Strategy-managerial characteristics alignment and performance

A manufacturing perspective

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Abstract *Prior research of the influence of "upper echelon" managers has confirmed the importance of matching the characteristics of senior executives with the requirements of their organizations' strategies. Firms that achieved higher levels of strategy-manager alignment at both the corporate and business unit levels were found to have correspondingly higher levels of organizational performance. This study extends prior research of the strategy-managerial characteristics relationship to the functional level of the organization. Specifically, based on a sample of 196 managers from 98 companies, this study investigates whether manufacturing units pursuing dissimilar strategies are led by manufacturing managers with dissimilar attributes, and whether the strategy-manager alignment is related to the performance of the manufacturing unit. Results provide evidence to support these hypothesized relationships.*

The impact of top managers on organizational performance and how this relationship may depend on the organization's strategy have been recognized as critical issues in strategic management for many years (Hambrick and Mason, 1984; Gupta and Govindarajan, 1984; Gunz and Jalland, 1996). As Gupta (1984, p. 399) states:

> After all, if the choice of appropriate strategies (Hofer and Schendel, 1978; Porter, 1980) and their implementation (Galbraith and Nathanson, 1978) is crucial to effective organizational adaptation, then the selection of specific individuals most directly responsible for the choice and implementation of those strategies also should be regarded as crucial.

This line of reasoning has lead to a series of studies investigating the importance of matching the characteristics of top managers with strategy at both the corporate level (Hambrick and Mason, 1984; Miller and Toulouse, 1986; Miller *et al.*, 1985; Roth, 1992) and at the business unit level (Thomas *et al.*, 1991; Govindarajan, 1989; Gupta and Govindarajan, 1984). More recent studies have broadened the focus of analysis from individual executives to top

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management teams (Gunz and Jalland, 1996; Wiersema and Bantel, 1992). Taken as a whole this stream of research has confirmed the importance of top management or "upper echelon" influence (Hambrick and Mason, 1984) on corporate and business strategy. That is, the strategic choices made by senior managers on behalf of the organization are influenced, to some extent, by their personal characteristics. In turn, the "strategy-manager alignment" impacts performance. Thomas *et al.* (1991, p. 509) found that "firms achieving a greater degree of alignment between their strategy and the profiles of top managers, generally realized superior performance outcomes".

Given the critical importance of strategy-manager alignment at the top of the organization, the dearth of empirical studies on these relationships at the functional level presents a significant research opportunity. The purpose of this study is to extend the literature on managerial characteristics and strategy by investigating the nature and performance impact of strategy-manager alignment within the manufacturing function. Specifically, this study addresses the following research questions:

(1) Should companies hire manufacturing managers with different characteristics to match the strategy of the business unit in which they operate?

(2) Is the strategy-manager relationship linked to the performance of the manufacturing unit?

(3) If so, what managerial characteristics are important for implementing a differentiation strategy versus a strategy of cost leadership?

Building on previous studies of upper echelon influence on strategy and performance, this study breaks new ground by testing the phenomenon of executive influence at the level of manufacturing managers. In so doing, the study attempts to develop the theory and practice of matching managers at the functional level with the strategic priorities of the functional unit.

Thus, this study represents both a replication of prior research and an extension of that research to new populations of managers and new organizational levels. Replications with extensions are important not only because they protect against the uncritical assimilation of erroneous empirical results into the literature (Hubbard and Vetter, 1996), but also because they help to determine the scope and limits of initial findings by seeing if they can be generalized to other populations, time periods, organizations, geographical areas, measurement instruments, contexts and so on. Thus replications with extensions are basic to empirical generalization or knowledge development (Galtung, 1967; Hubbard and Vetter, 1996; Lindsay and Ehrenberg, 1993).

Theory

Top executives-strategy linkage

Hambrick and Mason (1984) have developed the upper echelon perspective for understanding the influence of top managers on organizational strategy. Rooted in the behavioral theory of the firm and the classic research of Cyert and March (1963) and March and Simon (1958), the perspective emphasizes the selective perception and limited information processing capabilities (i.e. "bounded rationality") of top managers. Due to these unavoidable human limitations and the complexity of strategic decisions, top managers make less than rational decisions based on incomplete and imperfect information (Finkelstein and Hambrick, 1990). These decisions are influenced by, and reflect to some extent, the personal characteristics of the managers. "The manager's eventual perception of the situation combines with his or her values to form the basis of strategic choice" (Hambrick and Mason, 1984, p. 195). Thus, top managers' strategic choices depend not only on the objective characteristics of the environments they face, but also on their own personal traits and experiences. "Therefore, the critical role of top managers in determining a firm's strategic direction becomes important" (Thomas *et al.*, 1991, p. 511).

