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Management's blind spot: effects of team performance and teamwork behavior on perceived functional diversity appropriateness

Boudewijn A. Driedonks¹, Josette M.P. Gevers², Mariann Jelinek³, Arjan J. van Weele⁴

ABSTRACT

This paper focuses on consequences of team performance. We investigate how team processes and performance affect perceptions of functional diversity appropriateness, i.e., whether team members and managers believe that the right functions are represented. Our survey study, covering 48 sourcing teams from eleven companies, reveals how team members and their managers evaluate the effectiveness of functional diversity, and how these evaluations differ. Moreover, we show that teams with the poorest perceptions of functional diversity appropriateness are not poorly performing teams, but in fact well performing teams. The implications from this study suggest how managers can prevent this situation from occurring.

INTRODUCTION

As we have noted, over the course of recent decades, scholars in a variety of research fields (e.g. organizational behavior, management science) have established an extensive body of research regarding the effectiveness of cross-functional teams. Much of this research is based on the popular input-process-output (IPO) approach to identify how functional diversity affects team performance. In order to capture the dynamic nature of teams, Ilgen and colleagues (Ilgen, Hollenbeck, Johnson & Jundt, 2005) suggested the input-mediation-output-input (IMOI) model as a better alternative to the traditional IPO model. The extra input at the end of the model emphasizes the interdependence between subsequent team performance cycles since the outputs of one performance cycle serve as inputs for the next episode, creating a recurring loop.

Adopting this approach, the present paper is not about explaining team performance, but focuses instead on its consequences. Observations from practice reveal that the effectiveness of cross-functional team structures are often debated. While previous studies have investigated the effects of cross-functional team compositions on processes and performance, we investigate how team processes and performance relate to perceptions of functional diversity appropriateness, i.e., whether team members and their managers believe that the right functions are represented in their team for accomplishing its task effectively. We base our hypotheses on attribution theory, which predicts that team outcomes have

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psychological consequences that in turn determine future behavior (Weiner, 1985). Team members' and managers' perceptions are important because they ultimately determine the extent to which team members remain motivated to continue to work in cross-functional teams, and whether managers will continue to install cross-functional teams or will steer toward a more mono-functional approach (Gibson, Cooper & Conger, 2009; Greene, 1972; Wexley, Alexander, Greenawalt & Couch, 1980). Managers who perceive a team's performance to be below expectations are likely to intervene, most probably by changing the team's composition, which appears one of the most widely applied management interventions (Hollenbeck, DeRue & Guzzo, 2004). The question is, however, whether changing the team composition is always the optimal solution or whether a better answer lies in critically reviewing teamwork behavior and changing contextual factors influencing team performance.

Another important feature of the present research is that we distinguish between perceptions of team members and those of their managers. Extant research has shown clear differences of opinion between team members and managers regarding the effectiveness of functional diversity in teams (Ancona & Caldwell, 1992). Two recent studies reported positive relationships between functional diversity and team ratings of performance, while management ratings showed negative relationships between functional diversity and performance (Driedonks, Gevers & van Weele, 2010; Peters & Karren, 2009). These differences of opinion may be the result of different access to information, divergent interpretations of the same information, or different referents used to assess team performance (Gibson et al., 2009). Whereas team members have day-to-day information about team interaction and may use this information to evaluate performance, more distant managers rely on quantitative data such as financial reports, budgets and project schedules (Ancona & Caldwell, 1992). As a result, team members and managers may attribute team outcomes to different causes. We further investigate how perceived performance outcomes are attributed to the appropriateness of the level of functional diversity in a team. Perceptual discrepancies between team members and managers with regard to functional diversity appropriateness may compromise the effectiveness of subsequent managerial interventions. A better understanding of such potential discrepancies can provide insights for mitigating the risk of ineffective team management.

In sum, the aim of the present research was to determine how team members' and team managers' perceptions of team performance and teamwork quality relate to their perceptions regarding the appropriateness of the team's cross-functional composition. We hypothesize that managers base their judgments of functional diversity appropriateness primarily on reported performance. Team members, in contrast, are anticipated to also include the quality of teamwork in their judgments, which may also depend upon organizational context factors such as rewards and autonomy. We hope to provide insights for understanding and optimizing management decisions related to team composition and teamwork conditions.

This research is conducted among sourcing teams, which have become increasingly popular in large, multinational firms. The objective of such teams in general is to reduce a company's spend on specified categories of products or services by seeking, selecting and managing suppliers (Trent & Monczka, 1994). Sourcing teams are an excellent subject of study to investigate the phenomena mentioned above for three reasons. First, functional diversity is a recommended team characteristic for sourcing teams (Driedonks et al., 2010; Hardt, Reinecke & Spiller, 2007; Monczka, Trent & Petersen, 2006). Second, sourcing team performance can be assessed relatively well on a single criterion: a sourcing team's most prevalent objective is to reduce expenses on products and services acquired by a company. This clear objective, which all teams under study shared, allows for comparing team and management perceptions of team performance. Finally, sourcing teams are typically

supervised by purchasing managers. These purchasing managers delegate daily leadership over the team to the team leader, but monitor team performance, and are responsible for managerial interventions in the team's structure. Such managers qualify perfectly for the purposes of our study, since their interventions directly impact the operational processes of teams. In this research we investigate perceptions of sourcing team members –including the team leader– who collaborate on a day-to-day basis, and the perceptions of managers to whom these teams report.

This paper proceeds as follows. The next section describes a conceptual framework that is used to explain the perceptual differences that may exist between team members and managers of teams. The third section tests this framework empirically. The fourth section describes the results of our large scale survey, and the fifth section discusses the findings. The final sections address managerial implications and limitations of this study, and raises additional questions for future research.

BACKGROUND AND HYPOTHESES

Team performance is one output that serves as input for the next performance cycle in the input-mediation-output-input model (Ilgen et al., 2005). Team performance influences team members' as well as managers' trust in the team's ability to perform (Baker, 2001; Feltz & Lirgg, 1998; Katz-Navon & Erez, 2005). An appropriate team composition is implicitly assumed to be a precondition for good performance (Hollenbeck et al., 2004; Karakowsky, McBey & Chuang, 2004). Past performance, therefore, likely serves as an indicator for the perceived appropriateness of the team's composition for executing future work (Hoegl & Gemuenden, 2001), which in turn will impact possible managerial interventions in these compositions (Hollenbeck et al., 2004).

Although team studies sometimes rely on objective performance measures (Scott-Young & Samson, 2008), subjective measures are most typical (Lovelace, Shapiro & Weingart, 2001). Typically, this is due to the fact that companies have not succeeded in developing fair performance measures on the team level (Gibson, Zellmer-Bruhn & Schwab, 2003). As a result, teams are in practice as successful as they are thought to be (Baugh & George, 1997).

