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Wencang Zhou

Montclair State University, zhouw@mail.montclair.edu

Donald Vredenburgh

City University of New York

Edward G. Rogoff

City University of New York

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Informational diversity and entrepreneurial team performance: moderating effect of shared leadership

Wencang Zhou · Donald Vredenburg · Edward G. Rogoff

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Abstract A research need exists regarding the relationship between entrepreneurial team informational diversity and team performance, including the conditions under which such diversity might benefit performance. This study explores the moderating effect of shared leadership on the relationship between informational diversity and entrepreneurial team performance. Four dimensions are used to measure informational diversity: functional specialty, educational specialty, educational level, and managerial skills. The results show that functional specialty diversity can improve entrepreneurial team performance. Managerial skill diversity can improve entrepreneurial team performance when leadership is shared among team members. These findings advance the understanding of entrepreneurial team performance and provide practical implications regarding team structure.

Keywords Entrepreneurial teams · Shared leadership · Team diversity

Introduction

There is a growing interest in entrepreneurship research in the diversity and complexity of entrepreneurial teams because teams play a crucial role in shaping new business growth (Wright and Vanaelst 2009). According to the evolutionary perspective of entrepreneurship (Boeker 1988), the configuration of the founding team shapes subsequent entrepreneurial activities, strategies, and performance. In addition, an important focus of research on teams has been the study of team composition, especially as regards team diversity

W. Zhou (✉)

Department of Management, School of Business, Montclair State University, Montclair, NJ, USA
e-mail: zhouw@mail.montclair.edu

D. Vredenburg · E. G. Rogoff

Department of Management, Baruch College, The City University of New York, New York, NY, USA

D. Vredenburg

e-mail: Donald.Vredenburg@baruch.cuny.edu

E. G. Rogoff

e-mail: Edward.Rogoff@baruch.cuny.edu

(van Dijk et al. 2012; Williams and O'Reilly 1998). The issue of entrepreneurial team composition is of considerable practical importance in that the creation of a new entrepreneurial venture entails decisions regarding who will participate. Research may be able to provide guidance regarding team member selection. As the relationship between team composition and entrepreneurial team performance is better understood, founders can learn how to avoid some of the pitfalls in team selection that can lead to inadequate competencies as well as how to create teams that will best support venture success. In addition as the mechanisms through which diversity contributes to team performance are better understood, guidelines can be developed for structuring and managing these teams.

Three types of team diversity have been studied, including social-category diversity (or demographic diversity), informational diversity, and personality diversity (Jehn et al. 1999). Social-category diversity refers to differences in demographic membership, including race, gender, and ethnicity. Informational diversity refers to differences in knowledge and perspectives that team members bring to the team, and personality diversity consists of different personality traits. Because different information sources may be particularly valuable for entrepreneurial teams' start-up efforts, informational diversity receives attention here. Research on team diversity includes contradictory findings regarding effects of demographic diversity on team performance (Williams and O'Reilly 1998). On the one hand, heterogeneous teams can contribute to solving complex problems because of the existence of diversity in perceptions, skills, and knowledge (Stasser et al. 1995). On the other hand, heterogeneity can produce relationship conflicts among team members resulting in poor performance (Amason and Sapienza 1997). Therefore, in the face of these contradictory findings it is important to examine empirically the precise effects of diversity on entrepreneurial team performance.

A review of the entrepreneurial team diversity literature indicates that research on the relationship between entrepreneurial team diversity and performance remains inconsistent (Aspelund et al. 2005; Ensley et al. 1998). One explanation for the mixed findings is that studies proposing positive effects of diversity on entrepreneurial team performance often employed demographic diversity as a proxy for informational diversity or cognitive diversity of a team (Zhou 2013a). However, demographic diversity merely brings people together with diverse backgrounds but does not necessarily ensure the existence of diversity of perspectives and ideas (Chowdhury 2005). A second possible reason for inconsistent results may lie in different specific operationalizations of diversity across studies (Ensley et al. 1998; Zhou 2013b). A third possible explanation for the inconsistent findings of the effect of team diversity on entrepreneurial team performance might be due to the "black-box" problem (Lawrence 1997) of not examining a complex relationship comprehensively by identifying pertinent conditions defining the relationship. That is, while studies have examined the link between informational team diversity and entrepreneurial team performance, researchers have failed to investigate the specific conditions under which such diversity might affect performance (Nielsen 2010). For example shared leadership among multiple team members could determine how team diversity might affect entrepreneurial team performance, but this potential moderating effect has not been empirically investigated.

The first objective of this study is to go beyond demographic diversity and to examine directly the effects of different types of informational diversity on entrepreneurial team performance. The second objective is to empirically examine the relevance of shared

leadership to this relationship. By incorporating comprehensive measures of diverse information sources and of performance dimensions, and by including the condition of shared leadership in the model underlying this study, our analyses should add clarity to the existing inconclusive research results.

