# COMPARING ALTERNATIVE CONCEPTUALIZATIONS OF FUNCTIONAL DIVERSITY IN MANAGEMENT TEAMS: PROCESS AND PERFORMANCE EFFECTS

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# COMPARING ALTERNATIVE CONCEPTUALIZATIONS OF FUNCTIONAL DIVERSITY IN MANAGEMENT TEAMS: PROCESS AND PERFORMANCE EFFECTS


## ABSTRACT

We examine the process and performance effects of two different forms of functional diversity in management teams – the predominant conceptualization in the literature ( *dominant function diversity*) and a second conceptualization that has been generally overlooked ( *intra-personal functional diversity*). In a sample of business unit management teams, dominant function diversity had a negative and intra-personal functional diversity a positive effect on information sharing and unit performance. These findings suggest that different forms of functional diversity can have very different implications for team process and performance and that intra-personal functional diversity matters for team effectiveness.

Empirical research on functional diversity in management teams has presented a complex picture. On one hand, researchers argue that by broadening the range of experience and expertise available to a team, functional diversity can promote team effectiveness. Consistent with this argument, empirical studies have found that functionally-diverse management teams are more innovative (Bantel & Jackson, 1989), develop clearer strategies (Bantel, 1993), respond more aggressively to competitive threats (Hambrick, Cho, & Chen, 1996), and can be quicker to implement certain types of organizational change (Williams, Hoffman, & Lamont, 1995) than functionally homogeneous management teams. On the other hand, researchers argue that because functional diversity is associated with differences of opinion and perspective, functional differences can inhibit team process and/or effectiveness. Empirical research also seems to support this argument, finding that functional diversity can increase conflict (Knight, et al., 1999; Pelled, Eisenhardt, & Xin, 1999), slow competitive response (Hambrick, Cho, & Chen, 1996), and even compromise performance (Murray, 1989; Simons, Pelled, & Smith, 1999). Given this pattern of results, management team researchers have concluded that functional diversity is simply a double-edged sword – that it has positive implications in some contexts and for some process or performance variables but negative implications in other contexts and for other process or performance variables ( Milliken & Martins, 1996: 403; Tsui, Egan, & Xin, 1995; Williams & OReilly, 1998).

This paper introduces the possibility that the positive or negative effects of functional diversity may not just be a function of the dependent variable or context examined but may also be a function of the way in which functional diversity is conceptualized and measured. Existing research on functional diversity in management teams has conceptualized functional diversity primarily as the distribution of team members across the range of relevant functional categories, overlooking the extent to which the individuals who comprise the team are narrow functional specialists or broad generalists with

experience in a range of functional areas. We explore the thesis that, within the same context, the former conceptualization of functional diversity can have negative and the latter conceptualization positive implications for team process and performance. Teams composed of "specialists" from different functional areas may be unable to exploit their diverse expertise because of cross-functional communication and coordination problems. In contrast, teams composed of individuals with a breadth of functional experiences may be better able to overcome communication barriers (i.e., because team members can relate to one another's function) while still realizing the performance benefits of diverse functional experiences.

The purpose of this paper is to develop and empirically examine this thesis. Drawing on theories of motivation and social categorization, we develop a model in which information sharing mediates the relationship between these distinct forms of functional diversity and unit performance. A test of this model using data from a sample of 44 business unit management teams in a Fortune 100 consumer products company provides strong support, suggesting that the traditional conceptualization of functional diversity has an overall negative and a conceptualization based on intra-personal functional diversity an overall positive effect on information sharing and unit performance. The implications of these findings for theory, research, and practice are considered.

## THEORY AND HYPOTHESES

A review of published research examining functional diversity in management teams reveals two important patterns. First, although different studies of functional diversity presumably examine the same basic construct, they adopt very different conceptualizations of that construct. It is therefore important, as Pfeffer (1983: 310) suggests, "to be sensitive to the use of multiple measures of demographic characteristics and to developing theoretical predictions that are related to the specific measures being developed". Second, although a few researchers have recognized the potential

significance of examining the functional breadth of individual team members (see Burke & Steensma, 1998), there have been no attempts to empirically examine this aspect of functional diversity in management teams.

**Distinguishing Between Different Conceptualizations of Functional Diversity**

We reviewed published research on functional diversity in management teams in order to determine how functional diversity has been conceptualized and measured and to understand the results that have been reported. Relevant articles were identified through keyword searches of on-line databases and reviews of academic journals in management and organization. Search results were cross-referenced with published literature reviews on team diversity (e.g., Milliken & Martins, 1996; Tsui, Egan, & Xin, 1995; Williams & O'Reilly, 1998) as well as reference lists in published articles. Since our focus was on team functional diversity, we did not include studies at the individual or inter-personal levels nor did we consider team-level studies that considered means but not distributions of functional affiliations or experiences (e.g., Chaganti & Sambharya, 1987). Furthermore, although our focus in this review was on management teams, we included studies examining cross-functional project management teams since functional diversity is a fundamental issue for process and performance in those teams as well.

The results of our literature review are reported in Table 1 in terms of the functional diversity variable considered, the core propositions examined, and the key findings reported. A total of 17 empirical studies were identified that include functional diversity as a key variable. Fifteen studies examined functional diversity as an antecedent of team process (e.g., consensus, conflict, social integration, communication) and/or team outcomes (e.g., innovation, strategic clarity, financial performance, speed of response, accuracy of TMT perceptions). One study examined functional

diversity as a moderator (Michel & Hambrick, 1992) and one study examined selected antecedents of functional diversity (Keck & Tushman, 1993).

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Insert Table 1 about here.

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A review of these seventeen studies reveals three different conceptualizations of functional diversity: (1) diversity in the different functional areas within which team members have spent the majority of their careers (*dominant function diversity*), (2) diversity in the functional backgrounds of team members (*functional background diversity*), and (3) diversity in team member functional assignments (*functional assignment diversity*). In the following paragraphs, we summarize the core logic and research findings associated with each of these three conceptualizations of functional diversity.

**Dominant function diversity.** Ten studies (59%) examine the extent to which team members differ in the functional areas within which they have spent the majority of their careers. We refer to this form of functional diversity as dominant function diversity – diversity in the "dominant functions" represented on a team. This approach to conceptualizing functional diversity assumes that each team member brings a specific functional perspective to the team, a perspective gained through experience that is typically weighted toward a particular function. The key question then becomes whether the different functional perspectives (i.e., different "dominant functions") across team members cover some relevant range of functional categories or are restricted to a subset of those categories. The extent to which the dominant functions of team members are evenly distributed across all of the relevant functions is viewed as an indication of the team's breadth and balance of knowledge and expertise related to running all aspects of an organization. Empirical research using this measure of functional diversity suggests that dominant function diversity is associated with innovation (Bantel & Jackson,

1989), strategic clarity (Bantel, 1993), slower competitive response (Hambrick, Cho, & Chen, 1996), lower consensus (Knight, et al., 1999), higher conflict (Knight, et al., 1999; Pelled, Eisenhardt, & Xin, 1999), lower short-term but higher long-term performance (Hambrick, Cho, & Chen, 1996; Murray, 1989), a less global strategy[1] (Carpenter & Frederickson, forthcoming), and quicker implementation of the M-form structure (Williams, Hoffman, & Lamont, 1995).