Empirical studies of the top echelon perspective have confirmed the existence of a relationship between managerial characteristics and strategy at the corporate and business unit levels. Early studies in the research stream tended to focus on the strategy-manager linkage without regard for performance implications. For instance, Miller *et al.* (1982) found that firms with innovative and risky strategies tended to be led by chief executive officers (CEOs) with confident and aggressive personalities, and more conservative strategies were associated with CEOs with a tighter locus of control. Song (1982) concluded that CEOs of "internal diversifiers" tended to have a marketing and production background, while external diversifiers or acquisitive firms tended to be headed by CEOs from accounting, finance or law. Chaganti and Sambharya (1987) also found a relationship between the functional background of top managers and the strategies they employed.

Gupta and Govindarajan (1984) extended the research on the strategy-manager linkage to examine its impact on organizational performance. Govindarajan (1989, p. 251) found that "for superior performance, it is necessary to attune the choice of the general manager to the strategy of the business unit". Similarly, using the Miles and Snow (1978) typology of business strategy, Thomas *et al.* (1991) found that firms achieving alignment between strategy and the characteristics of top managers were superior performers. In a study of international strategy, Roth (1992, p. 769) found support for "increased organizational performance as the decision-making characteristics (of SBU managers) are aligned more closely to the requirements of the organization's international strategy".

Thomas and Simerly (1994) extended the strategy-top manager research to the field of social issues management. Their results suggest a relationship between

the personal characteristics of CEOs and corporate social performance, adding "credence to the argument that organizations are a reflection of their top managers" (Thomas and Simerly, 1994, p. 959). The strategy-manager relationship has also been extended to top management teams (TMTs). Wiersema and Bantel (1992) found that the more educated a TMT, and the more that education was in the sciences, the more innovative the firm's strategies tended to be. Gunz and Jalland (1996) argue that top managers' career backgrounds have an impact on their characteristics as managers and the characteristics, in turn, modify the way in which intended strategies are realized.

Manufacturing strategy

One definition of "manufacturing strategy" is the development and deployment of manufacturing capabilities in total alignment with the business unit's goals and strategies (Swamidass, 1986). Wheelwright (1984, pp. 83-4) states that an effective manufacturing strategy is not necessarily one that promises the maximum efficiency, or engineering perfection, but rather one "that fits the business, that is, one that strives for consistency between its capabilities and policies and the business's competitive advantage". Similarly, Skinner's (1969) pioneering work on manufacturing strategy emphasized that successful manufacturing strategy involves a process that requires manufacturing to conform to tasks and priorities derived from competitive strategy at the business unit level.

Indeed, the notion that manufacturing strategy should complement and support business strategy is a fundamental principle of the strategic management field. Within any reasonably large organization there are different levels of strategy – most frequently identified as corporate, business and functional levels. Strategic intent cascades from the top levels of the organization to influence and mold lower levels of strategy. The corporate strategy is the umbrella for all other levels. Within parameters set by corporate strategy, each distinct business unit within the corporation may craft its own business strategy. Business strategy reinforces corporate strategy and, in turn, is supported by functional level strategies, such as marketing, manufacturing and finance. In theory then, lower levels of strategy are consistent with higher levels of strategy so as to foster their successful accomplishment. This view is widely accepted in both the strategy field (Hofer and Schendel, 1978) and in the manufacturing literature (Hayes and Wheelwright, 1984; Safizadeh *et al.*, 1996; Skinner, 1978, 1985; Swamidass, 1986). Furthermore, Lingle and Schiemann (1996, p. 59) observe that: "Effective organizations are organic, integrated entities in which different units, functions and levels support the company strategy – and one another".

Empirical studies of manufacturing strategy and performance are under-represented, according to researchers in the field (Dean and Snell, 1996). Indeed, in their review of the manufacturing strategy literature, Adam and Swamidass (1989, p. 192) conclude that the "greatest weakness" of the field is insufficient

research that studies relationships among variables, and particularly the effects of strategy on performance: "What is glaringly absent is a body of studies that would investigate the interrelationship among variables or the effect of a subset of variables on performance". This study attempts to address this weakness by extending the strategy-top manager research to the manufacturing environment.

Research model

Based on the literature reviewed above it is possible to conclude that research efforts have found a relationship between top management characteristics, strategy and performance. That is, different strategies call for different managerial characteristics, and organizations that align the characteristics of top executives with the requirements of their strategies outperform those that do not. The purpose of this paper is to investigate whether these relationships also exist at the functional level, specifically within the manufacturing function. Do manufacturing units perform more effectively when the characteristics of manufacturing managers align with the strategic priorities of the unit?

We believe that senior executives and functional managers are similar in that they both have the ability to influence choices made within their organizations. The difference between the two is a matter of scope or the sphere of influence. The sphere of influence of functional managers is by definition more constrained than that of senior executives. While the influence of senior executives on corporate strategy has been heavily investigated, we know relatively little about these relationships at the functional level. This study is one step forward in filling this gap.

