socially integrated TMT will be more successful in performing these tasks and in enacting organizational and technological flexibility than a more socially fractured TMT where members do not cooperate, get along well and even view each other as competitors. In contrast, in low competition environments, there is a much lower need to acquire, process and share information and the information that is processed is geared to maintaining the status quo, which implies a much lower level of organizational flexibility.

Surprisingly, we do not find any significant moderating effect of competitive intensity on the relationship between a TMT’s political ties and organizational flexibility. Under conditions of low competitive intensity, there is little pressure for firms to make organizational structures and technological systems adapt to changes in the market, regardless of whether the TMT has strong political ties or not. However, under conditions of high competitive intensity the information-related benefits of political ties that enhances organizational flexibility is canceled out by the negative impacts of TMT’s spending time acquiring, sharing, and interpreting non-market related and outdated information that affects technological flexibility as our results demonstrate.

Furthermore, the positive impact of shared vision on organizational flexibility under low competitive conditions indicates the existence of a mediating role of organizational flexibility. It implies that TMTs’ facing a less competitive market environment and collectively agree on the firm’s goals have less time pressure and can first make changes to the structure of the organization to accommodate changes in its technological infrastructure to develop new products and technologies that respond to changing customer needs. In contrast, TMTs’ facing intense competition and that have a unified vision can positively affect technological flexibility directly.

**Theoretical and Managerial Implications**

Based on upper echelon theory, scholars have extensively studied TMTs’ demographic attributes. This study, building on information processing theory, focuses on three key TMT socio-psychological attributes and their influences on strategic flexibility. In addition to demographic factors, socio-psychological attributes have a significant impact on how firms respond to changes in their environment (Jansen et al, 2008). Thus, this study advances our understanding of how interaction processes between members of the TMT can affect decision making flexibility to enact strategic flexibility.

In addition, we found different elements of TMT cohesiveness (TMT shared vision and TMT social integration) play different roles in stimulating decision making flexibility through information acquisition, processing and sharing, and in enhancing strategic flexibility, depending on the competitive conditions in the marketplace.

Furthermore, the theoretical framework also provides additional insights into the nature and composition of the flexibility construct. First, previous research has focused on strategic flexibility as an all-encompassing representation of firm flexibility (Nadkarni and Herrmann,

2010; Nadkarnai and Narayanan, 2007; Zhou and Wu, 2010). This study conceptually distinguishes between organizational and technological flexibility and established that the former should precede the latter in order to accomplish a desired degree of flexibility which may be a more precise representation of what firm flexibility is. Second, the study establishes a direct link from a flexible organizational design to a flexible product mix consisting of changes to existing products and totally new products. From an information processing perspective, organizational structure affects the way information has been acquired, shared, and interpreted, and ultimately converted into a specific organizational outcome, i.e. technological flexibility by the TMT.

In terms of managerial implications, this study suggests that TMT composition plays a significant role in facilitating the strategic flexibility of a firm. More specifically, TMT cohesiveness represented in this study by TMT social integration and TMT shared vision has a significant total impact on technological flexibility. This implies that TMTs should be designed in such a way that they are composed of individuals that have agreed on a set of overall long-term goals for the firm, that get along well, that collaborate and do not have hidden agendas. Especially in highly competitive markets are the two TMT attributes mentioned above critical to enact strategic flexibility. In terms of magnitude TMT ties to government officials has a very marginal positive impact on strategic flexibility, and is therefore not a ‘must have’ attribute for TMT’s seeking to significantly enhance their strategic flexibility.

The research design employed in this study has some obvious limitations, which offers fruitful directions for future research. First, the data is only collected from a single respondent which creates the possibility of single response bias. Second, the research is based on a survey. Future research should employ a longitudinal approach to tease out the reverse causality issue. And third, we considered only two types of flexibility. Future research can include other functional flexibilities.