Dominant function diversity is operationalized by determining (or asking respondents to determine) that functional area within which each team member has spent the majority of his or her career or that best represents their dominant functional career track. Once each team member has been categorized into a functional area, some version of the Blau (1977) or Shannon (1948) heterogeneity indices is used to compute dominant function diversity. This approach does not consider nor assign any weight to experiences that lie outside an individual's dominant functional career track.

**Functional background diversity.** Two (12%) of the studies summarized in Table 1 conceptualize functional diversity as the degree of *difference* in the functional backgrounds of team members. We refer to this form of functional diversity as functional background diversity. Like dominant function diversity, functional background diversity focuses on the different functional experiences of team members. But whereas dominant function diversity focuses on the distribution of "dominant functions" across some range of functional categories, functional background diversity focuses simply on the extent to which team members *differ* in their functional backgrounds. The underlying assumption is that different functional backgrounds suggest non-overlapping knowledge and expertise which suggests a broader pool of resources from which to draw in making decisions and taking action. Key findings from these two studies are that functional background diversity is

[1] Although Carpenter and Frederickson (forthcoming) report an overall negative relationship between dominant function diversity and firm globalization, this relationship became positive under conditions of low environmental uncertainty.

positively associated with a diversity of beliefs and perceptions (Glick, Miller, & Huber, 1993; Sutcliffe, 1994) and with the tendency to communicate more frequently (Glick, et al., 1993).

Functional background diversity is operationalized by reviewing the work histories of each team member (obtained from surveys or archives) in order to determine the amount of time spent in each of the different functional areas. Functional background diversity is then computed as the average Euclidean distance between the time-in-function scores of each team member and every other team member across all relevant functions[2].

There is a logical relationship between functional background diversity and dominant function diversity. Specifically, teams composed of individuals whose dominant functions cover all of the functional bases (dominant function diversity) are more likely to be composed of individuals with different functional backgrounds (functional background diversity). The two measures clearly provide unique information, however, since it is possible to have a team whose members have generally similar functional backgrounds but very different "dominant functions". This suggests that the choice between dominant function diversity and functional background diversity is an important research design decision that may influence the results that are obtained and the way in which those results should be interpreted. Furthermore, we suspect that in most cases, researchers will want to select one or the other conceptualization rather than employ both in order to avoid problems of construct overlap and multicollinearity.

**Functional assignment diversity.** Five (29%) of the studies summarized in Table 1 conceptualize functional diversity as diversity in the functional assignments of team members. We refer to this form of functional diversity as functional assignment diversity. The key issue for this approach to examining functional diversity is not whether team members have experience in different functional

areas but whether their current functional assignments cover some relevant range of functional categories or are concentrated in just a few. By looking at diversity in current assignments rather than functional backgrounds, researchers hope to understand how the breadth and mix of functional accountabilities on a team relate to team processes and outcomes. Empirical research on functional assignment diversity suggests that it is positively related to external communication (Ancona & Caldwell, 1992), performance in turbulent environments (Keck, 1997), sustained performance (Keck & Tushman, 1993), likelihood of strategic reorientation (Lant, Milliken, & Batra, 1992), and, when accompanied by open debate and dialogue, firm profitability (Simons, Pelled, & Smith, 1999).

Functional assignment diversity is operationalized by assigning each team member to one functional area based on a consideration of job titles and/or responsibilities. Some version of either the Blau (1977) or Shannon (1948) heterogeneity indices is then used to compute functional assignment diversity.

In sum, empirical work on functional diversity in management teams has adopted three different conceptualizations of functional diversity: dominant function diversity, functional background diversity, and functional assignment diversity. These three conceptualizations focus on different expressions of functional diversity and are grounded in different assumptions about which form of functional diversity matters most.

**Intra-Personal Functional Diversity**

A review of the literature summarized in Table 1 suggests that existing empirical research has overlooked a fourth, potentially very important form of functional diversity in management teams -- the diversity represented in the functional backgrounds of individual team members. This conceptualization of functional diversity -- which we refer to as intra-personal functional diversity --

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[2] Since this approach does not take differences in tenure into account, an alternative would be to compute

focuses on the extent to which the individuals on a team are narrow functional specialists with experience in a limited range of functions or broad generalists whose work experiences span a range of functional domains. We now consider this fourth conceptualization of functional diversity.

Although there have been no attempts to empirically examine the significance of intra-personal functional diversity for management *teams*, there have been a few scattered attempts to examine its significance for *individual* managers. For example, Campion, Cheraskin, and Stevens (1994) found that experience in a range of functional domains is positively associated with salary level, promotion opportunities, overall positive affect, and perceptions of skill acquisition. And whereas Walsh (1988) and Beyer, et al. (1997) found that intra-personal functional diversity was not significantly associated with the way managers perceived an experimental problem situation, Hitt and Tyler (1991) found that executives with broad functional backgrounds evaluated strategic acquisitions differently than did executives with narrower functional backgrounds.

In a recent conceptual paper, Burke and Steensma (1998) suggested that intra-personal functional diversity is important for management teams and not just individual managers. They argued that management teams composed of people with wide-ranging functional backgrounds will have broader "dominant logics" (Prahalad & Bettis, 1986) and will be less susceptible to decision-making biases such as escalation of commitment and overconfidence. While intuitively appealing, these propositions have not been directly tested although some evidence supports this line of thinking. For example, Rulke (1996) found that teams of MBA students formed using a functional generalist selection strategy performed better at a management simulation exercise than did teams formed using a functional specialist selection strategy.

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Euclidean distances based on the *proportion* of an individual's work history spent in each functional area.

In sum, the significance of intra-personal functional diversity for management team process and performance is a largely unexplored phenomenon in organizational research. Consequently, we do not know how this conceptualization of functional diversity compares with more traditional conceptualizations (summarized earlier) in its effect on team process and performance.

**A Research Model and Hypotheses**

The above review raises an important question about the study of functional diversity in management teams: *How do the various conceptualizations of functional diversity found in the literature differ in their implications for team process and performance?* This question cannot be answered using existing empirical research since variance in the direction of results across studies may be due to the different process or performance variables examined or the different research settings utilized rather than (or in addition to) the different conceptualizations of functional diversity that are adopted. To begin to address the above question, one would need to compare the effects of at least two different conceptualizations of functional diversity on the same process and performance variables in the same research setting. Furthermore, this comparison should be grounded in sound theoretical arguments for why we might expect to see different effects across conceptualizations of functional diversity. In line with this research agenda, the present section outlines a specific model and set of hypotheses for comparing two of the four forms of functional diversity described above.

Most of the research on functional diversity in management teams has adopted some form of the basic input-process-outcome model of group effectiveness (i.e., Guzzo & Shea, 1992; Hackman & Morris, 1975). In the simple form of this model, group characteristics and context factors (e.g., functional diversity, nature of the task) influence patterns of behavior and interaction within a group (e.g., conflict, communication, cohesion) which, in turn, affect the outcomes achieved by the group (e.g., competitive responses, innovation, performance). But although all of the studies cited above and

summarized in Table 1 are grounded in this model, only a few attempt to "open the black box" (Lawrence, 1997) of group process in order to empirically examine the mediated relationships that are assumed to exist (e.g., Pelled, Eisenhardt, & Xin, 1999).

