

Top Management Team Cohesion and Superior Industry Returns

AN EMPIRICAL STUDY OF THE RESOURCE-BASED VIEW

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Empirical research of the resource-based view (RBV) is still in its embryonic stages. Existing studies show that certain resources are associated with firm performance, that firms appear to be unique bundles of resources, and that some resources appear relatively immobile—thus lending support to RBV's main premise and its two assumptions. Another important step in systematically testing RBV is to test its main prescription that strategic assets (SAs) are sustainable sources of superior returns. The current research argues that top management team cohesion (TMTC) possesses the characteristics of an SA. Then, in a longitudinal study of 81 classroom simulation teams functioning as the top management teams of competing airlines, the authors show that TMTC is significantly associated with superior returns during the second half of the simulation. Hence, the results lend support to RBV.

Keywords: resource-based theory; strategic assets; team cohesion; simulation; sustainable competitive advantage

According to the resource-based view (RBV), resources and capabilities are the main drivers of sustainable competitive advantage, particularly those that are simultaneously valuable, rare, difficult and costly to imitate, and non-substitutable (Barney, 1991b), called strategic assets (SAs) (Amit & Schoemaker, 1993). Since its inception (Wernerfelt, 1984), RBV has received considerable attention in the strategy literature, indicating some consensus as to its viability as an alternative explanation of superior industry returns (SIR) (Mauri & Micheals, 1998). Unfortunately, empirical testing of RBV is still in the developmental stages.

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This study tests RBV's main prescription (RBVmp) using a strategic management simulation involving 81 teams of senior-level undergraduate business students functioning as top management teams of competing airline companies, to examine the degree to which top management team cohesion (TMTC) can develop into a sustainable source of SIR. We selected TMTC as our major predictor variable for five reasons. First, TMTC appears to simultaneously possess all of the characteristics of an SA. Second, TMTC is a variable that exists in firms across many industries. Third, because TMTC is a socially complex, changing resource, its impact on relative performance can be studied over time. Fourth, little research has examined the relationship between TMTC and firm performance. Fifth, organizations often invest in expensive initiatives to enhance TMTC. Therefore, it is important to determine whether these investments are well spent.

This study makes two major contributions. First, it examines a socially complex, intangible resource that appears to meet RBV's criteria for being an SA, thereby providing a good test of RBVmp. Second, although a great deal of research has been conducted on team cohesion, only a minority of that work has examined intact work teams, and very few studies have examined the relationship between TMTC and firm performance.

RBV OF THE FIRM

RBV's premise is that resources are the main determinant of firm performance, based on the assumptions that firms are unique bundles of resources and that resources are relatively immobile (Barney, 1991a). Barney (1991a) defines resources as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable a firm to conceive of and implement strategies that improve its efficiency and effectiveness" (p. 101). Capabilities and processes are included in the definition because they are merely sets of resources used to perform integrated tasks (Amit & Schoemaker, 1993). In other words, resources are single assets (e.g., a firm's reputation) or bundles of assets (e.g., a firm's information system) that develop over time and can bestow probable future economic benefits to the firm (Collis & Montgomery, 1997).

Strategic assets. SAs are resources that are simultaneously valuable, rare, difficult or costly to imitate, and nonsubstitutable. A resource is valuable when it allows the firm to exploit opportunities in the market or to thwart competitive threats. Valuable resources that are not rare, called pedestrian resources, are only sources of competitive parity and not sustainable sources of SIR. Resources that are valuable and rare are potential sources of SIR.

unless competitors find strategically equivalent substitute resources (Barney & McEwing, 1996).