Earlier studies showed a discrepancy between team and management ratings of performance (Ancona & Caldwell, 1992; Campion, Medsker & Higgs, 1993; Campion, Papper & Medsker, 1996; Cohen & Ledford, 1994; Cohen, Ledford & Spreitzer, 1996; Hoegl & Gemuenden, 2001; Hoegl, Weinkauff & Gemuenden, 2004; Kirkman, Tesluk & Rosen, 2001). Authors of these studies acknowledge that managers and team members assess performance partly by overlapping criteria, and partly by different ones. In these studies, managerial judgments of team performance were operationalized using measures such as adherence to budgets and schedules. However, judgments by team members were measured through the use of criteria such as quality, efficiency and employee satisfaction. As a result, this research design, where different measures were used among different respondents, led to different findings with regard to factors explaining team performance. We argue that if one and the same outcome criterion is used for both team members and managers, the observed discrepancy between the perceptions of the parties involved will be reduced. Using a single criterion, team members and managers are likely to arrive at similar conclusions about the performance of teams.

We conducted our research in the context of sourcing teams. Research on sourcing teams has revealed that the success of sourcing activities is mainly measured in terms of cost savings (Plank & Ferrin, 2002). For this reason we consider sourcing team performance as the team's ability to reduce costs of purchased materials and services effectively. We

hypothesize in this study that performance perceptions may differ among team members and purchasing managers, but only to a limited extent when the same criterion is used for team members and managers. Even though this hypothesis is straightforward, we do include it to verify the cause of potential differences between team members' and managers' perceptions of functional diversity appropriateness. We thus hypothesize:

Hypothesis 1. Team performance in the perception of team members, and team performance in the perception of managers are positively related.

Sourcing is a cross-functional activity that affects multiple disciplines in a company. Therefore, purchasing decision making requires input from a range of functions, that is, disciplines from within the company. Another advantage of having high levels of functional diversity is that this would augment broad stakeholder commitment throughout the company. Such a broad commitment would enhance teams' communication and collaboration beyond the team boundaries. Since outside others typically must execute team recommendations, such commitment is critical. This explains why more and more companies have moved from teams staffed by purchasing professionals alone towards cross-functional sourcing teams staffed from relevant implementing units (Zheng, Knight, Harland, Humby & James, 2007).

Despite the obvious advantages of diversity, cross-functional sourcing teams in practice appear to have problems living up to their promise (Englyst, Jorgensen, Johansen & Mikkelsen, 2008). As a result, purchasing managers tend to perceive functional integration in sourcing processes as troublesome (Driedonks et al., 2010). Given their area of responsibility, purchasing managers are the essential link in a company's decision-making regarding the composition of sourcing teams.

In line with the IMOI model, past team performance likely serves as an input for the next performance cycle by influencing perceptions with respect to the appropriateness of the composition of the team (Ilgen et al., 2005). The relationship between team outputs and inputs can be described by attribution theory. Attribution theory explains that (team) outcomes are ascribed to causal dimensions (Weiner, 1985). Although attributional processes have received little attention in the organizational sciences, they affect virtually all goal and reward oriented behavior, and provide unique insights into the causes of manager-members conflicts (Martinko, Harvey & Dasborough, 2011). Managers evaluating the appropriateness of teams' level of functional diversity will likely review teams' composition as a cause for performance. In a purchasing context, managers can be expected to consider the current level of functional diversity to be appropriate when teams achieve significant cost savings. Conversely, teams underperforming in terms of cost savings will likely not be thought of as adequately composed teams by managers. Attribution theory subsequently predicts that such perceptions have behavioral consequences. A manager's decisions on intervening in a team's structure will be led by his or her perceptions of functional diversity appropriateness. Interventions in a team's composition in turn set the inputs for a new team performance cycle. We hypothesize:

Hypothesis 2. Management perceptions of team performance are positively related to management perceptions of functional diversity appropriateness.

Also the members of well-performing teams are likely to evaluate their level of functional diversity as more adequate than members of poorly-performing teams, resulting in a higher self-esteem (Weiner, 1985). Research has demonstrated links between team performance, team efficacy and potency (Gully, Joshi, Incalcaterra & Beaubien, 2002). Team efficacy refers to perceptions of task-specific team capability, whereas potency refers to

broader perceptions of team capability spanning tasks and situations. Likewise, team performance and viability are intertwined concepts, meaning that members of well-performing teams want to remain as team members (Beal, Cohen, Burke & McLendon, 2003; Mathieu, Maynard, Rapp & Gibson, 2008). The sense of confidence generated by high team performance is therefore expected to enhance perceptions of the appropriateness, whether of the mono- or cross-functional composition. Such perceptions help teams persevere in the face of adversity and retain their members –conditions necessary for proper team functioning over time (Gully et al., 2002; Hackman, 1987). So, team member perceptions of an appropriate level of functional diversity positively impact future team performance.

Hypothesis 3. Team member perceptions of team performance positively impact team member perceptions of functional diversity appropriateness.

Managers have a more distant role and are not involved in daily team processes. Thus managers simply lack proper insight into internal team processes (Baugh & George, 1997). Reported team outcomes are the primary information on which managers base their judgments. Management perceptions of functional diversity appropriateness are therefore expected to be primarily a result of team performance. For team members, however, team performance is likely not the sole factor to predict perceptions of functional diversity appropriateness. According to attribution theory, the most dominant causes for outcomes are ability, which for teams is for an important part determined by its composition, and effort, i.e., the extent to which team members have collectively tried to reach their team goal. Teamwork behavior, or a lack thereof, is what team members experience on a daily basis. Research has shown that the development of effective teamwork is particularly difficult in cross-functional teams, whose members have different thought worlds, competing social identities and obligations to different departments in the organization (Homburg & Jensen, 2007). Increased functional diversity broadens the range of expertise available to a team and can therefore promote team effectiveness. At the same time, because functional diversity is associated with differences of opinion and perspective, functional diversity seems to relate negatively to internal team processes and cohesiveness (Keller, 2001; Milliken & Martins, 1996; Van Knippenberg, De Dreu & Homan, 2004). The role of teamwork behavior seems therefore particularly critical in cross-functional team settings.

Cooperation with members who show little or no teamwork behavior is unsatisfying and may be highly frustrating. Current teamwork quality and the team's shared perception of its capability to successfully perform future tasks are interrelated (Tasa, Taggar & Seijts, 2007). For team members, a positive relationship between team performance and perceived adequacy of the team's composition will likely be enhanced under conditions of good teamwork behavior. When performance is high, team members will likely evaluate both the team's composition and teamwork behavior as good. Team members who have failed to develop effective teamwork behavior, however, can be expected to attribute poor performance initially to a lack of collective effort. In contrast, team members of teams who did succeed in developing a high quality of teamwork behavior may attribute poor performance more to an inadequate functional composition.