The model proposed here is designed to examine the role of **information sharing** in mediating the relationship between different forms of functional diversity and performance outcomes. Information sharing involves conscious and deliberate attempts on the part of management team members to exchange work-related information, keep one another apprised of activities, and inform one another of key developments. Since information related to both internal and external issues is unequally distributed across management team members (given the functional division of labor and accountability), the ability and willingness of a team to continually share pertinent information is critical if the team is to make decisions and take actions that appropriately consider the range of relevant factors (see Argote, Gruenfeld, & Naquin, 1999). Research on management teams has tended to generally support the significance of information sharing for management team effectiveness (Ancona & Caldwell, 1992; Eisenhardt, 1989; Gladstein, 1984).

Our approach here will be to examine the different effects of *dominant function diversity* and *intra-personal functional diversity* on information sharing and unit performance. We focus on these two forms of functional diversity for several reasons. First, dominant function diversity is by far the most common conceptualization of functional diversity in the management team literature and therefore constitutes a useful "standard" against which to compare alternative conceptualizations. Second, intra-personal functional diversity provides a nice theoretical counterpoint to dominant function diversity since dominant function diversity is concerned with a *team's* breadth of experience across functional categories whereas intra-personal functional diversity is concerned with the breadth of functional experiences of the *individuals* on the team. Third, intra-personal functional diversity has

been generally overlooked in the empirical literature suggesting an opportunity to broaden our understanding of functional diversity in management teams. And fourth, a careful comparison of all four forms of functional diversity is beyond the scope of a single study.

In developing our hypotheses, we reference data obtained from 43 interviews conducted with management team members from four different business units in a Fortune 100 consumer products company. This same company provided the setting for our empirical analysis although these four teams were not included in that sample. Interviews lasted about an hour and were tape recorded and transcribed. The interview format was semi-structured and focused on a variety of issues related to management team functioning, including the effect of functional diversity on team processes and performance. Data from these interviews were used to inform and enrich the development of our theory and hypotheses and specific quotes from our interviews will be used as appropriate to illustrate and elaborate specific points.

**Intra-personal functional diversity and information sharing.** Researchers interested in understanding the relationship between team diversity (of whatever form) and team process or performance often invoke social categorization theory to support their arguments or explain their findings (Williams & O'Reilly, 1998). Social categorization theory suggests that individuals seek to maintain high self-esteem by defining themselves in ways that lead to favorable social comparisons. Individuals place themselves and others into social groups (defined in terms of age, background, status, etc.) and then assign positive characteristics to their own group (ingroup) and negative characteristics to other groups (outgroups). These stereotypes and biases can severely restrict communication, undermine cohesion, and impede collaborative problem solving (see Tajfel, 1981 ; Turner, 1982).

Since the majority of management teams are composed of individuals who are responsible for different functional areas, stereotyping and ingroup/outgroup biases resulting from functional

background differences are a potential problem in any management team. If team members develop negative stereotypes about individuals in different functions, these stereotypes can act to restrict communication and undermine group cohesion. In contrast, if an individual perceives that he/she is similar to other team members in terms of functional background, positive attributions will likely be made and the lines of communication opened (Williams & O'Reilly, 1998).

We suggest that teams composed of individuals with broad functional backgrounds will be less susceptible to functionally-grounded biases and stereotypes because individual team members will identify with a greater number of functional areas. An individual who has spent time in a variety of functional areas should be less strongly identified with a single function and less likely to view other functional areas in stereotyped and biased ways. In other words, there are simply fewer function-based outgroups in a team composed of functional generalists since team members can claim membership in a variety of functional domains. These arguments suggest that teams composed of functionally broad individuals will be better at sharing information than will teams composed of functional specialists.

The following quote from our interview data gets at functional stereotypes and the way in which functional breadth can break down these stereotypes:

> "[I]t's just people don't understand what the other persons' experience base is or what's important to their job. You know, the typical manufacturing guy always wants [accurate forecasts] or the typical sales guy all he knows how to do is go after volume, volume. It's less of a problem if you have cross-fertilization between departments and a better understanding of what those people are up against."

Although social categorization provides one explanation for how functional diversity can affect information sharing, the sharing of information in teams can also be seen as a basic problem of motivation, i.e., are team members motivated to share information about activities and developments in their area with other members of their team? Whereas social categorization theory provides an

explanation for why an individual might not want to share information with other team members (i.e., negative stereotypes), a motivation approach – specifically expectancy theory (Vroom, 1964) – provides an explanation for why an individual would want to share information with other team members. By viewing the problem of information sharing in teams in terms of expectancy theory, we can identify additional ways in which intra-personal functional diversity might enhance team member motivation to share information and therefore increase information sharing within a team.

According to expectancy theory, motivation to perform a task results from an individual's response to three questions: (1) If I exert effort on this task, will I achieve the relevant outcome? (expectancy), (2) If I achieve this outcome, will it lead to a particular reward? ( instrumentality), and (3) Do I value the reward? (valence). In the case of information sharing, these questions can be framed as follows: (1) If I share information with my fellow team members about activities and developments in my area, will they understand me? (expectancy), (2) If my team members understand activities and developments in my area, will it help us to perform better as a team/organization? (instrumentality), and (3) Do I value performing better as a team/organization? (valence). If we assume that most management team members will respond in the affirmative to the valence question (given that bonuses, job security, and other incentives are involved), the question of information sharing in management teams boils down to issues of expectancy and instrumentality.

We propose that the intra-personal functional diversity of a management team will positively influence a given team member's responses to both the expectancy and the instrumentality questions. In a team composed of functionally broad individuals, I (as a team member) will be more likely to believe that other team members will be capable of understanding activities and developments in my functional area because I know that they have had experience in my area (thus increasing expectancy). Furthermore, if I have experience in a range of functions, I will be more likely to recognize the

relevance of information that I possess for individuals in other functional areas and for the team as a whole (thus increasing instrumentality). Consequently, individual team members in teams composed of functionally broad individuals should be more strongly motivated to share information with one another, which, in the aggregate, should lead to a higher level of information sharing within the team.

The above arguments suggest the following hypothesis about the relationship between intra-personal functional diversity and information sharing in management teams:

**H1**: The intra-personal functional diversity of a management team will be positively associated with information sharing within the team.

Given our earlier argument that information sharing would be positively related to team effectiveness, Hypothesis 1 suggests (by extension) that intra-personal functional diversity can influence team effectiveness by increasing information sharing within the team. We suspect, however, that intra-personal functional diversity has other positive implications for group process and performance beyond just improved information sharing. For example, teams composed of functionally broad individuals may be better at making well-informed decisions (individual and collective) than teams composed of functionally narrow individuals. Research suggests that accumulated prior knowledge is necessary for new knowledge to be assimilated and used because of the self-reinforcing aspect of memory development (Bower & Hilgard, 1981). That is, the more objects, patterns and concepts that are stored in memory, the more readily individuals acquire new information about these constructs and the better they are at using the information in new settings (Bower & Hilgard, 1981: 424). Without appropriate or sufficient prior knowledge, individuals may have difficulty making new knowledge fully intelligible (Lindsay & Norman, 1977: 517). This implies that teams composed of individuals who have worked in a number of different areas may be better prepared both to make sense of information and to integrate information related to different functional domains. In addition, teams composed of

individuals with broad capacity (intra-personal functional diversity) may be more capable of recombining existing knowledge, skills, and abilities into novel combinations (Burke & Steensma, 1998; Weick, Sutcliffe, & Obstfeld, 1999).