Theory and hypotheses

Informational diversity and team performance

Due to the wide array of roles and tasks that entrepreneurial teams confront, it may be desirable for team members to possess a range of education, knowledge, and skills. According to an information processing and decision making perspective, team members in a diverse team may offer more information and different views. This added information may enhance team performance when tasks can benefit from multiple approaches, generating benefits such as innovation or complex problem solving (Williams and O'Reilly 1998). Moreover, informational diversity can improve the breadth of cognitive ability available for tasks (Wittenbaum and Stasser 1996) because diverse teams can offer a variety of information sources and are likely to make more comprehensive strategic decisions (Mello and Ruckes 2006). In addition, diverse experience can increase teams' entrepreneurial alertness (cf. Westhead et al. 2005) to specific market opportunities. Finally, informational diversity facilitates learning and assists entrepreneurial teams in the accumulation of new knowledge and skills (Ackerman and Humphreys 1990). Thus entrepreneurial teams with higher informational diversity should be more effective in running their businesses. To understand this proposed relationship more specifically, particular types of informational diversity deserve attention. This study focused on four distinct sources of informational diversity.

Educational level diversity Educational levels within a team can serve as sources of informational diversity because this diversity can bring members together with different cognitive skills and goal/task perceptions. For instance, higher education levels focus on conceptual skills while lower levels of education concentrate on more technical skills (Pelled 1996). In addition, if people are more likely to form professional and social connections with others of similar educational level, this source of diversity can broaden the networks of entrepreneurial team members (Hellerstedt et al. 2007). Studies have shown positive associations of educational level diversity with business plan competition performance (Foo et al. 2005) and new venture sales growth (Amason et al. 2006).

Hypothesis 1 Educational level diversity is positively related to entrepreneurial team performance.

Educational specialty diversity Educational specialty diversity could provide entrepreneurial teams with a wide array of instrumental knowledge. For example, technological knowledge may provide the foundation for innovation, while education in general management can enable entrepreneurial teams to analyze market opportunities (Henneke and Luthje 2007). Although limited, some empirical evidence supports

a positive effect of educational specialty diversity on team outcomes (Foo et al. 2006; Amason et al. 2006).

Hypothesis 2 Education specialty diversity is positively related to entrepreneurial team performance.

Functional specialty diversity Because diverse teams are expected to contain more relevant expertise than homogeneous teams, teams with different functional backgrounds should be more effective in making decisions (Jackson 1992). From this perspective, increased functional diversity should be positively associated with entrepreneurial team performance. Empirical studies provided support for this argument (Aspelund et al. 2005; Beckman et al. 2007; Davis et al. 2009; Ucbasaran et al. 2003). The presence of functional heterogeneity on a team would likely derive from different industry experience that enhances the team's human capital and is associated with productivity (Becker 1975; Ucbasaran et al. 2003).

Hypothesis 3 Functional specialty diversity is positively related to entrepreneurial team performance.

Managerial skills diversity Entrepreneurial teams can vary regarding managerial skills also. This kind of informational diversity can enhance new venture performance (Roure and Madique 1986). Several managerial skills are potentially critical for competitive survival, including industry analysis, product design, organizational design, strategic planning, and operational administration (Herron 1990).

Hypothesis 4 Managerial skill diversity is positively related to entrepreneurial team performance.

Shared leadership and entrepreneurial team performance

Although informational diversity has often been assumed to be beneficial for firm level and team level entrepreneurial performance, empirical evidence is inconsistent (Aspelund et al. 2005; Ensley et al. 1998). A possible explanation for the conflicting results of entrepreneurial teams' informational diversity research might be the 'black box' problem (Lawrence 1997), whereby researchers have yet to identify team structure or process variables important to understand the conditions determining this relationship (Nielsen 2010).

Diversity and the information elaboration process Although an information/decision-making perspective (Gruenfeld et al. 1996; Wittenbaum and Stasser 1996) holds that diverse teams should outperform homogeneous teams because of different information sources, diverse ideas do not automatically emerge and generate higher team performance. Rather, this requires an information elaboration process to occur among team members, one involving the exchanging, analyzing, and integrating of information and perspectives from the individual level to the team level (van Knippenberg et al. 2004). In other words, it is not just the availability of the information but the

processing of that information during entrepreneurial tasks that improves the performance of new ventures.

This perspective is consistent with Hackman's I-P-O (input-process-output) model. According to Hackman (1987), team performance is influenced not only by team composition but also by interaction among team members, such as power and leadership processes (Mintzberg and Waters 1985). A team leader's behavior has been shown to be crucial for both individual and team performance (Zaccaro et al. 2001). Although most research on leadership in teams has focused on the leadership behaviors of an individual team leader, some researchers found that teams performed more effectively when most or all the members demonstrate leadership behaviors (Carson et al. 2007). This condition is referred to as shared leadership and can function as an information elaboration process.