Consequently, the effect of performance on team members' perceived functional diversity appropriateness is expected to be positively moderated by teamwork behavior. In other words, poor teamwork behavior is expected to marginalize the positive effect of team performance on functional diversity appropriateness. Better quality of teamwork behavior, however, will likely boost the positive effect of team performance on team members' sense of confidence in the appropriateness of the team's composition. So, we hypothesize that team

member perceptions of functional diversity appropriateness are a function of both team performance and teamwork behavior:

Hypothesis 4. The relationship between team member perceptions of team performance and functional diversity appropriateness is moderated by teamwork behavior, in such a way that high teamwork behavior strengthens and low teamwork behavior weakens the relationship between team performance and functional diversity appropriateness..

Our hypotheses suggest that teamwork behavior plays a pivotal role in explaining differences between team member and management perceptions. Prior research indicates that managers can apply a number of HR practices to foster teamwork behavior that leads to good internal team processes (Chi, Huang & Lin, 2009). Rewards and team autonomy are two particularly powerful factors to create a sense of ownership and responsibility, and positively affect the effort put into developing teamwork in cross-functional teams (Denison, Hart & Kahn, 1996; Driedonks et al., 2010; Spreitzer, Cohen & Ledford Jr, 1999). We include these factors in our research to demonstrate the impact of management interventions aimed at improving teamwork behavior rather than changing the team's composition.

Particularly for sourcing team members, who typically are allocated part-time to their teams, the team's work should be included in members' reward structure. A complicating factor is that the rewards of members of cross-functional teams are controlled by their functional home departments (Denison et al., 1996). If the team task is left out of the reward review, team members will rationally prioritize the tasks which have a more direct effect on their individual performance evaluation (Robbins & Finley, 1995). In effect, teamwork behaviors are likely to diminish. Hence:

Hypothesis 5. Team-based rewards are positively related to teamwork behavior.

A team's autonomy refers to its ability to control internal team processes and activities. Literature suggests that appropriate autonomy provided to teams in general (Kirkman and Rosen, 2000), and to cross-functional teams in particular (Holland, Gaston and Gomes, 2000) enhances internal teamwork behavior. Supply solutions proposed by cross-functional sourcing teams often impact many stakeholders within the buying organizations, who in turn try to intervene in the sourcing process. Such interventions reduce sourcing teams' levels of autonomy. Research has shown that a lack of autonomy prevents sourcing teams from achieving optimal performance (Driedonks et al., 2010; Giunipero & Vogt, 1997). Therefore, we hypothesize:

Hypothesis 6. Team autonomy is positively related to teamwork behavior.

The final research model is depicted in Figure 3.1. The upper part of the model reflects management perceptions; the lower part represents team member perceptions. Perceptions of team performance are expected to be congruent between managers and team members, since the same outcome criterion is assessed among both groups in this study. Whereas functional diversity appropriateness in managers' perceptions is a function of team performance alone, functional diversity appropriateness in team members' perceptions is predicted to be a function of both team performance and teamwork behavior. As a result, managers' and team members' perceptions of functional diversity appropriateness may not be congruent. We expect proper teamwork behavior to be a necessary condition for high levels of functional diversity appropriateness in team members' perceptions to occur. Good teamwork behavior is predicted to be a result of both autonomy and rewards.

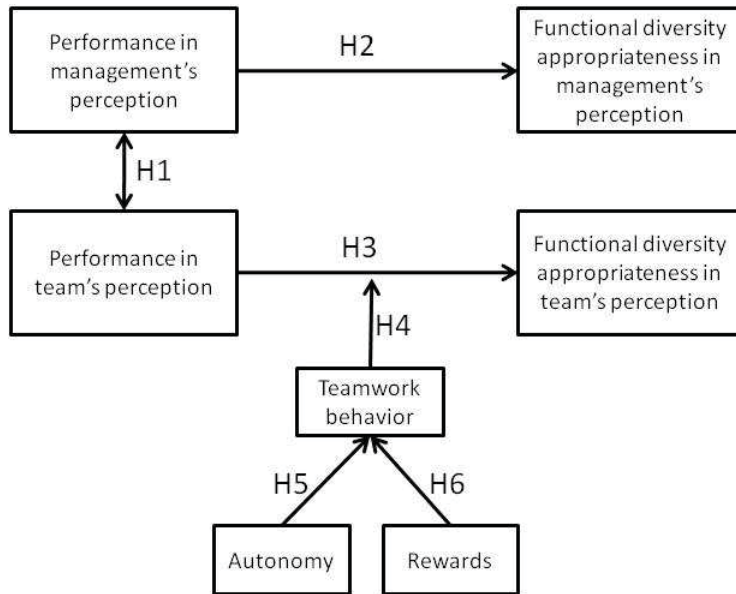


Figure 3.1: Conceptual framework

METHODS

Participants

The conceptual framework in Figure 3.1 was tested empirically by means of a cross-sectional survey. In total, 310 individuals from 53 teams were contacted and invited to participate in this study. The teams operated in 11 different multinational companies, all from different industries. These companies were headquartered in either Scandinavia or The Netherlands. Team members and team leaders were represented by 247 respondents. External purchasing managers of these teams were contacted to measure management perceptions. These external managers, defined as being the individuals to whom the teams reported, comprised 63 respondents.

Each respondent received a personalized invitation e-mail that gave access to a web-based questionnaire. This personal e-mail included the name of the respondent, the company and the respective team and explained the study's relevance. Respondents who had not filled out the online questionnaire completely received two reminders. To increase response rates and to reduce the risk of social desirability bias, confidentiality procedures were described in the announcement of the survey, in the e-mail invitations, and in the reminders.

The overall response rate reached 66.8%. In total, 207 questionnaires were completed, of which 164 were filled out by team members and team leaders (response rate 66.4%) and 43 by managers (response rate 68.3%). Only fully completed questionnaires were used for further analysis. Response rates were comparable across all companies. We found no significant relationships between our study variables and response rates per team, suggesting no systematic bias because of nonresponse (Armstrong & Overton, 1977).

The unit of analysis was the team. Responses that could be used for further analysis referred to 48 teams, for which at least two completed questionnaires were received. The average number of completed questionnaires per team was 4.3. Of the teams included for further analysis, 35% had a 'mono-functional' structure and were staffed by personnel who mainly represented the purchasing department. All other teams were cross-functional.

Management ratings were obtained for 36 of the 48 teams. No correlation exists between the absence of management ratings and the constructs in our research. Most teams

had one manager to report to. A single non-response can thus lead to a missing management rating for a team. In one company, five teams reported to the same manager, who did not participate in our survey. Another company did not provide access to managers of all participating teams. These two situations account for ten of the thirteen missing management ratings, and are unrelated to our study variables.

Measures

The survey that was developed for this research was entirely based on instruments that were validated in earlier research, except for the scale measuring team performance (i.e., cost effectiveness). All scale items were measured on a 7-point Likert scale, ranging from (1) 'completely disagree' to (7) 'completely agree'.