The following quotes, taken from our interview data, summarize some of the benefits of intra-personal functional diversity for decision making:

> "The more each individual manager knows generally about the business, the more effective they're going to be in making the right decision for their individual functional responsibility because they're not making a decision in a vacuum. They're actually trying to think first and foremost about their responsibility but also thinking about that in the right context."
>
> "[T]he better you know the business, the better you're going to be able to run your small segment of it because you've gotta be able to connect the dots. You've gotta be able to put the pieces of the puzzle together. You've gotta know how it all mixes in together. It's nice that you're great at what you do and I think it's nice that you run your part of the business very efficiently but you may not know how that connects to the bigger scheme of things."

These arguments suggest that although intra-personal functional diversity may improve team effectiveness by improving information sharing, the benefits of intra-personal functional diversity may not be limited to that one intervening variable. In other words, we do not expect that information sharing will fully mediate the relationship between intra-personal functional diversity and performance outcomes. To state this argument formally:

**H2**: Information sharing within a management team will <u>partially</u> mediate the positive relationship between the intra-personal functional diversity of the team and (short-term) unit performance.

**Dominant function diversity and information sharing.** As discussed above, the construct of *dominant function diversity* emphasizes the different and unique functional specializations among management team members. Dominant function diversity is higher when team members have unbalanced functional experiences (i.e., a preponderance of work experiences in a particular functional area) which complement one another in a way that covers all the functional bases. In other words, the construct of dominant function diversity is focused on breadth across a team whereas intra-personal functional diversity is concerned with breadth within individuals. We would therefore expect that dominant function diversity will have different (and in many cases, opposite) implications for management team process and performance than will intra-personal functional diversity.

For example, we would expect that dominant function diversity would exacerbate the problems of stereotyping and ingroup/outgroup biases described above as each team member identifies with their particular (dominant) functional specialty. As team members become specialists in a particular functional area, identification with that function becomes central to their sense of self and positive comparisons between their function and other functions become increasingly important. Unfavorable characterizations of "outgroup" functions, which lead to stereotyping and restricted communication, are the likely result. Although this may not be a problem for a group composed of team members who are specialists in the same function, it becomes more of a problem as the number of functions (and functional "specialists") increases. In other words, as dominant function diversity increases, we would expect to see more problems with communication and lack of cohesion due to social categorization processes.

Furthermore, motivation to share information may be compromised in teams where members have non-overlapping functional backgrounds. If I (as a management team member) perceive that my fellow team members are specialists in other functional areas, I will be less likely to believe that they

can understand activities and developments in my area (lower expectancy). Furthermore, my specialization in a particular functional area decreases the likelihood that I will see the relevance of issues I encounter for the effectiveness of other functions and the team as a whole (lower instrumentality). So, although I may still go to other team members for advice about issues and problems that I see as related to their function, I may be less willing to deliberately share information and issues related to my own function. This argument implies that information sharing will be lower in functionally heterogeneous teams.

The following quote from our interview data illustrates the way in which a narrow functional background can inhibit information sharing:

> "Because I understand sales, I have a tendency to gravitate a lot more to the [sales managers] because I feel like I can add some value there. I don't have a true appreciation for what X does in the manufacturing side of the business because I don't really understand all the nuances that go into that. And because I don't have a good capacity at that, I don't interact with X as much as I would if I really understood what he was up against. I think the same thing would apply to Y. I don't really know what he does on a day to day basis or how he goes about developing his budget, what process he has in place to make sure that he's got a declining balance. I don't know the kind of measures he's looking at. I think the fear of the unknown causes people to gravitate to things that they do understand."

These arguments lead to the following hypothesis about the relationship between dominant function diversity and information sharing in management teams:

**H3**: The dominant function diversity of a management team will be negatively associated with information sharing within the team.

Combined with our earlier argument that information sharing would be positively related to team effectiveness, this hypothesis suggests that dominant function diversity will contribute negatively to team effectiveness by decreasing information sharing within the team. But research adopting this

conceptualization of functional diversity has suggested other problems associated with dominant function diversity besides a restricted exchange of information. For example, research has suggested that dominant function diversity can increase conflict (Knight, et al., 1999; Pelled, Eisenhardt, & Xin, 1999), make it more difficult for a team to reach consensus (Knight, et al., 1999), and slow competitive response (Hambrick, Cho, & Chen, 1996). These process losses help to explain why dominant function diversity has been negatively associated with short-term financial performance in past research (Murray, 1989).

Given these findings, it seems clear that dominant function diversity can compromise short-term performance through means other than simply decreased information sharing. In other words, we should not expect information sharing to fully mediate the negative relationship between dominant function diversity and unit performance. Stated formally:

**H4**: Information sharing within a management team will partially mediate the negative relationship between the dominant function diversity of the team and (short-term) unit performance.

To summarize, we suggest that intra-personal functional diversity will be positively associated with information sharing in management teams and that dominant function diversity will be negatively associated with information sharing. Furthermore, we suggest that information sharing will partially mediate the relationship between these two functional diversity variables and unit performance. The next section describes the methods we used to examine these hypotheses.

## METHOD

### Research Site and Sample

We collected data from the management team members of business units (BUs) in a Fortune 100 consumer products company. The business units in this company are organized geographically

and each BU management team is responsible for overseeing the production, sales, marketing, and distribution of the company's product line in their respective market. Although each BU team is given considerable autonomy in how they carry out these activities, ambitious performance targets are developed for each BU under the supervision of the corporate office and each team is evaluated and compensated in strict accordance with these performance targets. In the words of one manager, "We have a lot of autonomy. We have to coordinate with other BUs, of course, but we have a lot of leeway". Gross revenues across all business units averaged $125 million in 1994.

Consistent with previous research (see Hambrick, 1994), we defined the BU management team as the BU general manager and his/her direct reports. Each BU management team therefore consists of the BU general manager and management-level individuals in each of the following functional areas who report directly to the general manager: finance, marketing, sales and distribution, production (or product logistics), equipment management, administrative support, and human resources. In larger markets, sales and distribution may be organized into smaller geographic areas, each with its own manager who will also be a part of the management team, resulting in teams of varying sizes.

This sample provides a particularly appropriate setting for testing our hypotheses. One of the problems facing researchers studying management teams is that the teams they include in their samples are often not directly comparable in terms of what they do or the outcomes they achieve. By examining management teams from a single organization, the role composition of the team, the way in which performance is measured and reported, and the work performed are all held constant. We can therefore focus on the hypothesized relationships while holding constant many of the more common industry (competitiveness, turbulence) and organizational (culture, reporting idiosyncrasies) confounds.

Furthermore, since the teams in this sample are responsible for the execution of day-to-day operational details, ongoing information sharing across functions is an especially important team

process that helps to promote mutual adjustment and real-time coordination. The managers we interviewed strongly emphasized this point as illustrated in the following quotes:

> "The [sales people] can't meet their goals and take care of their customers if my group doesn't support them correctly. So we have to have very good dialogue and communication. None of these things stand alone, not at all. . . . So to be successful we have to interact very well, extremely well."
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> "Communicate. That's the number one thing -- communicate, communicate and re-communicate. Everybody needs to know what track the other guy is on. People get off on a tangent, and it has ripple effects throughout the organization."
>
> "[C]learly a case can be built that the best operating teams are the ones who work closely together."