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**TABLE 1**

**Measurement Model Summary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Construct | Measurement Item | Factor Loading | Cronbach’s Alpha | Average Variance Explained (AVE) |
| Shared Vision  (SHVS) | SHVS 1 | 0.88 | 0.95 | 0.91 |
| SHVS 2 | 0.91 |
| SHVS 3 | 0.93 |
| SHVS 4 | 0.90 |
| Social Integration  (SOIN) | SOIN 2 | 0.78 | 0.90 | 0.84 |
| SOIN 3 | 0.89 |
| SOIN 4 | 0.90 |
| SOIN 7 | 0.79 |
| Organizational Flexibility (ORFX) | ORFX 1 | 0.69 | 0.82 | 0.78 |
| ORFX 3 | 0.84 |
| ORFX 4 | 0.81 |
| Technological Flexibility (TEFX) | TEFX 1 | 0.89 | 0.91 | 0.85 |
| TEFX 2 | 0.87 |
| TEFX 3 | 0.81 |
| TEFX 4 | 0.81 |
| Competitive Intensity (COMP) | COMP2 | 0.81 | 0.83 | 0.79 |
| COMP3 | 0.80 |
| COMP5 | 0.76 |

Note: (1) All the factor loadings are significant at p<0.01 level; (2) χ2 = 213.06, DF = 125, CFI = 0.97, TLI = 0.97, IFI = 0.97, RMSEA = 0.06.

**TABLE 2**

**Descriptive Statistics**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1.Shared Vision | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.Social Integration | 0.77 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.Organizational Flexibility | 0.47 | 0.54 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| 4.Technological Flexibility | 0.50 | 0.50 | 0.64 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 5.Political Ties | 0.03 | 0.03 | 0.19 | 0.09 | 1.00 |  |  |  |  |  |  |  |  |  |
| 6.Competitive Intensity | 0.10 | 0.26 | 0.22 | 0.23 | 0.29 | 1.00 |  |  |  |  |  |  |  |  |
| 7.Emerging Industry | 0.11 | 0.09 | 0.12 | 0.04 | 0.03 | 0.00 | 1.00 |  |  |  |  |  |  |  |
| 8.Growing Industry | 0.03 | 0.03 | -0.07 | -0.18 | -0.04 | -0.11 | -0.18 | 1.00 |  |  |  |  |  |  |
| 9.Mature Industry | -0.01 | -0.01 | 0.05 | 0.19 | 0.04 | 0.06 | -0.25 | -0.82 | 1.00 |  |  |  |  |  |
| 10.Declining Industry | -0.17 | -0.16 | -0.08 | -0.07 | -0.04 | 0.11 | -0.05 | -0.17 | -0.23 | 1.00 |  |  |  |  |
| 11.Firm Size | -0.02 | -0.02 | 0.01 | 0.16 | 0.09 | 0.03 | -0.30 | -0.17 | 0.33 | -0.06 | 1.00 |  |  |  |
| 12.Firm Age | 0.02 | 0.04 | 0.13 | 0.19 | 0.05 | 0.09 | -0.28 | -0.24 | 0.32 | 0.07 | 0.70 | 1.00 |  |  |
| 13.TMT Size | -0.08 | -0.06 | 0.00 | 0.06 | 0.04 | -0.01 | -0.14 | -0.03 | 0.12 | -0.08 | 0.39 | 0.31 | 1.00 |  |
| 14. Inner Region dummy | 0.02 | 0.08 | 0.15 | 0.00 | 0.02 | 0.14 | 0.09 | 0.04 | -0.12 | 0.12 | -0.15 | 0.00 | -0.08 | 1.00 |
| Mean | 4.65 | 4.52 | 4.07 | 4.33 | 3.60 | 3.93 | 0.05 | 0.37 | 0.53 | 0.04 | 3.24 | 3.09 | 6.56 | 0.33 |
| Std Dev | 0.85 | 0.81 | 0.94 | 0.90 | 1.18 | 1.08 | 0.22 | 0.49 | 0.50 | 0.21 | 1.51 | 1.48 | 3.79 | 0.47 |