Shared leadership as an information elaboration process Pearce and Conger (2003) described shared team leadership as a dynamic, interactive influence process among individuals in work groups in which the objective is to lead one another to achieve group goals. Similarly, Carson et al. (2007) conceptualized shared leadership as an emergent team property that results from the distribution of leadership influence across multiple team members, a condition embedded in the interactions among team members that can significantly improve team and organizational performance.

According to Day et al. (2004), shared leadership should enhance team performance because it can serve as an important intangible resource. First, shared leadership improves the experience of work by offering an incremental measure of self-determination and opportunity for meaningful impact (Cox et al. 2003). This significant work experience can result in higher team member commitment and potentially higher team performance. Second, shared leadership also benefits team performance by distributing and utilizing team members' knowledge and expertise. In complex team environments, a formal leader is often less likely than the team as a whole to have the knowledge and skills required to effectively guide the team (Pearce and Sims 2000). Shared leadership, however, reaches beyond the limits of individual leader capability through mutual influence among team members who are differently informed and responsive to task and leadership challenges (Cox et al. 2003).

Thus teams with high degrees of shared leadership should experience higher commitment and share more information (Cox et al. 2003; Katz and Kahn 1978). Shared leadership has been shown to enhance team effectiveness. Avolio et al. (1996) found a positive correlation between shared leadership and self-reported team effectiveness using teams of undergraduate students, and Pearce and Sims (2002) found a significant relationship between shared leadership and change management team effectiveness as rated by managers. Shared leadership was also correlated with more objective measures of performance, such as team sales (Mehra et al. 2006) and growth in revenue (Ensley et al. 2006). Pearce et al. (2004) found that shared leadership in virtual teams was a stronger predictor of team performance than hierarchical leadership. However, empirical studies exploring the influence of shared leadership with entrepreneurship have been limited. Ensley et al. (2006) demonstrated the relevance of shared leadership to start-ups, and the present study seeks to expand this stream of research by focusing on the potential importance of types of informational diversity to the shared leadership and

entrepreneurial team performance relationship. Specifically, the underlying model here examines shared leadership as a moderating condition.

Tasks of entrepreneurial teams are typically characterized by interdependence, creativity and complexity, such that new venture founding teams face unstructured situations (Bryant 2004). Shared leadership is appropriate for this type of team work (Pearce 2004). In an entrepreneurial team, it is rare that the leading entrepreneur has all the knowledge and skills to effectively lead the team through varied tasks (Pearce and Sims 2000).

Hypothesis 5 Shared leadership will positively relate to entrepreneurial team performance.

Moderating effect of shared leadership

Theoretically, diverse entrepreneurial teams should outperform homogeneous teams because diverse teams are more likely to possess a broader range of task-relevant knowledge, skills and abilities (Williams and O'Reilly 1998) which should lead to more innovative ideas and solutions (De Dreu and West 2001) that are important to new venture performance. However, the empirical relationship between informational diversity and entrepreneurial team performance remains inconclusive (Amason et al. 2006; Ensley and Hmieleski 2005). Whether or not entrepreneurial teams can benefit from informational diversity depends on the degree to which they interactively develop and distribute different information, thereby elaborating this resource from the individual to the team level. Shared leadership can foster this information elaboration process within entrepreneurial teams and increase the utility of information. Hierarchical leadership may prevent the team from realizing the advantages of diverse human capital, whereas with shared leadership members assume different leadership roles as problems and tasks necessitate. Thus, to advance knowledge of the information diversity and team performance relationship, we hypothesize a moderating role for shared leadership as follows:

Hypothesis 6 Shared leadership moderates the relationship between educational level diversity and entrepreneurial team performance such that the relationship will be significantly stronger in teams with higher shared leadership.

Hypothesis 7 Shared leadership moderates the relationship between education specialty diversity and entrepreneurial team performance such that the relationship will be significantly stronger in teams with higher shared leadership.

Hypothesis 8 Shared leadership moderates the relationship between functional specialty diversity and entrepreneurial team performance such that the relationship will be significantly stronger in teams with higher shared leadership.

Hypothesis 9 Shared leadership moderates the relationship between managerial skills diversity and entrepreneurial team performance such that the relationship will be significantly stronger in teams with higher shared leadership.

Figure 1 displays the theoretical model and hypotheses of the current study.

Method

The sample consisted of 200 entrepreneurial teams in a technology incubator founded in 2009 by the local government of Hangzhou, Zhejiang province of China. With support from the government, the incubator aims to support up to 300 start-up companies. The incubator offers start-ups office space and shared administrative services. Entrepreneurs who wish to enter the incubation program must apply for admission. Only those with feasible business ideas and a workable business plan are admitted. Other general acceptance criteria include (1) applicants are college students or graduates within 5 years, (2) the start-up was registered after 2008, and (3) each team's applicant has more than 30 % of the ownership of the start-up. The focus on firms within a single region allows us to hold constant key labor market and environmental conditions.