**Data Collection**

Survey and archival data from a random sample of business units were used for testing the hypotheses. Because corporate management limited the number of units that we could ask to participate in the study, we selected a random sample of 45 BUs (47% of the BU population) using a two-step, stratified sampling procedure designed to maximize variance on the dependent variable. We first grouped the population of BUs into high, medium, and low performers according to their performance averaged over a two-year period preceding the data collection. Next, we randomly selected 15 BUs from each performance level, resulting in a final sample of 45 BU teams.

Surveys were distributed to each BU manager and his/her direct reports along with a letter from the Corporate VP of Human Resources introducing the study, asking for participation, and promising confidentiality. We collected survey data early in the year for which performance was assessed so that there would be a lag of nearly one full year between the survey administration and the measurement of the criterion performance variable. Surveys were returned from 44 of the 45 teams

(98%) with an average team response rate of 84% (438 total responses). Responding teams had an average of 11 members (s.d. = 2.4). The average age of team members was 40 years and 86% were male. At the time of the survey, team members had been in their current position an average of 1.9 years and had been with the company an average of 9.6 years.

Performance data and data on team size were collected from corporate records with the cooperation and assistance of corporate personnel.

**Measures**

**Functional diversity.** Each team member was asked to indicate their years of previous work experience in each of nine functional areas: sales and marketing, manufacturing, distribution or warehouse, service (i.e., equipment management), personnel/HR, R & D, finance or accounting, administration (i.e., administrative support), and general management. These responses were used to calculate our two measures of functional diversity: dominant function diversity (DFD) and intra-personal functional diversity (IFD). *Dominant function diversity* was computed by assessing the "dominant functional background" of each team member (that functional area in which they had spent the majority of their career; see Hambrick, Cho, & Chen, 1996: 672) and then computing the heterogeneity index proposed by Blau (1977)[3], i.e.:

$$DFD = 1 - \sum_{i=1}^{9} p_i^2,$$

where $p_i$ = the percentage of the group whose dominant functional background is in the i $^{th}$ functional area (with nine different functions). Following Teachman (1980), *DFD* was normed so that values of *DFD* would range from 0 (minimum possible diversity) to 1 (maximum possible diversity).

[3] Although a majority of management researchers cite Blau (1977) as the origin for this measure, it is essentially the same measure used by Gini (1912), Hirschman (1964), Herfindahl (1950), and Gibbs and Martin (1962).

*Intra-personal functional diversity* was measured by first computing an intra-personal functional diversity score for each team member (see Walsh, 1988) and then taking the average of this score across all team members (see Burke & Steensma, 1998) as follows:

$$IFD = \sum_{i=1}^{n}\left(1 - \sum_{j=1}^{9} p_{ij}^{2}\right)/n,$$

where $p_{ij}$ = the percentage of manager i's total years of experience spent in the j $^{th}$ functional area and n = the number of team members. In other words, our focus here is on the central tendency of intra-personal functional diversity scores across team members (i.e., the extent to which the team is made up of functionally-diverse individuals) rather than on the variation of these scores (i.e., the extent to which team members have varying degrees of functional breadth). An alternative to averaging might be to calculate the percentage of team members with intra-personal functional diversity scores above some critical level (e.g., 0.50). We examined this approach and found it to yield virtually identical results in all regression models. As with *DFD*, *IFD* was normed (Teachman, 1980) so that values of *IFD* would range from 0 (minimum possible diversity) to 1 (maximum possible diversity).

Dominant function diversity ranged from 0.27 to 0.92 (m = .66, s.d. = .17) and intra-personal functional diversity ranged from 0.12 to 0.51 (m = .28, s.d. = .09), suggesting good variation on these two variables across teams in this sample.

**Information sharing** Information sharing was measured using three Likert-scale items that assess the extent to which management team members agree or disagree with statements about patterns of information sharing within their team. Specifically, each team member was asked to evaluate the extent to which (1) information used to make key decisions is freely shared among the members of the team, (2) team members work hard to keep one another up to date on their activities,

and (3) team members are kept "in the loop" about key issues affecting the business unit. The response set for all items ranged from 1 = "very strongly disagree" to 7 = "very strongly agree."

Responses to these three items were averaged across all of the managers on a team in order to create a group-level index of information sharing. We assessed inter-rater reliability using the intraclass correlation, ICC (1,k), which measures the extent to which responses from a given team are consistent with one another but different from the responses of other teams (Shrout & Fleiss, 1979; Kenny & LaVoie, 1985). Kenny and LaVoie (1985) suggested that an ICC significantly greater than zero indicates adequate inter-rater agreement. We found an ICC of 0.46 ($p < .001$) for the information sharing scale. The internal consistency reliability of the scale was also strong with a Cronbach's alpha of 0.89 and factor analysis supported the existence of only one underlying factor (eigenvalue = 2.4, 81% variance explained, loadings from .88 to .93). Measures of information sharing ranged from 3.8 to 5.7 (m = 4.8, s.d. = .45).

**Performance** As indicated above, BU management teams are held accountable for achieving annual profitability targets (net operating profit before tax or NOPBT) which must be approved by corporate management. Discussions with corporate personnel confirmed that NOPBT targets are intended to be stretch goals -- not easily achievable without some improvement in revenues and/or costs. Consequently, proposed targets are approved only after a careful evaluation of historic market conditions and potential market improvements. Corporate personnel also seek to apply a consistent set of criteria across all business units so that target achievement represents comparable improvement. Once set, these targets constitute the key performance bar against which management teams are evaluated to determine bonuses, promotions, and other recognition.

Given the primacy of these profitability targets for the teams in this sample, we measured performance in terms of this variable, specifically, as a management team's actual profitability relative to

their targeted profitability for the survey year (multiplied by 100 to simplify the interpretation of results). This performance measure has a number of advantages – beyond its importance in the minds of participating managers – that make it particularly well-suited for this sample and research model. First, as a number of scholars have noted, financial target achievement captures an important aspect of economic efficiency – the extent to which *ex ante* objectives are realized in *ex post* results (see Ezzamel, 1992: 25; McGrath, MacMillan, & Venkataraman, 1995). Second, financial target achievement explicitly takes differences in BU context into account since the denominator (the profitability target) is developed based on an evaluation of historic and projected market conditions. And third, the achievement of explicit financial objectives requires ongoing information sharing in order to coordinate progress toward the goal, suggesting that this may be the most appropriate performance measure for our research model.

Financial target achievement for BU teams in this sample ranged from 70 to 113 with a mean of 98 and a standard deviation of 8, a distribution that compares favorably with the population distribution on this variable ($\mu = 98$, $\sigma = 9.6$, min. = 63, max. = 118) [4].

**Control variables** Based on a review of the literature and a consideration of this specific research context, several control variables were added to the model in order to establish the robustness of the hypothesized relationships. These control variables include team size, average years of work experience, age diversity, tenure diversity, and market growth.

Research on group behavior and performance has established quite clearly that group size has important implications for group processes and outcomes (Goodman, Ravlin, & Argote, 1986). In the present study, it is important to control for team size for at least two reasons. First, larger teams may

[4] Financial target achievement in the survey year was not significantly correlated with our stratification variable – financial target achievement averaged over the prior two years – in the BU population. This finding mitigates any

have a more difficult time sharing information across all team members. And second, since larger teams are associated with larger BUs, it is important to control for any possible relationship between size and BU performance. Team size was computed simply as the number of managers on a team (general manager and his/her direct reports) and was obtained from corporate personnel.