Functional diversity appropriateness. Three items were used to assess to what extent either teams or managers believe that the right functions are represented in a team. An example of these items is, "This team has a nearly ideal 'mix' of members—a diverse set of people who bring different functional perspectives and experiences to the work." This scale was adopted from Wageman, Hackman and Lehan (2005).

Teamwork behavior. Teamwork behavior is a construct originally developed by Tasa et al. (2007), of which six items were adopted in this study. For example, respondents were asked to what extent they agreed with the statement, "Our team addresses conflict immediately by raising it for discussion."

Rewards. Driedonks et al. (2010) developed two items to verify whether all team members receive rewards for their contributions to team activities. We formulated one additional item for this study, resulting in a three item scale. For example, one item is, "All team members are rewarded for their work on the team."

Autonomy. To assess the level of autonomy experienced by teams, we adopted items from Kirkman and Rosen (1999), and Kirkman, Rosen, Tesluk and Gibson (2004). This scale included four items, for example, "My team can select different ways to do the team's work."

Team performance. Three items were formulated for this study to assess sourcing team performance, or more specifically, their ability to achieve cost-effective results. Example items are, "The team's ability to reduce total costs within a certain category of products or services is good", and, "The team's ability to reduce purchased item costs is good."

In our analyses, we control for the actual level of functional diversity in teams, that is, the absolute number of functions that are represented. A factor labeled 'actual functional diversity' is therefore included in our study, testing perceptions about diversity appropriateness against the actual level of cross-functionality of teams. Respondents were asked to list the functions that were represented in their team. The number of functions served as a formative scale.

These items comprised two different questionnaires, one developed for the teams, that is, the team members and team leaders, and the other for managers. The questionnaire for team members and leaders included all the scales listed above. The questionnaire for managers only included the scales for functional diversity appropriateness and for team performance, since managers have no direct insight into the processes that evolve internally within the team. Also, managers may have little insight into the exact reward structure of team members, since these members have different home departments that fall outside the direct range of influence of the managers included in this study. Interventions in reward structures can only be accomplished when the managers of cross-functional teams work in conjunction with the managers of functional departments, something managers may fail to do. Likewise, the actual level of autonomy that teams experience can only be assessed by the teams themselves. Finally, we assumed the team leader and team members to be well-

informed about the functional background of each team member, and therefore assessed the actual functional diversity only in the questionnaire for the teams. Teamwork behavior, rewards, autonomy and actual functional diversity were thus omitted from the questionnaire for managers. Items were randomized in all questionnaires.

Analysis

The measurement model, entirely based on scales validated in earlier research except for the team performance scale, was first validated by means of a confirmatory factor analysis (CFA)⁵. We removed one item from the management ratings for functional diversity appropriateness that showed a loading below .5. The resulting measurement model showed excellent fit ($\chi^2 = 204.90$, $df = 209$, RMSEA = .000), and is used for further analysis (Hair, Black, Babin, Anderson & Tatham, 2006; Hu & Bentler, 1999).

Study hypotheses take the team as the unit of analysis. Scales in this study refer to attributes of the team, not individuals, and thus results aggregate to the team level (James, 1982). Aggregation connects management ratings to specific teams. Analysis of variance results confirm that the variance between teams is greater than the variance within teams, and average $r_{wg(j)}$ values range between .78 and .85 for the constructs in our study, both justifying aggregation to the team level (Danserau & Yammarino, 2000; James, Demaree & Wolf, 1984). The average team score on each of the items is used in further analyses.

Since the data in this field study were obtained from practice rather than from designed experiments, and given the limited sample size and exploratory nature of our study, we use Partial Least Squares (PLS) to test our hypotheses (Wold, 1985)⁶. PLS is embraced by the field as a powerful and effective means to test multivariate structural models with latent variables (Cording, Christmann & King, 2008; Groth, Hennig-Thurau & Walsh, 2009; Sosik, Kahai & Piovosio, 2009). All our scales are reflective and are modeled as such, except for the actual functional diversity, which was modeled as a formative scale.

In line with most typically applied PLS procedures, we report composite scale reliability to assess scale reliability (Nunnally & Bernstein, 1994; Sosik et al., 2009). This measure is similar to Cronbach's alpha, except that the latter presumes that each indicator of a construct contributes equally (i.e., the loadings are set equal to one). Fornell and Larcker (1981) argued that composite scale reliability is superior to Cronbach's alpha because actual item loadings obtained within the nomological network are used to calculate internal consistency reliability. The interpretation of the values obtained is similar and .7 cutoff value can be adopted (Hair et al., 2006). Composite reliability values ranged between .79 and .90, all well exceeding the .70 level. Also the Cronbach's alpha scores were above this level. Furthermore, we assessed the average variance extracted for each construct. All values were above the threshold of .5 (Fornell & Larcker, 1981).

In the PLS measurement model, all standardized loadings were above .7, indicating good convergent validity (Hulland, 1999). Although discriminant validity was already assessed by the confirmatory factor analysis, we also verified that the average variance extracted for each latent variable was larger than the correlation between two latent variables (Fornell & Larcker, 1981). Average variance extracted values, composite reliabilities and correlations are depicted in Table 3.1.

PLS assesses the structural component by generating estimates of standardized regression coefficients for the structural paths in the model. In this study, the statistical significance of these path coefficients was evaluated using bootstrapping (1,000 samples), and a hurdle rate of $p < .05$ to indicate significance of the path coefficients.

⁵ CFA was conducted using Lisrel 8.72

⁶ PLS analyses were conducted using SmartPLS 2.0.M.3

A PLS model including only direct effects was estimated to test hypotheses 1, 2, 3, 5 and 6. To test the interaction effect hypothesized in hypothesis 4, we apply the PLS strategy for testing moderating effects as described by Chin, Marcolin and Newsted (2003). In this strategy, the indicator variables of the predictor and moderator constructs are used to generate new standardized product indicators. These product terms measure the additionally created interaction term in our reflective measurement model.

Structural model fit is assessed by the R^2 values of the endogeneous constructs. PLS path modeling lacks an index that provides a global validation of the model. However, a goodness-of-fit (GoF) criterion has been proposed which serves a diagnostic purpose (Tenenhaus, Vinzi, Chatelin & Lauro, 2005) and which will be referred to as such.

RESULTS

Figure 3.2 summarizes the results of PLS analysis of the structural model with the direct effects of all predictor variables⁷.

Hypothesis 1, which predicted a significant correlation between team member and manager ratings of team performance, was supported ($\beta = .40, p < .01$). Hypothesis 2 states that there is a positive relationship between management perceptions of team performance and management perceptions of functional diversity appropriateness. We found a strong positive correlation that supports this hypothesis ($\beta = .49, p < .01$). Hypothesis 3 predicted that team perceptions of team performance positively impact team perceptions of functional diversity appropriateness. This hypothesis was not supported by the structural model results ($\beta = -.01, ns$). Hypothesis 5, which stated that there is a positive relationship between autonomy and teamwork behavior, was supported by the results ($\beta = .40, p < .01$). Finally, Hypothesis 6 predicted a positive impact of rewards on teamwork behavior. We also found support for this hypothesis ($\beta = .25, p < .01$). Hence, all but one of the hypothesized direct effects received support in the structural model.