Resource-based advantages are also temporary if competitors can imitate them at a reasonable cost. Four barriers impeding resource imitation are causal ambiguity, social complexity, unique historical conditions, and path dependency (Barney, 1991b; Dierickx & Cool, 1989). Resource-based advantages are causally ambiguous when competitors cannot determine how a resource, such as corporate culture, improves another firm's performance. Socially complex resources, such as the relationships among firm employees, are also difficult to imitate because they are a function of the unique personalities of firm employees. Unique historical conditions are contexts in time that determine the relative importance of resources. Path-dependent resources, such as brand name recognition, are accumulated flows of stocks from strategic investments (e.g., in advertising, promotion, marketing expertise) and use of other firm resources (e.g., quality control systems, strategic alliance relationships) over long periods of time that competitors cannot quickly imitate. Acquiring the rights to path-dependent resources, such as valuable brand names and intellectual property rights, can be expensive, making it difficult to reap SIR.

Strategic assets and intangibility. RBV scholars are recognizing that SAs are generally not tangible in nature (Godfrey & Hill, 1995; Michalisin, Smith, & Kline, 1997). Tangible resources, such as property, plant, equipment, and other physical technologies, are often purchasable in the marketplace and thus are not rare. Internally developed technologies can be valuable resources, however, they become obsolete in highly innovative markets or can be reengineered by competitors. Of course, internally developed resources may be afforded legal protection against imitation via intellectual property rights.

This raises an important question: Is it the creativity, knowledge, insight, and so forth, behind the idea, represented and protected by the intangible resource, constituting the SA or is it the physical form? There are three reasons why the intangible resource constitutes the SA and not the physical form. First, the resource-based advantage is only sustainable due to the legal protection afforded by the intangible resource. Second, the intangible resources (creativity, knowledge, insight, etc.) driving the physical technology will prove more important in sustaining the firm's ability to meet changing customer needs than yesterday's physical technologies. Third, imitability of resource-based advantages is a function of the observability of the resources underlying them (Godfrey & Hill, 1995). In other words, the more unobservable the resources driving competitive advantage are, the

more insurmountable the barriers to imitation, and the more sustainable the competitive advantage. Unlike tangible resources with physical properties, intangible resources are state unobservable and thus difficult to imitate.

RBV studies. Corporate-level (C-L) RBV studies tell us that resources are considered in firm diversification decisions (e.g., Farjoun, 1994), that corporate portfolio relatedness is positively associated with performance (e.g., Robins & Weirsemá, 1995), and that corporate resources affect strategic alliance formations (Eisenhardt & Schoonhoven, 1996). These findings are valuable because they corroborate *pre-RBV* literature on the relationship between resources, diversification, and corporate performance; they support RBV's premise that resources are important to firm performance and lend support to RBV's assumption about resource immobility; and they support contemporary RBV thinking that SAs are intangible.

Business-level (B-L) RBV studies have shown that the firm's existing resources affect foreign direct investment decisions (e.g., Collis, 1991), that resource coordination and interaction affect firm performance (e.g., Majumdar, 1998), that a relationship exists between firm resources and first mover advantages (Henderson & Cockburn, 1994), that resources evolve as firms react to and act on their environments (e.g., Sharma & Vredenburg, 1998), that environmental contexts can affect the profit-generating capacity of certain resources (e.g., Miller & Shamsie, 1996), and that firm characteristics seem to be better predictors of performance than industry characteristics (e.g., Mehra, 1996). These findings are valuable because they lend support to RBV's main premise and lend support to RBV's assumption that firms are unique bundles of resources.

Individually and collectively, C-L and B-L RBV studies seem to support RBV's main premise and two main assumptions, which is indeed an important step in testing the validity of RBV. Another logical step in testing RBV is to test its main prescription. Unfortunately, the above-cited studies do not demonstrate either theoretically or empirically that the resources under examination possess the characteristics of SAs. We now identify a resource that seems to simultaneously possess all the characteristics of an SA—top management team cohesion.

TMTC

A top management team (TMT) is a group of high-level managers responsible for formulating and implementing the firm's strategies. The power to control the direction and performance of the firm probably makes TMT the most important and influential team in the firm (K. G. Smith et al., 1994).