Although the two functional diversity variables included in the model get at the mix of functional expertise on a management team, they do not tell us how many years of work experience team members have overall. Since competence and expertise are at least partially a function of time, it is therefore important to control for the average years of work experience of team members. As described earlier, each team member was asked to indicate their years of previous work experience in different functional areas. These responses were summed for each team member and then averaged across the team in order to produce a measure of average years of work experience for each team.

Although functional diversity is the central focus of the present study, other forms of diversity have also been shown to relate significantly to management team process and performance. For example, Zenger and Lawrence (1989) found that the age diversity of a project group was negatively related to intra-group communication. Age diversity does not appear to be related to performance outcomes, however (Williams & O'Reilly, 1998: 103-104). We therefore controlled for age diversity in the present model in order to account for any possible effects. Age diversity was computed from self-reported ages (year of birth) using the coefficient of variation (standard deviation across team members divided by the mean for the team; Allison, 1978).

Diversity in team member tenure has also been shown to affect group processes and outcomes. In a study of 53 top management teams, for example, Smith, et al. (1994) found that diversity in industry and organization experience was negatively related to the amount of informal communication

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concern about possible bias due to correlations between the dependent variable and the sampling variable (see

within the team. Similar negative relationships between tenure diversity and team communication were reported by O'Reilly, Snyder, and Boothe (1993) in their study of management teams and Zenger and Lawrence (1989) in their study of project groups. Studies examining the relationship between tenure diversity and performance have produced conflicting results (see Williams & O'Reilly, 1998: 96). Given these findings, we included a measure of organizational tenure diversity in our model to account for any possible effects. Organizational tenure diversity was measured by asking respondents to indicate the month and year they started working in the focal organization and then computing the coefficient of variation (Allison, 1978).

Finally, since we would expect that BU performance will be significantly influenced by the market context within which a BU is operating, we controlled for market context in two different ways. First, our performance dependent variable explicitly takes market context into account by assessing performance relative to that level of performance which would be expected for each BU given past trends and expected market conditions. Second, we included a measure of market growth for the geographic region served by each BU. We obtained industry-specific data on the value of core-business product class shipments for the period of this study from the U.S. Economic Census, Manufacturing Industry Series (U.S. Department of Commerce, 1999: Table 6b). Market growth was computed as the value of core-business product shipments for a specific geographic region (state-level data) at *t+2* divided by the value of product shipments in that region at *t-3* (where *t* = the survey year, *t-3* and *t+2* = census years). Market growth measures ranged from 0.87 to 2.56 for the business units in this sample (m = 1.4, s.d. = .48).

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Quesenberry & Jewell, 1986).

**Analyses**

Hypotheses were tested using the mediated regression approach recommended by Baron and Kenny (1986). This approach involves an examination of three separate regression equations. In the first equation (Model 1), the mediator (information sharing) is regressed on the independent variables (dominant function diversity and intra-personal functional diversity) and the control variables. Significant relationships between the two functional diversity variables and information sharing in Model 1 provide support for H1 and H3 (assuming the coefficients are in the hypothesized directions).

In the second equation (Model 2), the dependent variable (unit performance) is regressed on the independent variables (dominant function diversity and intra-personal functional diversity) and the controls. And in Model 3, the dependent variable (unit performance) is regressed on the independent variables (dominant function diversity and intra-personal functional diversity), the mediator (information sharing), and the controls. Evidence for mediation is obtained if (1) the two functional diversity variables significantly predict information sharing in Model 1, (2) the two functional diversity variables significantly predict unit performance in Model 2, and (3) information sharing significantly predicts unit performance in Model 3. If these three conditions hold and in the predicted directions, the final requirement for mediation is that the effect of the two functional diversity variables on unit performance be less in Model 3 than in Model 2. If the two functional diversity variables have no effect on unit performance in Model 3, there is evidence for "perfect mediation" (Baron and Kenny, 1986: 1177). Since Hypotheses 2 and 4 predict partially mediated relationships rather than perfectly mediated relationships, support for H2 and H4 is obtained if the coefficients for the two functional diversity variables are smaller in Model 3 than in Model 2 but not necessarily insignificant.

## RESULTS

Table 2 presents the means, standard deviations, and intercorrelations for all variables included in the model. Table 3 presents the mediated regression results for Models 1 through 3. In Model 1, the two functional diversity variables and five control variables accounted for a significant 19% ($p < .05$) of the variance in information sharing. Of the five control variables included in the model, only team size demonstrated a moderately significant ($p < .10$) association with information sharing. The coefficients for dominant function diversity and intra-personal functional diversity were significant ($p < .01$) and in the predicted directions, providing support for Hypotheses 1 and 3.

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Insert Tables 2 and 3 about here.

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In Model 2, the five control variables and two functional diversity variables accounted for a significant 18% ($p < .05$) of the variance in unit performance. Only one of the five control variables exhibited a significant relationship with unit performance – organizational tenure diversity was negatively related to unit performance at $p < .10$. The coefficients for the two functional diversity variables were both significant ($p < .01$ for dominant function diversity; $p < .05$ for intra-personal functional diversity) and in the predicted directions.

Finally, the addition of information sharing in Model 3 increased the variance explained to a significant 25% ($p < .05$). The coefficient for information sharing in Model 3 was positive and significant ($p < .05$) as predicted. Furthermore, the coefficients for both functional diversity variables decreased in magnitude and significance. In the case of dominant function diversity, the coefficient decreased from -.44 (which was significant at $p < .01$) to -.29 (which was marginally significant at $p < .10$). In the case of intra-personal functional diversity, the coefficient decreased from .40 (which was significant at $p < .05$) to .25 (which was not statistically significant at $p = .16$). According to Baron

and Kenny (1986), these results suggest that information sharing partially mediates the relationship between dominant function diversity and unit performance (as specified in H4) but that information sharing may "fully mediate" the relationship between intra-personal functional diversity and unit performance (in contrast to H4 which predicted a partially mediated relationship). The fact that the coefficient for intra-personal functional diversity was still fairly large (.25), however, and approached significance ($p = .16$) suggests that we may want to preserve the possibility that intra-personal functional diversity exerts an effect on unit performance beyond what can be accounted for by improved information sharing.

In order to directly test the approximate significance of the mediated effects hypothesized in H2 and H4, we used the procedures outlined in Baron and Kenny (1986: 1177) which build on the work of Sobel (1982) and Goodman (1960). Specifically, we computed the standard error for each mediated effect (following Goodman, 1960) and then used this parameter to compute z-scores for each mediated effect. Results support our hypotheses that information sharing mediates the relationship between both dominant function diversity and intra-personal functional diversity ($p < .001$ in both cases).

## DISCUSSION

Our objective in this paper has been to suggest that different conceptualizations of functional diversity can have very different implications for management team process and performance. We examined two forms of functional diversity – intra-personal functional diversity and dominant function diversity – and developed a model to predict how these two forms of functional diversity would relate to team process and performance. Drawing on social categorization and motivation theories as well as research on groups and teams, our model predicted that intra-personal functional diversity would have positive and dominant function diversity negative effects on information sharing and unit performance. A test of this model in 44 business unit management teams from a Fortune 100 consumer products

company provided strong support for the different effects of these two conceptualizations of functional diversity on management team process and performance.