We assessed the model fit of the endogenous variables in the structural model depicted in Figure 3.2. R^2 values for teamwork behavior, functional diversity appropriateness in management's perceptions and functional diversity appropriateness in team members' perceptions were .31, .29 and .22 respectively.

To test the interaction effect hypothesized in Hypothesis 4, we added the interaction term to the structural model. The results of this second model are depicted in Figure 3.3. The interaction term proved to be significant ($\beta = .35, p < .05$), supporting Hypothesis 4, while the direct effect of teamwork behavior remained significant. The R^2 of functional diversity appropriateness in team members' perception increased significantly from .22 to .30 when the interaction term was added. We also calculated the goodness-of-fit (GoF) of a model including team performance and teamwork behavior as predictors of team perceptions of functional diversity appropriateness, and of the model including the interaction effect. Without the interaction effect, the GoF value was .30. With the interaction effect added, the GoF climbed to .35. The entire model scored a GoF of .44, well beyond the .35 threshold level (Wetzels, Odekerken-Schroder & van Oppen, 2009)⁸.

⁷ Missing management ratings were substituted by the mean over all available cases. Alternatively, one could also apply casewise deletion for those cases with missing data, but casewise deletion also deletes valuable team member ratings. However, testing both approaches in additional analyses led to similar results as those reported here.

⁸ We also tested the direct effect of teamwork behavior on management perceptions of functional diversity, which was not significant ($\beta = -.13, ns$), neither was the interaction effect of management perceptions of team performance and teamwork behavior ($\beta = -.09, ns$).

	AVE	Comp. Rel.	1	2	3	4	5	6	7
1. Performance management	.72	.89							
2. Functional diversity appropriateness management	.81	.90	.53**						
3. Performance team	.71	.88	.40**	.14					
4. Functional diversity appropriateness team	.61	.83	-.17	-.11	.10				
5. Teamwork behavior	.59	.90	.08	-.06	.55**	.32*			
6. Autonomy	.56	.79	.02	.02	.20	.35*	.52**		
7. Rewards	.65	.85	-.02	-.17	.43**	.31*	.43**	.46**	
8. Actual functional diversity	<i>na</i>	<i>na</i>	-.46**	-.31*	-.24	.32*	-.08	.01	.03

* Significant at a p=.05 level (two-tailed)

** Significant at a p=.01 level (two-tailed)

Table 3.1: Average Variance Extracted (AVE), Composite Reliabilities and correlations of study constructs.

Figure 3.4 provides a graphical representation of the interaction effect. As expected, a high level of teamwork behavior enhanced the relationship between team performance and functional diversity appropriateness. Under conditions of low teamwork behavior, however, the relationship between team performance and functional diversity appropriateness was not simply weakened, but actually became negative. This interaction effect was thus stronger than anticipated in our hypothesis.

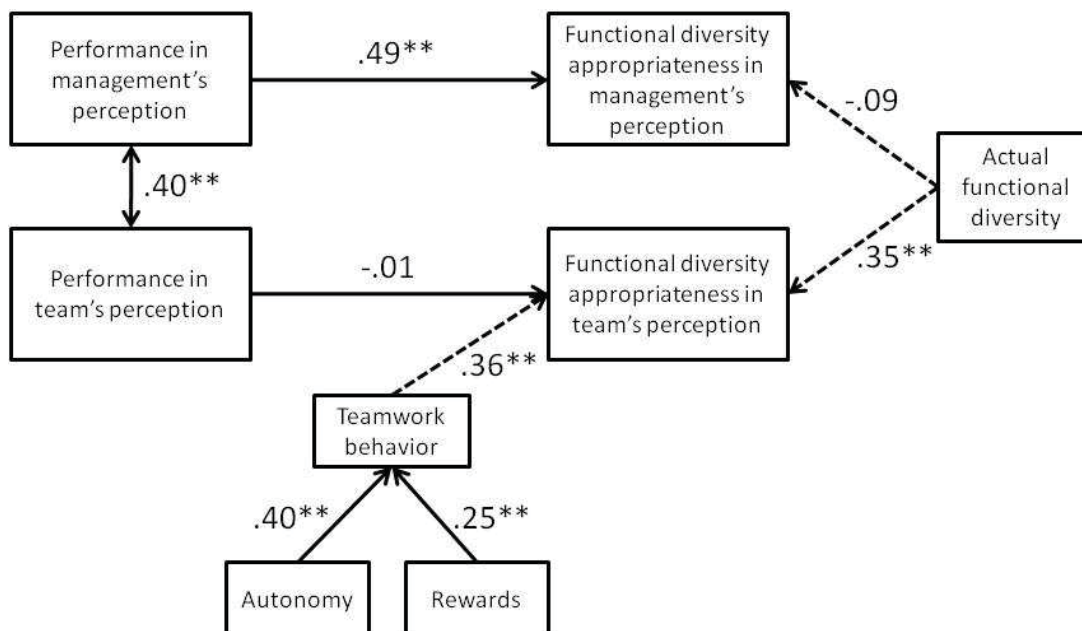


Figure 3.2: PLS model results for testing Hypotheses 1-3, 5 and 6.