Thus, RBV logic seems to indicate that key intangible TMT resources can be SAs to the firm. Social and organizational psychologists, as well as management scholars, have long been interested in the effects of team cohesion on a host of process and outcomes variables (for a review, see Hogg, 1992). Research has shown that cohesion is positively associated with team performance, provided that the team adopts norms of high performance (Mullen & Copper, 1994). However, the vast majority of studies in the large cohesion literature have examined nonorganizational groups, and organizational studies of cohesion have focused on groups and teams at the functional or task level, rather than at the TMT level. To our knowledge, only two studies (Michel & Hambrick, 1992; K. G. Smith et al., 1994) have examined TMTC. Both found a positive relationship with firm performance, but neither established cohesion as an intangible SA. Also, Michel and Hambrick (1992) did not actually measure cohesion, but instead used team tenure as a proxy for it. We hope that the present study will help fill this gap by examining TMTC directly as an intangible SA that influences SIR over time.

Cohesion itself is a complex, possibly multidimensional construct that has been defined and operationalized in a variety of ways. However, the majority of theoretical and empirical treatments have emphasized members' attraction to the group and desire to remain in the group (Hogg, 1992). Consistent with this emphasis, we define TMTC as the degree to which members are attracted to their team and desire to remain in it. Although TMTC often bears a close relationship with a number of other TMT attributes such as homogeneity, consensus, and tenure, we feel that it can and should be distinguished as a unique concept. Namely, what separates TMTC from other TMT attributes is that it is a function of the degree to which members are attracted to the team and desire to remain in it, regardless of their level of similarity, consensus, or tenure with the organization. A team's level of cohesion can thus be viewed as the end result of all the personal, social, and situational forces acting on the team to either hold it together and enhance member attraction to the team or pull it apart, repel member attraction, and reduce the desire to remain in the team (cf. Festinger, 1950).

With regard to the RBV, TMTC appears to simultaneously possess all of the characteristics of an SA. TMTC is rare and difficult and costly to imitate for six reasons. First, consensus in the team cohesion literature is that similarity among team members in terms of background, experience, and values promotes cohesion (Hogg, 1992). If true, then TMTC will vary across companies based on the unique composition of each TMT, including differences in TMT size (Jones, George, & Hill, 1998). Second, TMTC develops over time and is affected by interaction and unique historical conditions, making it rare and difficult to imitate (Barney, 1991b). Third, TMTC is a socially

complex phenomenon reflecting the unique attributes of team members and their attraction to one another and the team (Barney & McEwing, 1996). Fourth, TMTC is an invisible resource, making it hard for competitors to imitate (Godfrey & Hill, 1995). Fifth, even if competitors are cognizant of a firm's TMTC, its impact on firm performance is often causally ambiguous (Reed & DeFillippi, 1990). Sixth, attempting to perfectly replicate another firm's TMTC would probably require hiring their entire TMT. Even if all TMT members agreed to join the competitor, it may be very costly and the team's cohesion could be affected by the new corporate climate.

TMTC is also imperfectly substitutable. Because team cohesion has been shown to be an evolving social dynamic that emerges partially as a function of shared experiences, exposure to shared threats, reciprocal self-disclosure, expression of similar values, and cooperation in the pursuit of common goals (e.g., Hogg, 1992), it would be practically impossible to provide a perfect substitute for cohesion without creating these same shared experiences over time. In sum, TMTC appears to possess all of the attributes of an SA and thus, according to RBV, should be positively related to SIR.

Hypothesis 1: TMTC will be positively associated with superior industry returns.

Our use of multiple measurement periods also allowed us to assess whether the relationship between TMTC and firm performance varied over time. Although we predicted TMTC to be positively associated with SIR, it is possible that it may take some time for TMTC to translate into SIR due to the complex nature of managing the firm. Time may be required for teams to identify member expertise and strategies and understand the market environment sufficiently to allow the advantages of TMTC to result in SIR.