Specifically, we found that intra-personal functional diversity was positively associated with information sharing. This finding is consistent with our expectation that groups and teams composed of functionally broad individuals would be more strongly motivated to exchange information and would be less susceptible to the stereotypes and ingroup/outgroup biases that restrict the open sharing of information. We also found that information sharing mediates the relationship between intra–personal functional diversity and unit performance and that, in fact, the positive relationship between intra-personal functional diversity and unit performance is largely (if not completely) explained by improved information sharing. This finding is inconsistent with our argument that intra-personal functional diversity would have positive implications for performance beyond just improved information sharing (e.g., better-informed decisions). Given the magnitude of the coefficient for intra-personal functional diversity in Model 3, however, it appears that intra-personal functional diversity does account for some residual variance in unit performance. Further exploration of this relationship therefore provides one promising direction for future research.

As expected, we found a very different (and generally opposite) pattern of results for dominant function diversity. Specifically, we found that dominant function diversity was negatively associated with information sharing for the management teams in our sample. This finding is consistent with our argument that the dispersion of team members across functional areas of expertise increases the likelihood that team members will have very different backgrounds and experiences and will therefore have difficulty communicating with and relating to one another. We also found that information sharing partially mediated the relationship between dominant function diversity and unit performance. This result supports our contention that the negative implications of dominant function diversity for

unit performance are not fully explained by decreased information sharing but may also be due to increased conflict and dissensus, slower decision making, and an inability to take decisive and coordinated action.

The findings presented here enrich our understanding of functional diversity in management teams and have important implications for management theory and practice. For example, our findings underscore the wisdom of Pfeffer's (1983) recommendation that researchers be sensitive to the differences between demographic measures and make sure that their measures match their theories. In this study, different measures of functional diversity exhibited different relationships to the same mediating and outcome variables for the same group of teams. These results suggest that studies using different measures of functional diversity (or any other demographic variable) may not be comparable and that researchers should therefore be careful and explicit in operationalizing demographic constructs.

Furthermore, although empirical research has demonstrated the benefits of functional breadth for individual careers (Campion, Cheraskin, & Stevens, 1994; McCall, Lombardo, & Morrison, 1988), this study is the first to examine the significance of intra-personal functional diversity for management teams. The results suggest that this form of functional diversity has significant and positive implications for team process and performance. These findings imply that organizations can benefit considerably by seeking and developing management teams composed of individuals who are functionally broad and not just narrowly specialized in a single functional area.

**Future Research Directions**

A number of avenues for future research follow from this study. First, although intra-personal functional diversity emerged as an important variable in this study, the seemingly low intra-personal functional diversity scores for these BU management teams (average of 0.28) suggests that, for the

most part, managers in this sample had a fairly narrow range of functional experiences. This finding raises a number of interesting questions about the extent to which management teams in other organizations, industries, or levels have similarly narrow backgrounds and about the organization or industry factors that are associated with higher levels of intra-personal functional diversity. An examination of intra-personal functional diversity in other settings is therefore an important direction for future research.

Second, in this study we measured performance with a short time horizon, i.e., performance in the year following data collection. We found that intra-personal functional diversity was positively associated with short-term performance, and, consistent with other studies (Murray, 1989; Simons, Pelled, & Smith, 1999), that dominant function diversity was negatively associated with short-term performance. There is, however, evidence to suggest that although functional diversity can cause performance problems in the short term, there may be benefits to functional diversity in the long term (Keck & Tushman, 1993; Murray, 1989). An important direction for future research, therefore, would be to examine the relative effects of intra-personal functional diversity and dominant function diversity on performance over the long term.

Third, past research has suggested that the positive or negative effects of functional diversity may be at least partially a function of contextual factors. For example, researchers have suggested that functional diversity may be most strongly related to performance under conditions of high rivalry (Murray, 1989) or high environmental turbulence (Keck, 1997). In the present study, industry context was held constant so that we could focus on differences across conceptualizations of functional diversity rather than differences across contexts. Future research might therefore consider how differences in contextual factors (e.g., environmental stability) affect the relationships examined here.

And finally, the fact that the two forms of functional diversity examined here – dominant function diversity and intra-personal functional diversity – had such very different implications for team process and performance suggests that similar comparisons involving the two other forms of functional diversity – functional background diversity and functional assignment diversity – may also be significant and substantively meaningful. In pursuing this promising research direction, it may be useful to consider not only the comparative effects of the different forms of functional diversity but also the way in which they interact. Jehn, Northcraft, and Neale (1999) found that the relationship between certain forms of team diversity and performance can be moderated by other forms of team diversity. For example, they found that the relationship between informational diversity (diversity in education, functional assignment, and position) and team performance is moderated by value diversity (diversity in goals and work values). These findings underscore the possibility that the various forms of functional diversity we identify here may interact in their effect on team processes and performance.

For example, the theory and results presented in this paper raise an interesting paradox -- what about a management team composed entirely of functional specialists? On one hand, such a team should be able to easily share information (given a common functional background) but, on the other hand, increased information sharing may not translate into better-informed decisions because the information shared represents a similar functional perspective. This particular scenario is practically unlikely in most management teams given that the different functional positions in a management team are filled by individuals with presumed expertise in different functions. Nevertheless, it suggests that there may be settings where the interaction between dominant function diversity and intra-personal functional diversity becomes particularly important for predicting information sharing and performance outcomes.

Furthermore, there may be situations in which the interaction between intra-personal functional diversity and functional assignment diversity has implications for team process and performance. In many teams (including most management teams), functional accountabilities are clearly assigned so that people know who is responsible for what and who has the last word on what issues. Where functional accountabilities are not clearly assigned, however, informal roles often evolve around perceived areas of functional expertise. In a team composed largely of functional generalists (high intra-personal functional diversity), this informal role evolution process could become problematic since there might be several people who could legitimately claim expertise in a given area. This suggests that where intra-personal functional diversity is high, functional assignment diversity might also need to be high in order to avoid coordination and accountability problems.

## CONCLUSION

Research on management team process and performance has increasingly recognized the importance of diversity in functional backgrounds, affiliations, and assignments for team effectiveness. The purpose of this paper has been to suggest that the construct of functional diversity can be conceptualized in different ways and that these different conceptualizations have very different implications for management team process and performance. Our examination of two different forms of functional diversity – dominant function diversity and intra-personal functional diversity – confirmed this expectation. These results underscore the importance of careful articulation and operationalization of demographic constructs and suggest that intra-personal functional diversity may be more important for management team effectiveness than the simple distribution of team members across functional categories.

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## TABLE 1.

Alternative Conceptualizations of Functional Diversity in the Empirical Literature.