Note: The correlation coefficients with the absolute number larger than 0.13 are significant at p<0.05 level. Firm age is measured by a categorical variable as “1 = no more than 5 years; 2 = 6-10 years; 3 = 11-15 years; 4 = 16-20 years; 5 = >20 years”. Firm size is also measured by a categorical variable as “1 = no more than 50; 2 = 51-100; 3 = 101-500; 4 = 501-1000; 5 = more than 1000”. Inner region dummy is a dummy variable indicating whether your firm is located in inner regions (middle and western regions) or not in China.

**TABLE 3**

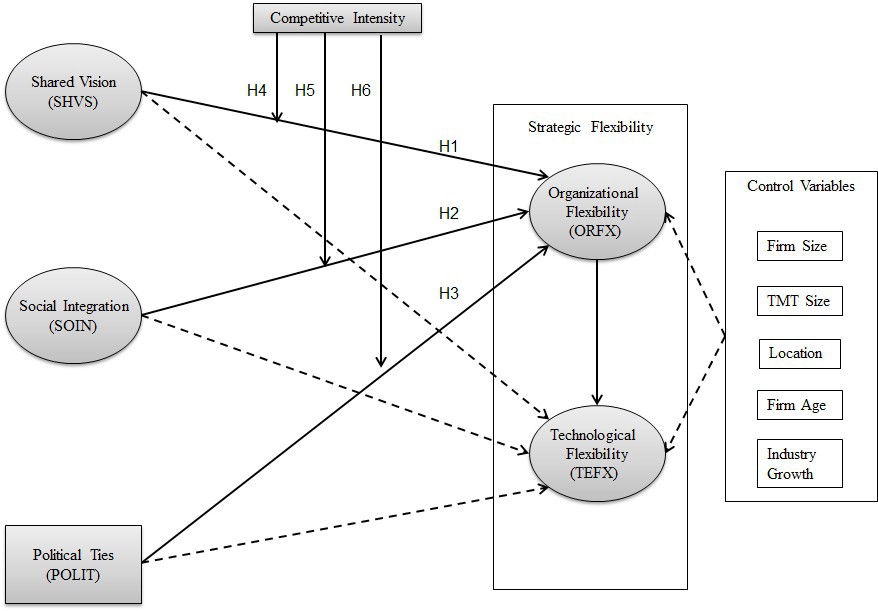
**Total Effects, Direct Effects, and Indirect Effects**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total Effects** | **Direct Effects** | **Indirect Effects** |
| **Main Effect in Fig. 2 (N = 227)** |  |  |  |
| Shared vision (SHVS) | **0.31** | **0.22** | 0.09 |
| Social integration (SOIN) | **0.42** | 0.00 | **0.42** |
| Political ties (POLIT) | 0.05 | -0.04 | **0.09** |
| **Low Competition Group (N = 97)** |  |  |  |
| Shared vision (SHVS) | **0.53** | 0.24 | **0.29** |
| Social integration (SOIN) | 0.15 | -0.02 | 0.17 |
| Political ties (POLIT) | 0.00 | -0.04 | 0.05 |
| **High Competition Group (N = 130)** |  |  |  |
| Shared vision (SHVS) | 0.22 | **0.28** | -0.06 |
| Social integration (SOIN) | **0.51** | -0.07 | **0.58** |
| Political ties (POLIT) | 0.01 | **-0.10** | **0.11** |

Note: (1) Bootstrap: number of bootstrap samples = 1000, 90% bias-corrected confidence interval; (2) The numbers in bold are at least significant at p<0.05, the significant indirect effects suggest the existence of mediating effect.