METHOD

PARTICIPANTS

Participants were 328 undergraduate management students (202 men, 126 women; 305 native U.S. students, 23 international students) enrolled in nine sections (three fall semester sections and six spring semester sections) of the capstone strategic management and policy course for graduating seniors at a doctoral/research-extensive university. We created diverse teams in each section by categorizing individuals in terms of major, gender, and nationality and then randomly assigned individuals to teams within each category in a stepwise fashion so that each team included a variety of majors,

included no more than one international student, and included both men and women. In short, the process resulted in 81 diverse teams.

STRATEGIC MANAGEMENT SIMULATION

Recent years have seen increased use of complex management simulations as an empirical tool, and the paradigm has produced valuable results on a number of issues central to strategic management, organizational theory, and organizational behavior (e.g., Chatman & Barsade, 1995). We chose simulation as our research method because it allowed us to study complex organizational phenomena in a controlled setting in a manner that was highly involving to participants and that incorporated a host of company and industry factors commonly faced by organizational TMTs. Our use of a simulation methodology adds breadth to the TMT literature, which has relied mostly on anecdotal evidence, cross-sectional studies, archival studies of financial reports, and case analysis.

We used *Airline: A Strategic Management Simulation* (J. R. Smith & Golden, 1994). *Airline* is a complex, computer-assisted strategic management simulation in which teams function as TMTs of individual airlines that compete against one another in the commuter airline industry. The simulation was designed to model many key attributes of top management decisions and resultant firm outcomes and produce rich financial feedback to participants about both their own firm and the industry. The simulation is also rather unique in that the simulation algorithms are based on extensive research of the commuter airline industry, thereby providing as high a level of realism in the market dynamics of the simulation as possible.

Each of the nine sections represented a single industry composed of 4 to 12 firms. Although sections varied in the number of competing airlines, all firms within each section had an equal chance to attain profitability because the simulation adjusted the number of available markets to each airline based on the number of firms in the industry. After an initial 75-minute meeting in which individuals were assigned to teams, became acquainted with their teams, and began discussing the simulation, teams then met weekly in separate 75-minute sessions across a 12-week period to make all strategic and tactical decisions about their business. Each simulation period (i.e., week) represented a calendar quarter for the firm.

Experienced graduate teaching assistants keyed the decision form information into the computer's simulation software each week, which computed a myriad of team and industry information. At the beginning of each simulation period, each team received printouts of their financial statements, operations management statistics, financial statistics, market reports, industry

statistics, and so on. Each graduate assistant received formal training on how to run the software and manage the simulation classes to promote consistency in administering this research. We periodically attended each section to be sure that all simulation sections were being run the same way.

Ten percent of each student's grade in the course was based on his or her airline's financial performance relative to the competitors. This was determined using a number of financial ratios, including those used to measure the dependent variable used in this study. Each week, every simulation team received a report showing their overall financial performance to date, relative to their competitors. This promoted industry competition and created a shared goal among teams to enhance their airline's performance across the course of the simulation.

MEASUREMENT OF SUPERIOR INDUSTRY RETURNS

RBVmp indicates that SAs are the key source of competitive advantage and SIR. SIR measures firm performance relative to the industry. For example, we used relative median return on sales (RMROS) as one measure of SIR. RMROS is the differences between the firm's ROS and industry median ROS, indicating whether the firm's ROS was above (superior), at (median), or below (inferior) industry ROS and to what extent.

Each firm can buy or lease airplanes. As a result, common return on investment (ROI) measures, such as return on assets (ROA), are problematic because the cost of leased planes does not appear on the balance sheet—making ROA difficult to compare across firms. Arguably, the two largest resources in an airline company are its airplanes and employees. As such, we used two common airline performance measures that are associated with these two resources to measure SIR—relative median net profit per seat mile (RMNPSM) and relative median net profit per employee (RMNPEE). Relative median earnings per share (RMEPS) was also included to assess each firm's relative EPS—an important indicator of stock value.