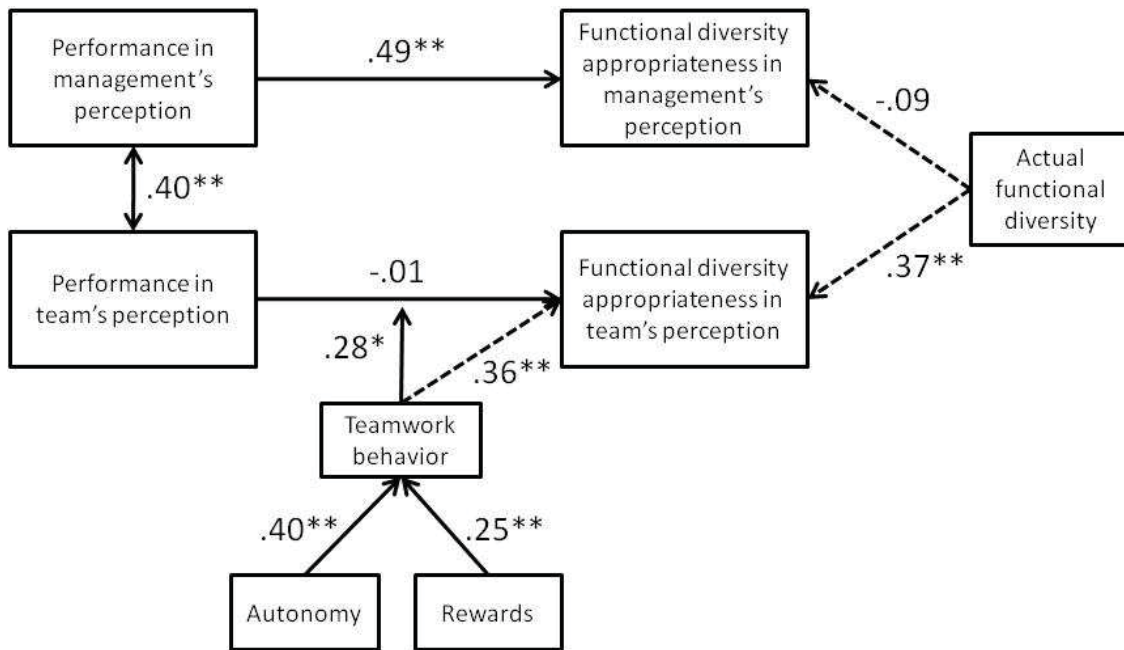


Figure 3.3: PLS model results for testing Hypothesis 4.

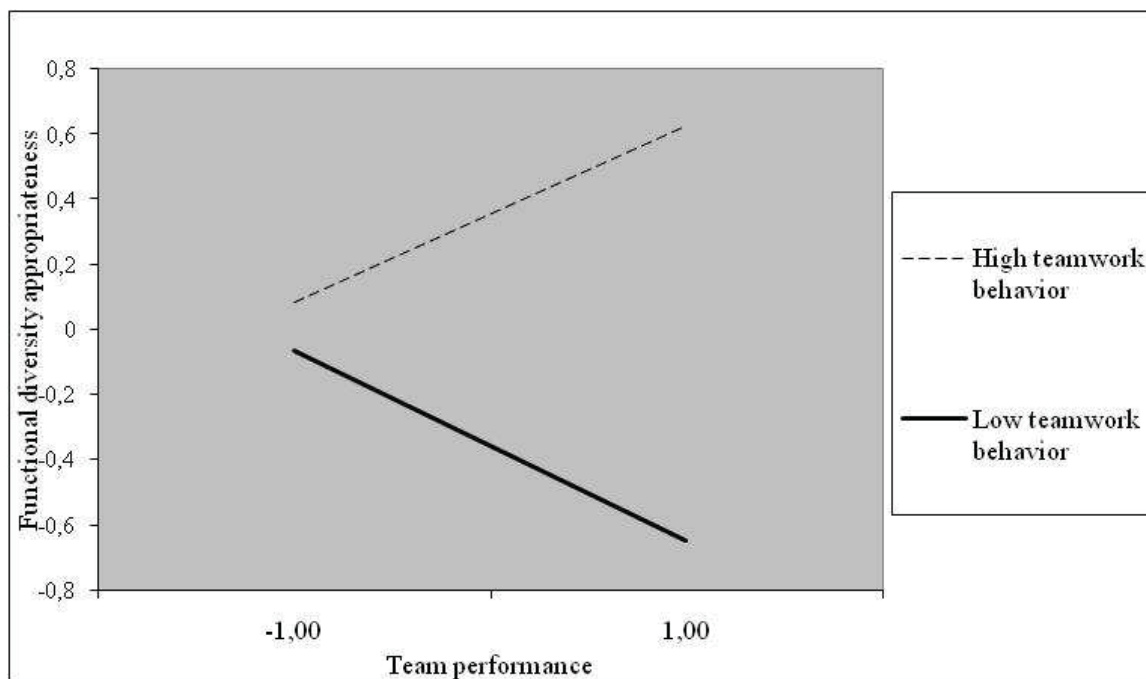


Figure 3.4: Directions of interaction effects.

Additional analysis

Two unanticipated results emerged from our initial analyses. First, the control variable actual functional diversity showed a positive and significant relationship with functional diversity appropriateness in the perception of team members ($\beta = .35, p < .01$), but not in the perception of managers ($\beta = -.09, ns$). Second, as mentioned above, the interaction effect of performance and teamwork behavior on team member perceptions of functional diversity appropriateness was stronger than expected, and resulted in a negatively skewed

relationship between team performance and functional diversity appropriateness when teamwork behavior is low.

Functional diversity ranges in our sample from one function to the representation of seven functions. To anticipate possible explanations for the negatively skewed interaction term, we split up the sample in two categories: mono-functional teams (17 teams), that is, sourcing teams staffed by purchasing personnel only; and cross-functional teams (31 teams), covering sourcing teams that represent two or more functions. We then reanalyzed the effects of the interaction term. The results are depicted in Figures 3.5a and 3.5b, which show the directions of the interaction in both groups. For both samples, the interaction term remained significant (for mono-functional teams: $\beta = .73, p < .01$, for cross-functional teams: $\beta = .30, p < .01$). These results show that for mono-functional teams the direction of the effects is as hypothesized: low levels of teamwork behavior marginalize the positive effect of team performance on perceived functional diversity appropriateness. In contrast, among the cross-functional sourcing teams we find a negatively skewed relationship between team performance and perceived functional diversity appropriateness when teamwork behavior is low. This suggests that the negative effect of poor teamwork behavior on perceptions of functional diversity appropriateness, despite high cost reductions, is actually stronger for cross-functional sourcing teams than for mono-functional sourcing teams. Also, the positive moderating effect of good teamwork behavior appears weaker for cross-functional teams than for mono-functional teams. Future studies with larger samples of mono-functional and cross-functional teams should confirm these findings.