These relationships may be expressed in terms of the following research propositions:

P1. Manufacturing units pursuing dissimilar strategies will be led by manufacturing managers with dissimilar attributes.

P2. Manufacturing units that more closely align the attributes of manufacturing mangers with the requirements of their strategies will achieve higher levels of performance.

To test these relationships we adopt and modify a research model developed by Thomas *et al.* (1991) in their study of CEO characteristics. The model is shown in Figure 1. As Thomas *et al.* (1991, p. 512) argue:

> This model is universalistic as it allows for the several distinct conceptualizations of strategic orientation and corresponding managerial profiles. For example, strategic posture could be described in terms of generic typologies (Miles and Snow, 1978; Porter, 1980) or individual strategic dimensions such as corporate diversification (Song, 1982) or international expansion (Channon, 1979). Similarly, managerial characteristics could be operationalized in terms of psychological (Miller *et al.*, 1982) or demographic measures (Hambrick and Mason, 1984) or even a combination of both.

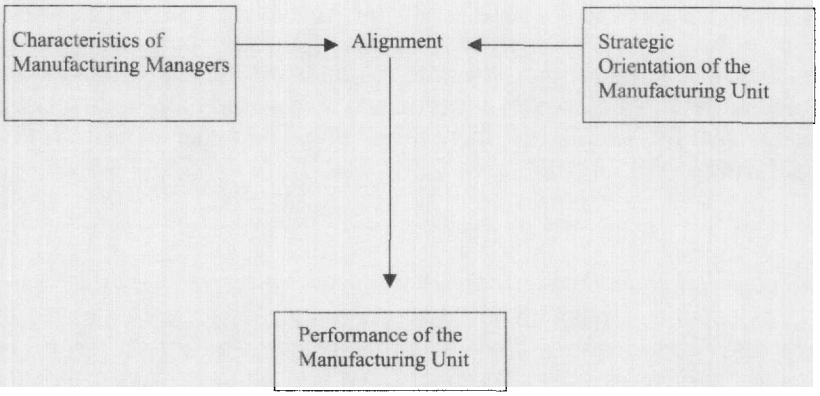

Figure 1.
The research model

In this study, strategy is classified using the Porter (1980) typology and demographic variables are used to derive the characteristics of manufacturing managers. These constructs, and the rationale for their choice, are described in the sections that follow.

Hypotheses

As stated above, the manufacturing unit's performance depends on its ability to foster and support successful implementation of the business unit's competitive strategy (Skinner, 1969; Wheelwright, 1984). Thus, to test the relationships in the research model shown in Figure 1, it was necessary to determine the business unit's competitive strategy as a "strategic orientation" within which the manufacturing manager operated. To classify competitive strategy, this study employs Porter's (1980) competitive strategy typology. This conceptualization was used by Govindarajan (1989) in a similar study of the strategy-manager relationship, and has been widely supported and accepted in the fields of strategy (Dess and Davis, 1984) and manufacturing (Hayes and Wheelwright, 1984; Kotha and Orne, 1989; Safizadeh *et al.*, 1996; Swamidass, 1986; Wheelwright, 1984).

Porter (1980) identifies two generic strategies to gain a competitive advantage in an industry: low cost and differentiation. Differentiation is achieved by establishing the perception of uniqueness or exclusivity. This may be done in many ways, including through innovations in product design, quality and features, brand image, customer service and distribution. A cost leadership strategy, on the other hand, "requires aggressive construction of efficient-scale facilities, vigorous pursuit of cost reduction from experience, tight cost and overhead control, avoidance of marginal customer accounts, and cost minimization in areas like R&D, service, sales force, advertising, and so on" (Porter, 1980, p. 35).

Researchers have argued that innovation is more characteristic of SBUs employing a differentiation strategy than for those employing a low cost

strategy (Dess and Davis, 1984; Hambrick, 1983; Porter, 1980). Likewise, in their typology of strategy, Miles and Snow (1978) describe firms pursuing a "prospector" strategy as more innovative than firms following a "defender" strategy. Thus, differentiation and prospector strategies are similar in their emphasis on innovation and uniqueness, while low cost and defender strategies are similar in their emphasis on efficiency. The fact that an SBU seeks differentiation does not imply that it can ignore costs, but cost issues are secondary to innovation and uniqueness (Porter, 1980).

P1 states that the strategic orientation of manufacturing units is expected to relate to the characteristics of manufacturing managers. In their study of strategy-manager alignment, Thomas *et al.* (1991) focused on the following characteristics of CEOs: organization tenure, position tenure, functional background, age and level of education. This study adopts the same managerial attributes as Thomas *et al.* with one exception: "functional background" was irrelevant and therefore dropped in this study since, by definition, all managers under study were from the manufacturing function. The efficacy of using demographic variables to study the relationship between managerial attributes and organizational outcomes has been demonstrated in several studies (Chaganti and Sambharya, 1987; Gupta and Govindarajan, 1984; Hambrick and Mason, 1984; Thomas *et al.*, 1991; Thomas and Simerly, 1994).