MEASUREMENT OF TOP MANAGEMENT TEAM COHESION

After each simulation period, participants completed a brief questionnaire assessing TMTC. Items assessed both member attraction to the team and desire to remain in it and group processes and member perceptions that have been demonstrated repeatedly in prior research to be strongly associated with cohesion, including good working relationships, high contribution levels, and a shared commitment to completing the group task (Hogg, 1992). The following items were used to assess cohesion in a clear, efficient, and face-valid manner:

1. I enjoyed working with my teammates.
2. I wish I was on a different team. (Reverse scored for principal components analysis [PCA])
3. The team worked well together.
4. Everyone contributed to the discussion.
5. The team wasted a lot of time. (Reverse scored for PCA)
6. I trust that my teammates will do their fair share of the work.

Items were assessed on 5-point scales, with higher numbers representing stronger agreement with the item.

CONTROL VARIABLES

Prior performance. Consistent with the strategy literature, we controlled for the impact of prior performance (RMROS, RMNPSM, RMNPEE, and RMEPS) on current performance. Doing so also controlled for the effect of past performance on TMTC. Otherwise, one could argue that past performance affects TMTC and thus is obviously associated with current performance because of its relationship with prior performance. This control allowed us to evaluate the relationship between TMTC and current SIR, in the presence of past SIR.

Leverage. Companies with high debt levels use large portions of their cash flows to service debt obligations, thus reducing free cash flow. A reduction in free cash flow disciplines managers to invest wisely (Jensen, 1986) and to closely monitor business strategy (Hoskisson, Johnson, & Moesel, 1994). Hence, leveraging debt can improve performance unless the firm uses too much debt to fund the firm's assets and is unable to meet its debt obligations. In this study, leverage is measured using the firm's debt to asset ratio.

Firm size. Firm size can affect performance through economies of scale, monopoly power, and bargaining power (Chandler, 1990). In this study, firm size is measured as total airplane seats (in their fleet) to capture both the number and the size of their planes.

Competitors. Each section of the course represented one industry. Each industry contained between 4 and 12 airline companies depending on the number of students in the section. Porter (1980) tells us that the number of competitors in an industry can affect the attractiveness of the industry and thus its profitability and can affect industry rivalry. As such, we included a control variable that represented the number of competitors in the industry.

TMT size and semester. Because the size of TMTs ranged from three to five members depending on enrollment in each section, we included a control variable for team size. Because three sections were offered in the fall 1998 semester and six were offered in the spring 1999 semester, we also included a dummy variable to control for any effect due to the semester.

STATISTICAL MODELS

We tested the hypothesis using a series of cross-sectional multiple regression equations (ordinary least squares). Specifically, we compared the results of a full regression model (independent and control variables) with the results of a control model (control variables only) for each of the 11 periods to determine if TMTC's relationship with SIR is statistically significant and if the incremental change in R^2 from adding TMTC to the control model is statistically significant. Using 11 measurement periods also allowed us to assess when TMTC became positively associated with SIR and how long the relationship was sustained.

RESULTS

PCA of the TMTC survey questions showed significant Bartlett's Test of Sphericity (BTS) chi-squares ($p < .001$) for all 11 periods. The six items were highly correlated and loaded heavily onto one principal component for all survey periods. The principal component scores were then used to represent a composite measure of TMTC. Cronbach's alphas ranged from .86 to .93 across periods, indicating high reliability.

PCA analysis of the four SIR measures showed significant BTS chi-squares ($p < .001$) for all 11 periods. The SIR measures were highly correlated and loaded onto a single component for all survey periods. Thus, the resulting PCA scores represent a composite measure of SIR.

Correlations and descriptive statistics for Period 11 are summarized in Table 1. TMTC has a positive, highly significant relationship with SIR ($p < .01$), supporting Hypothesis 1. Prior performance ($p < .001$) and leverage ($p < .01$) have a statistically significant positive relationship and a statistically significant negative relationship, respectively, with SIR. Some of the control and independent variables have statistically significant relationships, however, the variance inflation factors do not indicate multicollinearity. Other statistical/graphical analyses do not show any violations of the assumptions underlying multiple regression analysis.