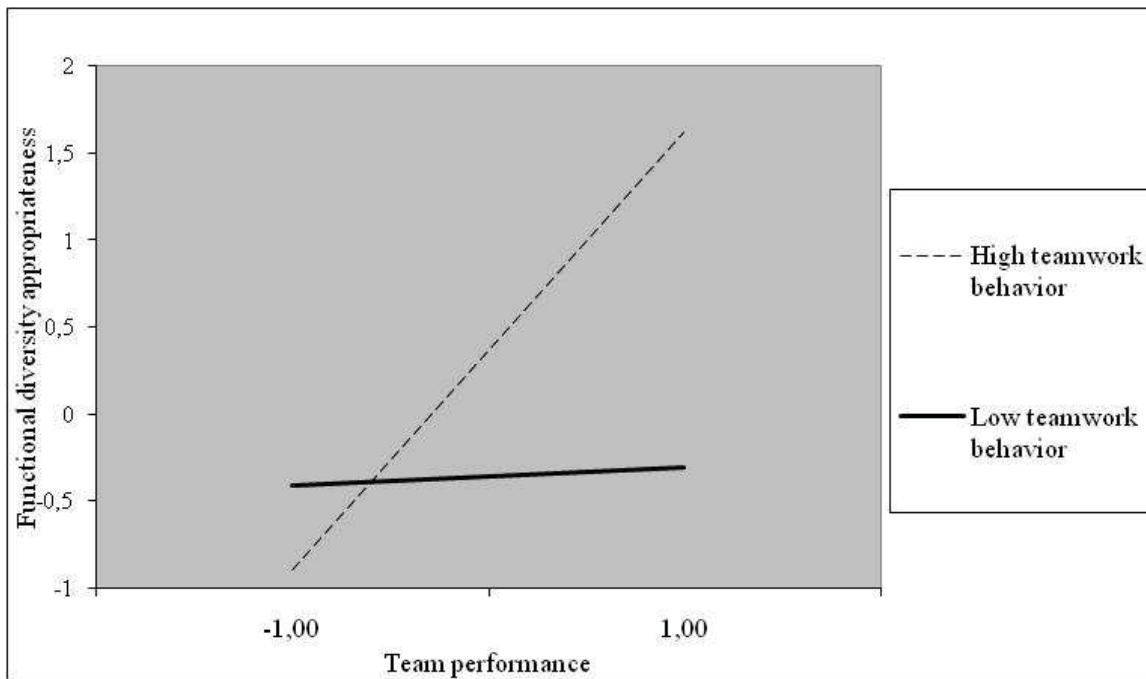


Figure 3.5a: Directions of interaction effects among mono-functional sourcing teams.

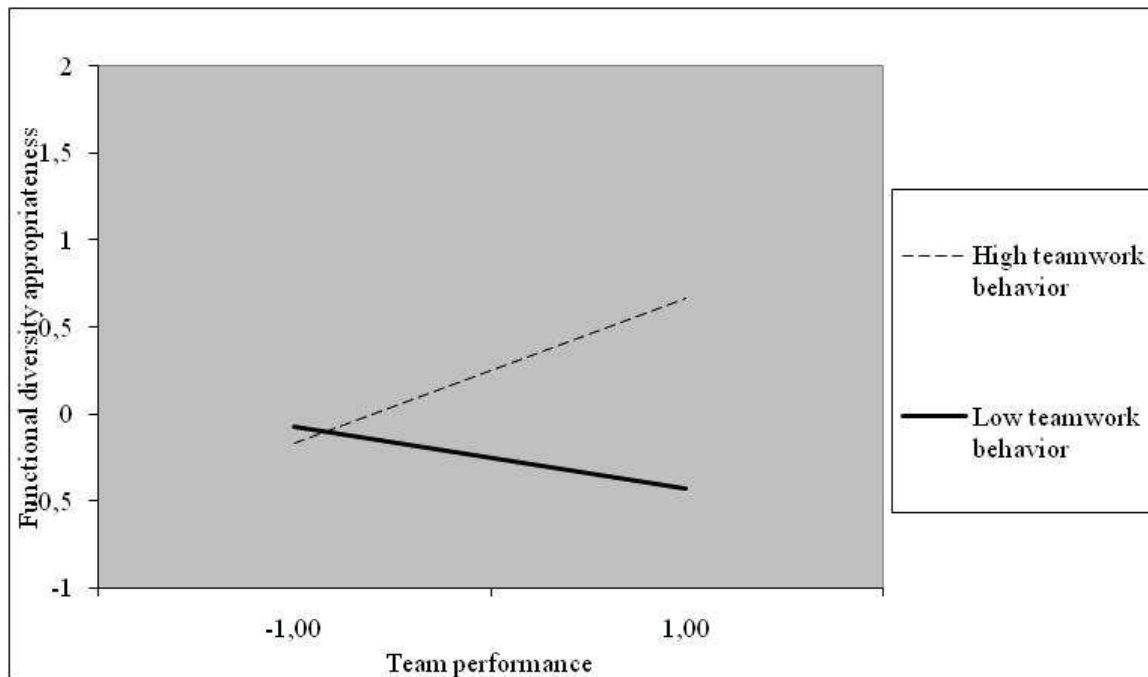


Figure 3.5b: Directions of interaction effects among cross-functional sourcing teams

DISCUSSION

This study explains how team members and managers develop their perceptions with regard to the appropriateness of the level of functional diversity within teams. Next, the study explains how team performance, teamwork behavior and contextual factors like autonomy and rewards affect perceptions of appropriateness of functional diversity. Our research framework, which was tested in a sample of 48 sourcing teams across 11 multinational companies, was based on the IMO framework, in which past team performance influences the next episode's team performance.

Most of the hypothesized relationships were confirmed. As expected, the results indicated that team members and managers have similar perceptions about the performance of sourcing teams in terms of achieved cost savings. Although perceptions of team performance were consistent across both managers and team members, the results showed different perceptions of functional diversity appropriateness. These differences originate from the fact that team members, unlike managers, acknowledge the quality of teamwork behavior when evaluating the appropriateness of their team's diversity. Team members attribute performance levels to a combination of shared effort (teamwork behavior) and ability (the team's composition). The moderating effects suggest that appreciation for the team's functional diversity only increases as a result of positive performance outcomes when the quality of teamwork behavior has been high. Managers' perceptions of functional diversity appropriateness were largely explained by the financial outcomes of a team's work, rather than by the actual functional diversity of teams or the quality of teamwork behavior in those teams. In fact, the purchasing managers, who participated in our research, appear not in favor of a more cross-functional approach, while team members generally appreciate a more diverse team composition.

Differences in appreciation of functional diversity between managers and team members may result in suboptimal team compositions and team structures. Although managers' assessments of teams' performance and composition may be positive, team

members' confidence may be subverted, eroding the basis for future work. A lack of managerial intervention, while team members feel that the composition is inadequate for addressing future tasks, compromises long-term team perseverance (Foo, Sin & Yiong, 2006). Hence, this situation can undermine long-term viability. On the contrary, when managers intervene in the composition of teams whose members perceive their cross-functional composition to be very suitable for executing their tasks, team members interpret these interventions as a step backwards rather than forwards. Managers may be unaware of how functional diversity supports better team decision making. Hence, management interventions in the composition of cross-functional teams then lead to short-lived, viable teams. This in turn could erode team members' perceptions of autonomy, and thus their willingness to participate going forward. The message from this study is clear: before interfering in teams, managers should be aware of the quality of the team processes through which team results were achieved.

Some unexpected effects surfaced. The teams with the poorest perceptions of functional diversity appropriateness were not poorly performing teams, but in fact well performing teams. Contrary to what we expected, poor teamwork behavior did not just weaken the positive effect of team performance on perceived functional diversity appropriateness, but actually turned this relationship towards the negative. That is, when the level of teamwork quality in a sourcing team was low, higher performance in terms of cost effectiveness reduced team members' belief that the right functional backgrounds were represented in the team. At the same time, managers considered the diversity of these teams to be good, since achieved cost savings were high.