**FIGURE 1**

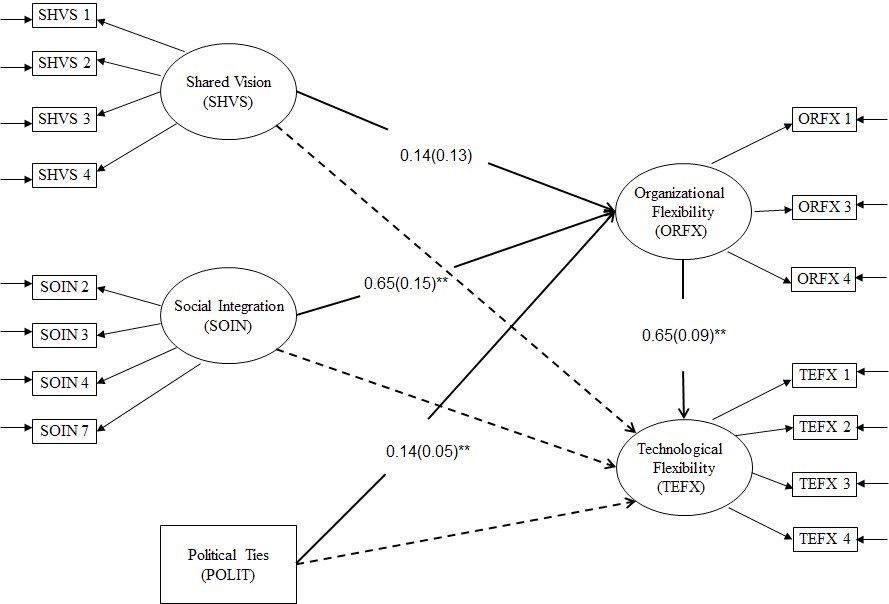
**Conceptual Model**



Note: (1) All dashed lines and solid lines are included for analyzing the model; (2) For the sake of simplicity, the results reported in the sequent tables and figures are only for the solid lines; H4, H5, and H6 illustrate the moderating effects.

**FIGURE 2**

**Hypotheses Testing on the Full Structural Equation Model: Full Sample**

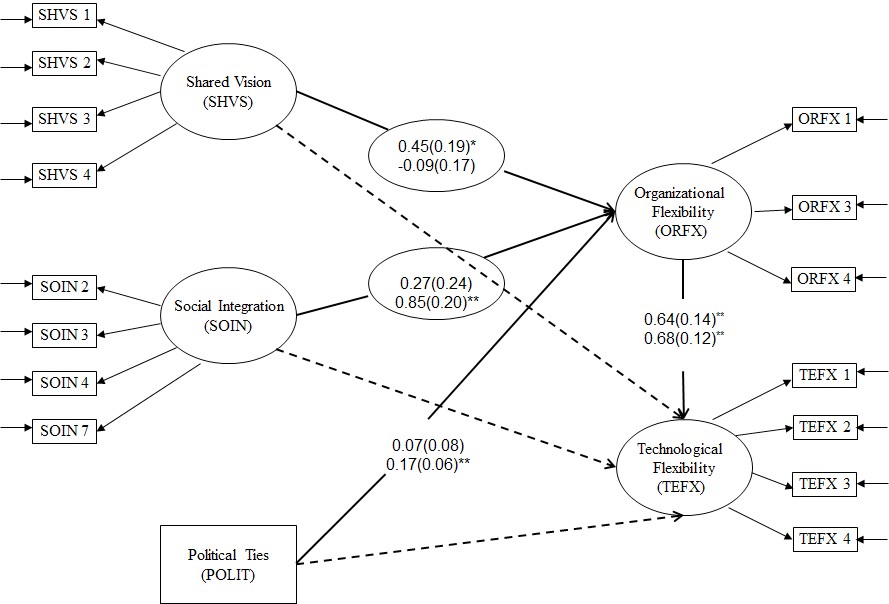


Note: (1) χ2 = 276.28, d.f. = 179, GFI = 0.91, CFI = 0.97, IFI = 0.97, RMSEA = 0.05; (2) +: p<0.10, \*: p<0.05, \*\*:

p<0.01, the graph only shows the results of solid lines (H1, H2, and H3) in Figure 1.