TABLE 1
Correlations and Descriptive Statistics for Period 11

Variable	M	SD	1	2	3	4	5	6
1. SIR	.00	1.00						
2. TMTC	.00	1.00	.35***					
3. TMT size	4.04	.56	.01	-.14				
4. Prior performance	.00	.61	.56***	.35***	.08			
5. Firm size	113.67	43.89	-.10	.06	-.03	-.19*		
6. Leverage	.53	.21	-.32***	-.11	.05	-.45***	.17	
7. Semester	.56	.50	-.06	.20*	-.12	.07	-.10	.06

NOTE: SIR = superior industry returns; TMT = top management team; TMTC = top management team cohesion.

* $p < .10$. ** $p < .01$. *** $p < .001$.

Table 2 shows the multiple regression results by period. In the full model (independent and control variables), TMTC is not significantly associated with SIR in Periods 1 through 5, but then they become weakly associated in Period 6 ($p < .10$), followed by a highly significant relationship between TMTC and SIR in Periods 7 through 11 ($p < .01$ or $p < .05$). The significant relationships from Periods 7 through 11 support Hypothesis 1. The pattern of associations across periods shows that it takes time for TMTC to significantly influence SIR but that once this relationship is established, it remains robust across the rest of the simulation. Incremental R^2 , from adding TMTC to the control model, is weakly significant in Period 6 ($p < .10$) but then is highly significant in Periods 7 through 11—again supporting Hypothesis 1 for the latter time periods of the simulation. Among the control variables, prior performance has a positive, significant relationship with SIR in Period 2 and Periods 5 through 11. Relationships between other control variables and SIR are only rarely significant (see Table 2). The R^2 for the full regression model is highly significant in every period except Period 4.

DISCUSSION

Our study has theoretical, empirical, and practical implications. For theorists, our review of the RBV literature revealed that RBVmp is basically untested. However, we were able to use that literature along with relevant research by organizational and social psychologists to systematically illustrate that TMTC is simultaneously valuable, rare, difficult and costly to

TABLE 2
Multiple Regression Results by Period (Y = Superior Industry Returns)

Variables	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11
Independent	β^a	β^a	β^a	β^a	β^a	β^a	β^a	β^a	β^a	β^a	β^a
TMTC	.10	.13	.06	.05	-.04	.18*	.25**	.21**	.30***	.26**	.21**
Controls											
Prior performance	n.a.	.22**	.23*	.09	.38***	.26**	.35***	.38***	.49***	.40***	.46***
Leverage	-.22**	-.08	.12	-.06	-.10	-.26**	-.10	-.12	-.04	-.13	-.07
Firm size	-.47***	-.51***	-.33***	-.13	-.09	-.12	-.12	-.09	-.13	.08	-.03
Competitors	-.24*	.14	-.01	-.09	-.02	-.18	-.20	-.10	.00	-.11	-.07
TMT size	.10	-.01	.01	.07	.12	.27**	.17	.04	.11	.06	.02
Semester	-.06	.16	.02	.11	.13	-.08	-.15	-.13	-.17	-.08	-.17
Model statistics											
R^2	.39	.47	.24	.08	.24	.32	.31	.31	.48	.34	.38
Adjusted R^2	.34	.41	.16	.00	.17	.26	.24	.25	.43	.28	.31
F	7.76***	9.07***	3.21***	.91	3.36***	4.98***	4.57***	4.71***	9.47***	5.36***	6.17***
Incremental R^2	.01	.02	.00	.00	.00	.03	.06	.04	.08	.06	.04
Partial F	.98	1.98	.27	.30	.14	3.28*	5.77**	4.54**	10.94***	6.10**	4.67**
% Contribution of											
TMTC to R^2 ^b	2.56	4.26	1.28	2.47	.82	9.38	19.35	12.90	16.67	17.65	10.53

NOTE: TMT = top management team; TMTC = top management team cohesion.

a. Standardized regression coefficients.

b. Small differences due to rounding.