Level of education

Executives with higher levels of education have been found to be more understanding and more receptive to new ideas in studies examining the relationship between education levels and organizational outcomes (Becker, 1970; Kimberly and Evansiko, 1981). Similarly, Williams *et al.* (1995) found that managers with greater education levels were likely to implement structural changes (a new initiative and hence a challenge) with greater speed. In another study, Awamleh (1994) suggested that greater levels of education were associated with managers' willingness to be more innovative. Thomas *et al.* (1991) found that CEOs of more innovative firms (i.e. "prospector firms") had more education than CEOs of less innovative, "defender firms". Since innovation and uniqueness are hallmarks of a differentiation strategy, it is expected that manufacturing managers in manufacturing units pursuing differentiation strategies will be more educated than their counterparts in units pursuing cost leadership strategies.

Age

Stevens *et al.* (1978) found that older managers are more risk averse and tend to make more conservative decisions than younger managers. Similarly, Awamleh (1994) suggested that higher age levels were inversely associated with managers' willingness to be more innovative and open to change; older managers are more apt to defend the status quo. Thomas *et al.* (1991) found that

CEOs of prospector firms were significantly younger (at the 0.10 level of significance) than those in defender firms. Therefore, it is expected that manufacturing managers in plants pursuing differentiation will be younger than those in low cost manufacturing plants.

Tenure

Job tenure is a measure of the length of time a manufacturing manager has held his/her current job. Organizational tenure indicates the length of time managers have been with their current firm. To achieve the internal efficiency and control necessary to achieve a cost leadership position requires managers who are thoroughly familiar with their positions and their organizations (Gupta, 1984; Kotter, 1982). The longer an individual has worked for a firm, the more familiar he/she is with its structure, systems, people and process (Gupta, 1984). Hence firms pursuing cost leadership are expected to be led by managers with extensive experience in their jobs and with their firms. Thus, Miles and Snow (1978) propose that top managers of defender firms tend to have longer tenure in their position and their organization. In contrast, CEOs of prospector firms are more externally focused and more transitory since their influence varies by the firm's current areas of prospecting. Thomas *et al.* (1991) found support for these differences regarding job and organizational tenure in their study of CEOs. It is expected, then, that manufacturing managers pursuing cost leadership will have longer job and organizational tenures than their counterparts pursuing differentiation.

Strategy-manager alignment and performance

Based on the preceding discussions, it is expected that the demographic attributes of manufacturing managers will be different depending on whether they seek to implement differentiation or low cost strategies. Strategy-manager alignment exists to the extent that managerial profiles match the requirements of the different strategies. Furthermore, *P2* states that performance benefits will accrue to manufacturing units that more closely align the attributes of manufacturing managers with the requirements of their strategies. Thus, it is expected that the managers of top-performing manufacturing units pursuing differentiation will not only be younger, more educated, and have shorter job and organizational tenures than their counterparts in top-performing low cost units, but that these differences will also be more pronounced than those of the entire sample.

Since the manufacturing units pursuing a low-cost strategy are required to operate their facilities efficiently, exercise tight cost and overhead control, and minimize cost in general, their performance is assessed based on measures of operating efficiency and productivity. For the units pursuing differentiation, which is achieved by establishing the perception of uniqueness, including through product design, quality and features, and customer service, performance is measured based on quality of work and customer

satisfaction. Thus, different performance measures are used depending on the strategy employed, since researchers have argued that no single performance measure may be used to adequately assess all types of strategies (Thomas *et al.*, 1991). These hypotheses are summarized below:

H1a. Manufacturing managers of differentiation units will have higher levels of education than manufacturing managers of low cost units.

H1b. Manufacturing managers of differentiation units will be younger than manufacturing managers of low cost units.

H1c. Manufacturing managers of differentiation units will have shorter job tenures than manufacturing managers of low cost units.

H1d. Manufacturing managers of differentiation units will have shorter organizational tenures than manufacturing managers of low cost units.

H2. Differences in characteristics of manufacturing managers will be more pronounced when comparing top performers in differentiation versus top performers in low cost.

Methodology

Sample and data collection

The data for the study were collected from matched pairs of managers from two levels for each participating company. First, the Manufacturing Manager's Survey, shown in the Appendix, was completed by the individual responsible for managing the manufacturing function of the organization. The titles of managers who responded to this survey included operations manager, director of operations, and manufacturing manager. Second, the General Manager's Survey, also shown in the Appendix, was completed by the supervisor of the manufacturing manager who responded to the preceding survey.