**FIGURE 3**

**Hypotheses Testing on the Two Groups: Competitive Intensity as Moderator**



Note: (1) χ2 = 535.54, d.f. = 358, GFI = 0.84, CFI = 0.95, IFI = 0.95, RMSEA = 0.05; (2) +: p<0.10, \*: p<0.05, \*\*: p<0.01; (3)The top number is for the group operating under low competition (N = 97); the bottom number is for the group operating under high competition (N = 130); Circled pairs of coefficients indicate that coefficients are different at p<0.10 across two groups.

**APPENDIX**

|  |  |  |
| --- | --- | --- |
| Construct | Item | Measurement |
| Shared Vision | SHVS 1 | There is commonality of purpose in my senior team |
|  | SHVS 2 | There is total agreement on our organizational vision |
|  | SHVS 3 | All senior team members are committed to the goals of this organization |
|  | SHVS 4 | People are enthusiastic about the collective goals and mission of the whole organization |
|  | SHVS 5 | Our senior team lacks a clearly defined collective vision [inverse coded] (\*) |
| Social Integration | SOIN 1 | The members of the senior team are quick to defend each other from criticism by outsiders (\*) |
|  | SOIN 2 | Everyone’s input is incorporated into most important company decisions |
|  | SOIN 3 | The members of the senior team get along together very well |
|  | SOIN 4 | The members of the senior team are always ready to cooperate and help each other |
|  | SOIN 5 | When final decisions are reached, at least one member to be unhappy with the decision [inverse coded] (\*) |
|  | SOIN 6 | There is a great deal of competition between members of the senior team [inverse coded] (\*) |
|  | SOIN 7 | The members of the senior team really stick together |
| Political Ties | POLIT | We often take informal approaches to interact with government such as gaining information and lobbying. Scales: 1 – 6 |
| Organizational Flexibility | ORFX 1 | The firm often finds new uses for existing main resources through communication between units |
|  | ORFX 2 | The operating modes in the company can adapt to new team, unit, and project quickly (\*) |
|  | ORFX 3 | Flexibility in response to changes is a characteristic of our working relationship |
|  | ORFX 4 | The firm takes actions in re-formulating current strategies quickly when market conditions or competition require it |
| Technological Flexibility | TEFX 1 | The existing technologies in the firm can enable a large number of operations to produce new product/service |
|  | TEFX 2 | The existing technologies in the firm can offer new products easily and quickly with changes in production tasks |
|  | TEFX 3 | The existing technologies can effectively implement minor changes in current products to meet changing needs |
|  | TEFX 4 | The ability of a manufacturing system to effectively produce a wide variety of different products |
| Competitive Intensity | COMP1 | Competition in our industry is intense (\*) |
|  | COMP2 | There are many “price wars” in our industry |
|  | COMP3 | Anything that one competitor can offer, others can match readily |
|  | COMP4 | New competitive move almost every day (\*) |
|  | COMP5 | Our competitors are relatively weak [inverse coded] |
| Firm Age |  | What is the age of your firm? 1 = no more than 5 years; 2 = 6-10 years; 3 = 11-15 years; 4 = 16-20 years; 5 = >20 years |
| Firm Size |  | How many employees in your firm? 1 = no more than 50; 2 = 51-100; 3 = 101-500; 4 = 501-1000; 5 = more than 1000 |
| TMT Size |  | How many top executives in your firm? |
| Firm Location |  | Is your firm located in inner regions (middle and western regions)? |
| Industry Growth |  | Which of the stages is your industry in? 1 = emerging, 2 = growing, 3 = mature, 4 = decline. |

Note: the items with \* notation are deleted.