*Dominant Function Diversity (DFD): 10 studies*

| Study | Functional Diversity Variable | Core Proposition | Data/Results |
|---|---|---|---|
| Bantel & Jackson (1989) | **DFD.** Blau index from survey data (obtained from HR exec.). | DFD → Innovation adoptions | N=TMTs[5] of 199 banks. TMTs high on DFD were more innovative (especially in terms of administrative innovations). |
| Bantel (1993) | **DFD.** Blau index from survey data (obtained from HR executive). | DFD → Strategic clarity | N=TMTs of 205 banks. TMTs with high DFD had clearer strategies. |
| Carpenter & Frederickson (forthcoming) | **DFD.** Blau index using archival data. | DFD → Firm Globalization (moderated by environmental uncertainty) | N = 207 TMTs of U.S.-based MNCs[5]. Firms whose TMTs were high on DFD were less global when environmental uncertainty was high but more global under low uncertainty. |
| Hambrick, Cho, & Chen (1996) | **DFD.** Blau index using archival data. | DFD → competitive action/response | N=All competitive moves of 32 TMTs in the airline industry over a 7-year period. High DFD teams were more likely to act/respond in noteworthy ways although speed was compromised. High DFD was also related to market share & profit growth. |
| Knight, Pearce, Smith, Olian, Sims, Smith, & Flood (1999) | **DFD.** Blau index using survey data. | DFD → Strategic consensus | N=TMTs of 76 firms in U.S. and Ireland. High DFD teams had lower ($p < .05$) strategic consensus and higher interpersonal conflict ($p < .05$). Conflict and agreement seeking moderate DFD → strategic consensus relationship. |
| Michel & Hambrick (1992) | **DFD.** Blau index using archival data. | Diversification Posture → Performance (moderated by DFD) | N=TMTs of 134 firms. DFD did not moderate the relationship between diversification posture and performance. |
| Murray (1989) | **DFD.** Blau and Shannon indices using archival data. | DFD → Performance (efficiency/short-term and adaptability/long-term) | N=TMTs of 84 Fortune 500 companies. DFD was negatively related to short-term performance, especially under high rivalry. DFD was positively related to long-term performance under high rivalry. |
| Pelled, Eisenhardt, & Xin (1999) | **DFD.** Shannon index from survey data. | DFD → Task conflict → performance | N=45 new product and process improvement teams from 3 firms. High DFD teams experience greater task-related conflict (relationship moderated by tenure and task routineness). DFD not related to performance. |

[5] TMT = Top Management Team, MNC = Multi-National Corporation.

| | | | |
|---|---|---|---|
| Smith, Smith, Olian, Sims, O'Bannon, & Scully (1994) | **DFD.** Blau index from survey data. | DFD → TMT Process (social integration, informal communication, communication frequency) → TMT Performance | N=TMTs of 53 technology firms. DFD had no effect on team process or performance. |
| Williams, Hoffman, & Lamont (1995) | **DFD.** Blau index from archival data. | DFD → M-form implementation time | N=TMTs of 76 firms adopting M-form. TMTs w/ high DFD implemented the M-form structure more rapidly ($p < .10$). |

*Functional Background Diversity (FBD): 2 studies*

| Study | Functional Diversity Variable | Core Proposition | Data/Results |
|---|---|---|---|
| Glick, Miller, & Huber (1993) | **FBD** based on complete work histories. Euclidean distances between all TMT members. Survey data. | FBD → Diversity of beliefs about effectiveness → communication | N=TMTs of 79 SBUs. TMTs with high FBD had more diverse beliefs about effectiveness and more frequent communication. |
| Sutcliffe (1994) | **FBD** based on complete work histories. Euclidean distance measure. Survey data. | FBD → Accuracy of environmental perceptions | N=67 TMTs. TMTs with high FBD were less accurate in perceptions of the environment. |

*Functional Assignment Diversity (FAD): 5 studies*

| Study | Functional Diversity Variable | Core Proposition | Data/Results |
|---|---|---|---|
| Ancona & Caldwell (1992) | **FAD.** Shannon index from survey and archival data. | FAD → Communication with other groups → Self- and manager-ratings of effectiveness | N=45 new product teams in 5 high-tech companies. FAD led to more frequent external communication which led to higher manager ratings of innovativeness. |
| Keck (1997) | **FAD.** Blau index from archival data. | FAD → Performance over time (Moderated by environmental stability) | N=TMTs from 56 cement & 18 minicomputer firms over 65 and 12 years respectively. High FAD teams performed better in turbulent environments whereas low FAD teams performed better in stable environments. |
| Keck and Tushman (1993) | **FAD.** Blau index from archival data. | TMT context → FAD | N=TMTs of 104 firms in the cement industry over 86 years. Periods of environmental stability related to lower FAD. Sustained performance was related to higher FAD. |
| Lant, Milliken, & Batra (1992) | **FAD.** Blau index from archival data. | FAD → Strategic reorientation | N=TMTs from 40 furniture firms & 40 software firms. High FAD TMTs more likely to engage in strategic reorientation in both industries. |
| Simons, Pelled, & Smith (1999) | **FAD.** Blau index from survey data. | FAD X Debate → Firm financial performance (debate as the moderator) | N=TMTs from 57 manufacturing firms. FAD X Debate related positively to sales & profits. FAD alone related negatively to sales & profits. |

## TABLE 2.

Means, Standard Deviations, and Intercorrelations[a].

| Variable | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Team Size | 10.82 | 2.42 | -- | | | | | | | |
| 2. Average years experience | 15.84 | 4.44 | -.03 | -- | | | | | | |
| 3. Age diversity | .18 | .05 | .23 | .27$^{\dagger}$ | -- | | | | | |
| 4. Organizational tenure diversity | .84 | .42 | .05 | -.37$^{*}$ | -.26$^{\dagger}$ | -- | | | | |
| 5. Market growth | 1.38 | .48 | .17 | .10 | .10 | .15 | -- | | | |
| 6. Dominant function diversity | .68 | .18 | -.10 | .10 | .20 | -.30$^{*}$ | -.03 | -- | | |
| 7. Intra-personal functional diversity | .28 | .09 | -.05 | .25 | -.21 | -.04 | .24 | .30$^{*}$ | -- | |
| 8. Information sharing | 4.84 | .45 | -.22 | .28$^{\dagger}$ | .01 | -.11 | .01 | -.19 | .30$^{*}$ | -- |
| 9. Unit performance | 98.41 | 8.37 | .08 | -.07 | -.21 | -.05 | .19 | -.28$^{\dagger}$ | .28$^{\dagger}$ | .40$^{**}$ |

[a] N = 44

$^{\dagger}$ $p < .10$

$^{*}$ $p < .05$

$^{**}$ $p < .01$

## TABLE 3.

Mediated Regression Analysis of Functional Diversity Variables, Information Sharing, and Unit Performance[a].

| Independent Variables | Model | | |
|---|---|---|---|
| | 1: DV = Information Sharing[b] | 2: DV = Unit Performance | 3: DV = Unit Performance |
| *Controls* | | | |
| Team size | -.27† | .05 | .14 |
| Average years experience | .12 | -.22 | -.26† |
| Age diversity | .21 | -.08 | -.15 |
| Organizational tenure diversity | -.10 | -.30† | -.26† |
| Market growth | -.08 | .15 | .17 |
| *Functional Diversity Variables* | | | |
| Dominant function diversity | -.44** | -.44** | -.29† |
| Intra-personal functional diversity | .45** | .40* | .25 |
| *Mediator* | | | |
| Information sharing | -- | -- | .34* |
| *F* statistic | 2.47* | 2.36* | 2.80* |
| $R^2$ | .32 | .31 | .39 |
| Adjusted $R^2$ | .19 | .18 | .25 |
| $\Delta R^2$ | -- | -- | .08* |
| Df | 7,36 | 7,36 | 8,35 |

[a] N = 44

[b] Standardized regression coefficients are reported.

† $p < .10$

* $p < .05$

** $p < .01$

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