Detailed instructions for distribution of the questionnaires and their subsequent completion were provided to the contact person, the CEO, president, vice president-manufacturing or the plant manager. Each contact person was asked to identify one manufacturing manager who had worked for at least six months in this position, and one general manager who was the supervisor of this manufacturing manager. Separate self-addressed envelopes were provided to each individual to ensure confidentiality and unbiased responses.

The unit of analysis for this study was a manufacturing unit. A large pool of companies in different industries was identified and contacted to participate in the study. A sample of 158 companies agreed to participate. The data used in this study came from two questionnaires (one for the manufacturing manager and one for the general manager) from each participating unit. A total of 98 companies returned usable responses from both general managers and

manufacturing managers (i.e. 196 respondents). Thus, once a manufacturing unit agreed to participate, the response rate was 62 percent.

To test for response bias, two analyses were conducted. First, the industry composition of the sample relative to the US population of manufacturing companies was examined. The final sample comes from 17 manufacturing industries at the two-digit SIC code level. The distribution of sample manufacturing units reflects the US population distribution across industries (taken from Troy, 1990), with the following exceptions: paper is somewhat over-represented, whereas petroleum refining, food and transportation equipment somewhat under-represented. Based on a sample of manufacturing units from the Midwest and Northeast regions of the USA, Safizadeh and Ritzman (1997) used the same approach to assess the representativeness of their sample, and observed a similar representation of industries.

Furthermore, a comparison of the plants in this study with a random sample of non-participating plants showed no statistically significant differences for size, that is the number of employees and annual sales. The average plant in the sample had annual sales of US$43 million with 275 employees. A similar approach, that is, comparing the final sample with a random sample of nonparticipating manufacturing units, was used by Dean and Snell (1996) to rule out non-response bias. A majority of the units (64 percent) in our sample had their average sales below $50 million, with only 19 percent above $200 million. A total of 96 percent of the units in our sample had less than 1,000 employees.

Managerial characteristics

Data on the demographic characteristics of manufacturing managers were collected from manufacturing managers. Age was measured as the chronological age of the manager. Level of education was measured on a scale of 1 (some high school) to 6 (graduate degree). Tenure was operationalized by counting the number of years that the manufacturing manager had served in the same position (job tenure), and with the same company (organizational tenure).

Strategic orientation

Based on Porter's framework, two strategic types were examined. The data for these measures were obtained from general managers and manufacturing managers. Manufacturing managers were asked to rate the importance of several management priorities in manufacturing. Three items were used to operationalize cost and eight for differentiation. The items on the Manufacturing Manager Survey (Appendix) have been taken from Morrison and Roth (1993), Ritzman *et al.* (1993), Nemetz (1990), Wood *et al.* (1990), Roth and Miller (1990). Manufacturing managers rated all items on a five-point Likert scale with values ranging from 1 (Not at all important) to 5 (Extremely

important). The items in the questionnaire were arranged in a random order to elicit accurate information from respondents. The strategic orientation of the general managers was assessed using another set of items, two of which were used for cost and eight for differentiation. The items on the general manager survey were phrased differently since the general managers view priorities from the "competitiveness" perspective, and not as "competencies" as viewed by manufacturing managers (Corbett and Wassenhove, 1993). These items were taken from Ritzman *et al.* (1993), Roth and Miller (1990) and Nemetz (1990).

Specific items used to assess the cost and differentiation orientation of the manufacturing managers and general managers, and estimates of internal consistency of the scales are included in the Appendix. The Cronbach alpha coefficients, measures of internal consistency of the scales, were above 0.70 for the differentiation scales for both the manufacturing managers and the general managers. For the cost scale of the manufacturing managers, the alpha was above 0.70 but for the general managers the cost scale, comprising two items, had a corresponding coefficient of only 0.36. In the marketing literature, Anderson and Coughlan (1987) suggest that if only two items are used in scale creation then a low alpha value is acceptable.

To ascertain the strategic orientation of a manufacturing unit, the matched pairs of managers – a general manager and a manufacturing manager – were surveyed to determine their relative emphasis on cost priorities versus differentiation. First, the agreement between the two raters was assessed using the ratio method developed by James *et al.* (1984). This method uses an index of inter-rater agreement that is computed as a proportion of true variance relative to true variance plus error variance. The index ranges between 0 (no agreement) to 1 (perfect agreement). This method was originally intended for use in situations with multiple raters for a single item on a single case. Since most manufacturing strategy studies have a large number of cases (e.g. 98 manufacturing units in this study), Boyer and Verma (2000) modified the original ratio method to accommodate such situations. Applying their approach, we first calculated $r_{wg(1)}$ for each case independently and then $R_{wg(1)}$ was calculated as the average of 98 cases. This was done for each of the two scales – cost and differentiation. The inter-rater agreement index for the two scales was 0.75 and 0.87 respectively, which is considered to be very good.