This finding could simply be the effect of some members of poor-functioning teams pushing the job harder and getting better results. However, their behavior may nevertheless result in judgments from team members that the composition of the team is inappropriate. Alternatively, the negative moderating effect may be explained in the light of the single functional criterion by which team performance was measured. In theory, different functional areas within an organization should have complementary goals derived from common, overarching company objectives and goals. In practice, however, organizational goals are often broken down into specific functional objectives that may conflict with each other (Pinto, Pinto & Prescott, 1993). Achieving cost savings is the primary goal from the purchasing department's –and purchasing managers'– perspective. Members with other functional backgrounds may be more concerned about the preconditions under which this goal is achieved (e.g., the quality of the sourced goods or services, the flexibility of the supplier, etc.) or may prefer to focus on the activities for which they are actually assessed and rewarded. Individual purchasing team members may push cost saving goals without developing good teamwork with the other team representatives. Inputs from other functions that do not seem to contribute to cost reduction plans, or that even seem counterproductive to those plans, could be disregarded. Those high performing teams may reflect a situation in which other functional perspectives have insufficiently been taken into account, leading members to consider a stronger and wider representation of other functions necessary. Our additional analysis supports this latter explanation: the negative effect of high performance on perceptions of functional diversity appropriateness only surfaced in cross-functional teams, and not in mono-functional teams. Goal incongruence is absent in mono-functional teams, and hence, high cost effectiveness does not harm perceptions concerning the team composition in those teams, while it does in cross-functional teams.

This could point towards a general phenomenon in cross-functional teams: Teamwork behavior may suffer where one functional goal prevails over others. In turn, this will bring team members to doubt the functional diversity appropriateness of the team, thereby damaging the team's long term viability and performance potential.

Enabling teamwork behavior is thus critical, not only for current performance, but particularly for long term team success. Managers have a prime responsibility in enabling good teamwork behavior in cross-functional teams. At the same time, however, teamwork behavior seems to fall into management's blind spot, since managers do not consider the quality of teamwork in evaluating teams or when making decisions to interfere in team compositions. Providing teams with a sufficient level of autonomy and guaranteeing that all members are recognized and rewarded for their contribution prove to be effective practices.

In sum, this empirical study was among the first to have adopted the IMOI approach to study perceptions of team performance and functional diversity appropriateness. First, our findings indicate that differences in performance perceptions between team members and managers, as reported in prior research (Ancona & Caldwell, 1992; Campion et al., 1993; Campion et al., 1996; Cohen & Ledford, 1994; Cohen et al., 1996; Hoegl & Gemuenden, 2001; Hoegl et al., 2004; Kirkman et al., 2001), may be attenuated when unequivocal and identical outcome criteria are used, about which both groups are well-informed. Second, this research explains how and why team member and management perceptions regarding the appropriateness of functional diversity differ. Our findings point towards the pivotal role of effective teamwork behavior and the contextual factors that consolidate it. Finally, the study brings to light the risk that cross-functional teams incur if they achieve high performance through poor teamwork behavior.

Implications

Despite claims that moving towards a cross-functional approach for purchasing and supply management is critical for future development of the purchasing profession (Carter & Narasimhan, 1996; Carter, Carter, Monczka, Slaughter & Swan, 2000; Trent & Monczka, 1998; Van Weele & Rozemeijer, 1996), our results show that purchasing managers are reluctant to do so. In contrast, members of sourcing teams generally perceive that cross-functional compositions are a prerequisite for obtaining better future results. This discrepancy may lead to situations where managers intervene inappropriately to homogenize team structures, which team members perceive to be a step backwards rather than forward. Similarly, our results show that when current performance meets management expectations, managers will most likely not intervene, even if team members themselves are critical with respect to the team's abilities. In those cases teams will be forced to "muddle through", which likely has a devastating impact on future team member motivation.

The preference not to involve other business functions among purchasing managers may also be present in other business domains. Such discrepancies may particularly occur in settings that require cross-functional cooperation, but where cross-functional teams are not a widely accepted practice yet, such as in sales environments (Weitz & Bradford, 1999). The primary commitment to one functional goal of a manager responsible for a cross-functional team contradicts with the purpose of cross-functional teams, which is to take into account multiple functional goals simultaneously.

As this study shows, managers are likely to base their decisions to intervene in teams on outcomes, rather than on processes. This phenomenon reduces the likelihood of interventions in the infrastructure that enables teams to develop productive internal processes. Our study indicates that under conditions of poor performance, managers should first focus on improving teamwork behavior, before intervening in the team's composition. Moreover, managers should not be misled by current performance alone; high performance may have been achieved at the cost of high personal sacrifice and team disputes, which may decrease chances for future team success (either with the same team members, or members representing the same implicated functional areas).

Finally, our study shows that high performance on one objective can lead to low levels of perceived functional diversity appropriateness in teams with poor teamwork behavior. One possible explanation is that goal setting remains to be a matter of concern for cross-functional teams. Goal acceptance and commitment among the cross-functional team members is key to success (Rauniar, Doll, Rawski & Hong, 2008). In order to achieve this, teams and their managers should define a clear set of objectives that is communicated to and accepted by senior management and their functional department managers (Parker, 1994). Failing to do so may –despite current performance– lead to a decline of team viability, as our data indicate.

Limitations and Future Research

One of the limitations of this study is that common method bias was not cancelled out. This limitation, however, does not hold for the notion that team member and management perceptions of performance are more similar than perceptions of functional diversity appropriateness. Moreover, if common method bias had occurred, we would likely have found positive relationships between all constructs measured under the same target group (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). This is not the case. In fact, the relationship between team performance and perceived functional diversity appropriateness was absent, although we had expected this correlation to occur. Finally, common method variance is unlikely to occur for moderating effects (Podsakoff et al., 2003).

A second limitation, as with every cross-sectional study, is that the direction of causality cannot be confirmed. Although there is a sound theoretical logic behind the order of constructs as hypothesized in this study, it may also be that perceived functional diversity appropriateness is a predictor for team performance. Nevertheless, this would not affect the main conclusions of our study, namely that there is a discrepancy between management and team members' ratings of functional diversity appropriateness, that managers' perceptions are not related to actual teamwork behavior, that team member perceptions of functional diversity appropriateness are related to higher levels of functional diversity while management perceptions are not, and that teamwork behavior and team performance interact in their relation with perceived functional diversity appropriateness.

This study confirms the relevance of the IMOI approach, but could not capture the dynamic nature of teams. Future longitudinal research should confirm causality, but maybe even more interesting, it could investigate how perceptions lead to managerial interventions, and whether perceptual differences between team members and managers diminish or increase as time passes.

Also, the finding that high performance on one functional goal leads to lower perceptions of functional diversity appropriateness when teamwork behaviors are poor is in our view a particularly interesting area for future research. Specifically, research investigating to what extent this phenomenon can be generalized to other settings of cross-functional teamwork (e.g., sales teams, inter-firm teams, etc.) and what the exact explanation is for this effect could make a major contribution to the team performance literature. Particularly in this era in which effective cross-functional collaboration is more and more crucial for company survival, research on how to achieve long term rather than short term team success is vital.

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