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

imitate, and nonsubstitutable. Our research thus provides support for RBV's premise and its two main assumptions, as well as for contemporary thinking that strategic assets are intangible.

For empiricists, our findings support Hypothesis 1 during the latter half of the simulation. This seems to indicate that it takes time for TMTC to influence SIR; however, once the relationship develops, it can be sustained, even in the presence of potent control variables. This relationship, coupled with the incremental R^2 statistics and TMTC's percentage contribution to total R^2 , which increased dramatically after Period 5 (reaching a high of 17.9% during Period 7), is consistent with RBV logic—that SA is a source of sustainable competitive advantage and sustainable SIR due to the rareness, inimitability, and nonsubstitutability of the SA.

Our study also has some clear practical implications. Most important, our results suggest that TMTC is an intangible SA that can produce a sustained competitive advantage. Thus, our research raises the possibility that factors that can increase TMTC—such as liking and attraction to other TMT members, commitment to the team and desire to remain in it, and pursuit of shared goals—may well produce sustainable competitive advantage for the firm. If these findings replicate across samples and industries, it is possible that the careful use of team-building exercises, establishment of shared goals, and even careful selection of TMT members for compatibility, may increase the strategic value of the TMT. More generally, our results suggest that intangible assets that have been traditionally disregarded in terms of firm performance may indeed be important levers for enhancing competitiveness. Our results also suggest that initiatives designed to increase TMTC may not produce immediate positive impact but that the relationship may develop over time and remain strong once developed.

Although this study makes a number of important contributions, it also has some inherent limitations. External validity is a concern given that our sample consisted of senior-level business students playing the role of TMTs rather than TMTs of intact organizations. Moreover, our sample was restricted to one university, and the simulation was based on only one industry. Yet, despite these considerations, there are several reasons why the results of this study are likely to have external as well as internal validity. First, the simulation incorporated a host of major decisions found in many intact organizations and incorporated an industry environment modeled after actual industry variables and simulating random change. Second, TMTs made their own decisions, and resulting firm and industry outcomes were reliant on the interaction of the decision outcomes of multiple firms and industry variables. Thus, each team was functioning as a TMT in terms of managing all aspects of decisions related to the operation of a simulated firm.

Third, the simulation created a high degree of involvement among participants, thereby enhancing the likelihood that basic processes likely to affect TMT behavior across settings were indeed activated. Finally, using a simulation allowed us to examine the performance of multiple firms in multiple markets. Nonetheless, research that examines TMTC in actual organizations across different industries is an important future step in testing RBVmp.

Temporal issues are also important to interpreting our results. A major asset of the simulation was the ability to study firm and industry dynamics in a controlled fashion across 11 simulated quarters rather than at just one measurement of time. However, it should be recognized that the 11 quarters were simulated across an 11-week period only. It would be interesting to examine the effects of TMTC over longer time periods and to examine the effects that variables that influence cohesion may have on firm performance in the long term.

In our research, we have taken the vital first step of demonstrating that differences in TMTC across teams have a significant impact on sustained competitiveness. However, because our goal was to test the effect of cohesion on firm performance to provide a potent test of the RBV's main assumption regarding intangible SAs, we did not seek to determine what specific elements comprising the complex construct of cohesion enhance performance, nor did we seek to identify which specific cohesion-related processes and mechanisms were primary over others in enhancing firm performance. Future research could seek to identify which specific attributes of TMTC exert the strongest influence on SIR over time.

Finally, to fully exploit the implications of the RBV, future research should examine the strategic effects of other potential intangible assets such as team member personality, diversity, or TMT culture. Given that our study suggests that TMTC is a viable source of competitive advantage, it seems likely that other intangible assets may have similar strategic value. We hope that the current study is useful in generating additional research on the RBV and its applicability to SIR, as well as in highlighting the usefulness of complex business simulations in studying the RBV and strategic management issues in general.

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