Thus, for each unit, the two managers' scores on each of the two strategies were averaged, which yielded two scores – cost and differentiation – for each unit. The difference in the two scores (cost – differentiation) was then calculated to determine a unit's "strategic orientation score". Positive scores indicated a low cost strategy and negative scores suggested a differentiation strategy. This technique resulted in a nearly equal number of units in each strategic category, which suggests that the sample is not biased toward either strategy.

Performance measures

The difficulty of obtaining objective financial measures of performance such as profit growth, profit margin, sales increase, market share, return on investment, etc., at the manufacturing unit level has been noted by many researchers including Swamidass and Newell (1987). These measures are particularly difficult to get when studying privately-held companies, which were a part of our sample. Furthermore, objective measures of financial performance depend on factors beyond the control of the manufacturing unit – the focus of this study, including factors such as market conditions, economic conditions, technological changes, and governmental policies (Pfeffer (1977); Brown (1982); both in Yukl and Van Fleet (1992)).

Therefore, perceptual measures of performance were adopted from the organizational sciences and the manufacturing strategy literature. The perceived measures have been used and recommended as a substitute when objective measures are either not available or not relevant (Dess and Robinson, 1984; Venkatraman and Ramanujam, 1987). The general managers were asked to provide their assessment of the operational performance of the manufacturing unit on four items:

(1) productivity of the unit;

(2) operating efficiency of the unit;

(3) customer satisfaction; and

(4) quality of work.

General managers rated these items on a seven-point Likert scale with values ranging from 1 (Unsatisfactory) to 7 (Excellent).

Even though data were collected on all four measures of performance for each participating unit, appropriate measures consistent with a manufacturing unit's strategic orientation were used in subsequent data analyses. For example, for manufacturing units with strategic cost orientation, a two-item scale, effyprod, comprising the first two items – productivity and efficiency – was used to measure performance. Another two-item scale, custqual, comprising the last two items – customer satisfaction and quality – was used for units with a strategic differentiation orientation. Our choice of performance measures is also supported through significant correlation coefficients between strategic orientation and the corresponding performance measure in Table I. For example, cost orientation is significantly positively correlated with effyprod ($r = 0.16, p < 0.05$), and differentiation is significantly related to custqual ($r = 0.31, p < 0.01$). The cost orientation is not significantly correlated with custqual, and the differentiation orientation is not significantly correlated with effyprod. These scales and their corresponding internal consistency estimates (0.84 and 0.47 respectively) are provided in the Appendix.

Variable	Mean	SD	Lowcost	Diff.	Effyprod	Custqual	Age	Edn	Jobt	Orgt
Lowcost	3.39	0.55	1.0	0.08	0.16*	0.00	−0.06	−0.11	0.04	0.09
Differentiation	3.45	0.46		1.0	0.11	0.31**	−0.04	0.05	−0.10	−0.13*
Effyprod	4.99	0.92			1.0	0.39**	0.13*	−0.19**	0.19**	0.08
Custqual	5.41	0.77				1.0	−0.05	−0.04	−0.06	−0.04
Age	42.83	8.29					1.0	0.00	0.32**	0.32**
Edn	3.89	1.29						1.0	−0.09	−0.24**
Jobt	4.90	3.76							1.0	0.44**
Orgt	11.74	7.88								1.0

Notes: Correlation coefficients are one-tailed; * significant at $p < 0.05$ **significant at $p < 0.01$
Diff. – Differentiation
Effyprod – Performance measure based on operating efficiency and productivity
Custqual – Performance measure based on quality of work and customer satisfaction
Jobt – Job tenure
Orgt – Organization tenure
Edn – Education

Table I. Descriptive statistics

Results

Strategic orientation-managerial characteristics alignment

Table II presents the results relevant to *H1a-H1d*, that is, the demographic attributes of manufacturing managers by strategic orientation. These hypotheses were tested using a series of directional *t*-tests. As indicated in Table II, manufacturing managers employed with the differentiation units have significantly higher levels of education ($p = 0.04$) than manufacturing managers of low cost units, which lends support to *H1b*. The results also support *H1d* since manufacturing managers of differentiation units have significantly shorter organizational tenures (difference = 2.50 years, $p = 0.07$) than those of low cost units. The age and job tenures of manufacturing managers of differentiation units are not significantly different from their counterparts in the low cost units.

Characteristic	Group	*n*	Mean	Std dev.	*t*-statistic	*p*-value
Age	Differentiation	45	42.82	7.23	0.24	0.41
	Low cost	45	42.40	9.39		
Education	Differentiation	45	4.13	1.23	1.67	0.04
	Low cost	46	3.69	1.26		
Job tenure	Differentiation	45	4.58	3.12	−0.92	0.18
	Low cost	46	5.32	4.42		
Organizationnal tenure	Differentiation	44	10.56	6.09	−1.48	0.07
	Low cost	45	13.06	9.46		

Note: *n* varies because of missing values on different variables

Table II. Difference in managerial characteristics for differentiation vs low cost strategy groups (entire sample)

Strategy-manager alignment and performance

As predicted under *H2*, the differences in managerial characteristics are more pronounced when top performers in differentiation units are compared to the top performers in low cost units (see Table III). Top performers were identified in each group with an average performance of above 5.5 (on a scale of 1-7) on the corresponding performance measures. This classification scheme gave rise to 13 top performers in each group (about 25 percent of the overall sample).

As indicated in Table III, *H2* is generally supported. Differences among top performers are significant for three of the four managerial characteristics, and at higher levels of statistical significance. Specifically, the job and organizational tenures of manufacturing managers in top performing differentiation units are significantly shorter than their counterparts in top performing low cost units, at $p = 0.05$ and $p = 0.03$ respectively. The difference in education remains significant at $p = 0.04$, with the top performers in differentiation units being more highly educated than those in the low cost units. Once again there are no significant age differences between manufacturing managers of the top performing low cost versus differentiation units.

To substantiate these results concerning the performance impact of alignment between strategic orientation and managerial characteristics, mean differences in managerial characteristics of top performers in the two strategic groups were compared with the differences in the entire sample. As seen in Table IV, the mean difference in the education of top performers in differentiation units versus low cost units is 0.40 units higher ($p = 0.08$) than the mean difference in education for all units pursuing differentiation versus low cost. Similarly, the corresponding differences in the job and organizational tenures of top performers are significantly higher by 2.40 years ($p = 0.006$) and 3.33 years ($p = 0.039$), respectively. Since the mean difference in age of manufacturing managers in differentiation versus low cost units was not significantly different from zero in either group (i.e. entire sample in Table II and top performers in Table III) further comparisons were not relevant. These results provide further evidence in support of *H2*. Thus, the mean differences in

Table III.
Differences in managerial profiles for top performers in differentiation vs low cost strategy groups

Characteristic	Group	*n*	Mean	Std dev.	*t*-statistic	*p*-value
Age	Differentiation	13	42.53	7.43	−1.13	0.13
	Low cost	12	46.75	11.03		
Education	Differentiation	13	4.00	1.35	1.72	0.04
	Low cost	12	3.16	1.03		
Job tenure	Differentiation	12	4.24	3.50	−1.70	0.05
	Low cost	13	7.38	5.56		
Organizational tenure	Differentiation	12	12.54	6.10	−1.96	0.03
	Low cost	12	18.37	8.29		

Note: *n* varies because of missing values on different variables

Managerial characteristic	Mean difference in managerial characteristics by strategic orientation: Entire sample	Top performers	Difference between top performers and entire sample	*t*-statistic	p-value
Age	−0.42	4.22	[a]	[a]	[a]
Education	0.44	0.84	+0.40	1.38	0.08
Job tenure	0.74	3.14	+2.40[b]	2.55	0.006
Organizational tenure	2.50	5.83	+3.33	1.78	0.039

Notes:
[a] Since the age difference between low cost and differentiation units was not significantly different from zero in either entire sample or top performers, we did not compare the mean difference in age
[b] Given that the difference in job tenure of manufacturing managers in low cost and differentiation units for the entire sample was not significantly different from zero, this value is on the conservative side

Table IV.
A comparison of the mean difference in managerial characteristics by strategic orientation for entire sample and top performers

managerial characteristics are more pronounced when comparing managers of top performing units than those in the entire sample.

To further substantiate the above results concerning the performance impact of alignment between strategic orientation and managerial characteristics, we conducted some more analyses. First, we tested the mean performance difference for top performers pursuing different strategies. As seen in Table V, the top performers in differentiation units perform significantly better than their counterparts in low cost units on custqual ($p < 0.0001$). Similarly, top performers in low cost units perform significantly better than their counterparts in differentiation units on effyprod ($p < 0.0001$).

Next, we tested performance implications of the misalignment of managerial characteristics with the ideal characteristics suitable for a specific strategic orientation. The misalignment was calculated as the lack of correspondence between the profile of top performing managers and that of any given manufacturing unit with a specific strategic orientation. The following

Performance measure	Mean performance (standard error) by strategic orientation: Differentiation	Cost	*t*-statistic	*p*-value
Custqual	6.35 (0.12)	5.41 (0.16)	4.702	0.000
Effyprod	5.00 (0.18)	5.92 (0.11)	−4.382	0.000

Table V.
Differences in manufacturing performance for top performers in differentiation vs low cost strategy groups

Euclidean distance measure proposed by Van de ven and Drazin (1985) was used for this purpose:

$$\text{DISTDIFF OR DISTCOST} = \sqrt{\Sigma(X_{in} - X_{jn})^2}$$

where:

X_{in} = the score for the top performer on the nth managerial characteristic;.

X_{jn} = the score for the jth manufacturing unit in each sub-sample on the nth managerial characteristic.

This lack of correspondence measured by the misalignment score, was then correlated with the appropriate performance measure. The results of the correlation analysis between misalignment of managerial characteristics and manufacturing performance are presented in Table VI. If the underlying thesis of *H2* is supported, we would expect a negative correlation between misalignment and performance, i.e. as the distance from the top performing managers' characteristics increases, manufacturing performance should deteriorate.

Based on the results in Table VI, the efficiency and productivity of manufacturing units with low cost orientation seem to decline as the misalignment increases ($r = -0.767, p < 0.01$). For the differentiation units, however, the relationship is statistically non-significant ($r = 0.229, p = 0.23$). These results provide further evidence in support of *H2*.

Conclusions and implications

Previous studies have established the importance of matching managers with strategies at the corporate and business unit levels. This study extends those findings and suggests that the notion of aligning managerial characteristics and strategy holds at the functional level as well. Specifically, results of this study indicate that manufacturing units pursuing dissimilar strategies are led by manufacturing managers with dissimilar attributes. This finding is consistent with what Thomas *et al.* (1991) observed at the corporate level, i.e. firms pursuing dissimilar strategies are led by CEOs with dissimilar attributes. Furthermore, these differences in personal characteristics are more pronounced

Table VI. Relationship between misalignment of managerial characteristics (profile deviations) and manufacturing performance

Performance measure	Strategic orientation	
	Differentiation	Cost
Custqual	0.229	(–) 0.449
Effyprod	(–) 0.472	(–) 0.767*

Note: * Significant at $p < 0.01$ level

among managers of top performing units than the entire sample, suggesting a relationship between manufacturing unit performance and strategy-manager alignment. This finding implies the importance of functional managers' influence in the implementation of the competitive strategy of a business unit.

The results of this study suggest that findings from upper echelon research are generalizable at the functional level. These findings are important not only to extend our theoretical knowledge of strategy-manager alignment, but also because they have practical implications for staffing organizations at the functional level. That is, if the strategy-manager alignment relationships hold at the functional level, organizations must consider this for staffing purposes.

For managers, findings highlight the importance of careful recruiting, selection and placement of manufacturing managers, and suggest specific types of characteristics that may be critical for managers to possess depending on the strategic orientation of the manufacturing unit. After all, this study not only finds that managers' attributes tend to differ depending on the strategic context, but also that those differences are linked to measures of manufacturing unit performance. Thus, companies should select and place manufacturing managers with different characteristics depending upon their strategic orientation. For example, for differentiation units, manufacturing managers with higher education and shorter job and organizational tenures seem to perform better. On the other hand, the managerial profile that seems to fit a low cost orientation includes managers with higher job and organizational tenures and lower levels of education. Another implication for senior managers is the need to consider reassigning functional managers when changing the strategic orientation of manufacturing units within a corporation.

For researchers, this study fills a void in the manufacturing strategy literature by examining the strategy-manager alignment issue at the manufacturing level, and its relationship with performance. Given the finding that strategy-manager alignment is important in a manufacturing setting, researchers may wish to test these relationships in other functional areas.

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Appendix. Survey of managers

I. Manufacturing Manager's Survey

Priorities were measured by the importance given to each item in a manufacturing unit. (Not at all important to Extremely important.)

Cost (Cronbach's alpha = 0.70):

(1) Controlling production costs.

(2) Running equipment at peak efficiency.

(3) Improving labor productivity.

Differentiation (Cronbach's alpha = 0.73):

(1) Handling changes in the product mix quickly.

(2) Handling variations in customer delivery schedule.

(3) Introducing new designs or new products into production quickly.

(4) Customizing product to customer specifications.

(5) Adjusting capacity rapidly within a short period.

(6) Manufacturing durable and reliable products.

(7) Making design changes in the product as desired by customer.

(8) Meeting and exceeding customer needs and preferences.

II. General Manager's Survey

1. Priorities were measured by the importance given to each item for competing in an industry. (Not at all important to Extremely important.)

Cost (Cronbach's alpha = 0.36):

(1) Low price.

(2) A standard, no-frills product.

Differentiation (Cronbach's alpha = 0.73):

(1) Frequent design changes or new product introductions.

(2) Rapid volume changes.

(3) Product variety.

(4) Speed in product changeover.

(5) High product performance.

(6) Large number of product features or options.

(7) Customized product.

(8) High durability (long life) of product.

2. Performance measured on a scale of 1 – Unsatisfactory to 7 – Excellent.

Effyprod (Cronbach's alpha = 0.84):

(1) Productivity of the group.

(2) Operating efficiency.

Custqual (Cronbach's alpha = 0.47):

(1) Quality of work.

(2) Customer satisfaction.