This study used a cross-sectional study design. Participants were given a questionnaire which collected data on the independent, dependent, moderator, and control variables. Because all the measures were assessed by self-reported questionnaire, common method bias was a potential problem. However, the bias should be minimized in the current study. First, the measures of education background and number of employees were objective measures and thus not subject to common method bias. Second, the measure of shared leadership derived from team members' ratings and not an individual's self-ratings.

The web-based survey instrument was translated into Chinese and back-translated into English by two independent bilinguals to ensure meaning equivalence across the two cultures. High quality back-translations are important because close correspondence between the original source language version and the back-translated source language version is required before reliance can be placed on results based on translated scales (Hulin 1987).

Measures

Informational diversity Informational diversity was measured on four dimensions: functional specialty, educational specialty, educational level, and managerial skills. The first three dimensions are categorical variables and were reported by respondents as part of the survey.

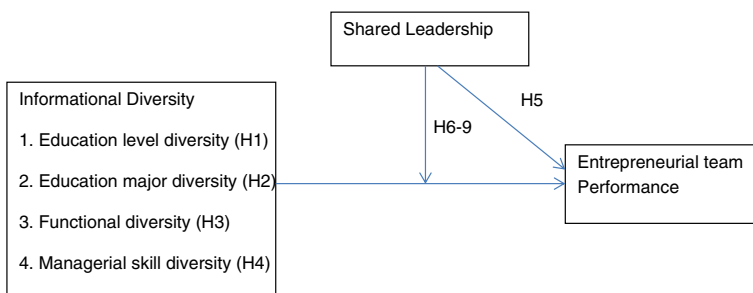


Fig. 1 Theoretical model and hypotheses

Functional specialty was measured by asking respondents to identify the functional areas in which they have expertise. Nine categories of functional areas (Bunderson and Sutcliffe 2002) were available, including marketing, sales/customer service, finance/accounting, general management, human resources/personnel, information technology, R&D, administrative support, and operations/distribution/logistics. Educational specialty consisted of nine different categories based on an international standard for educational classification (ISCED 1997). Educational level was measured with five categories: no high school diploma, high school graduate, college graduate, master's degree, and doctoral degree.

Blau's (1977) index was used to calculate a diversity index for each of the three discrete variables. The formula for calculating Blau's (1977) index is:

$$\text{Blau's Index} = 1 - \sum p_i^2$$

where p_i is the proportion of the population in a given team in the i^{th} category. The index ranges from 0 (completely homogeneous entrepreneurial team) to 1 (completely heterogeneous entrepreneurial team) for the functional specialty, educational specialty, and educational level dimensions of informational diversity.

The fourth dimension, management skills, was measured with a scale developed by Herron (1990). Respondents were asked to rate their skill level on each of seven items: product design, industry analysis, organizational design, motivating employees, creating a sphere of influence, planning and administration, and discovering opportunities. Measurement occurred on a five-point Likert-type scale ranging from (1) Not Effective to (5) Extremely Effective. Because this was a continuous measure, the coefficient of variation was used to measure team diversity for managerial skills, ranging from 0 (completely homogenous) to 1 (completely heterogeneous). A previous study's Cronbach's coefficient alpha for the measure was .76 (Herron 1990).

Entrepreneurial team performance Entrepreneurial team performance was measured by a 16-item scale developed by Pearce and Sims (2002) to evaluate team effectiveness with six dimensions: (a) output effectiveness, (b) quality effectiveness, (c) change effectiveness, (d) organizing and planning effectiveness, (e) interpersonal effectiveness, and (f) overall effectiveness. Responses were given along a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). A previous Cronbach's alpha for the scale was .92 (Pearce and Sims 2002). Each team member was asked to respond to the 16 items. Then the entrepreneurial team performance was measured as the mean score across team members. This team level performance measure reflects the perceived entrepreneurial team process and indicates how the team has functioned.

Shared leadership Shared leadership was measured with the approach used by Carson et al. (2007) focusing on density, which is a measure of the total amount of leadership displayed by team members as perceived by others on a team. Every team member rated each of his/her peers (1, "not at all," to 5, "to a very great extent") on the following question: "To what degree does your team rely on this individual for leadership?" The density was calculated by summing all values and then dividing that sum by the total number of possible relationships among team members (Sparrowe et al. 2001).

Control variables Team size can influence team process and functioning. For instance, Bantel and Finkelstein (1991) suggest that larger teams have lower cohesion. Team size may also affect resources and workload requirements that can influence entrepreneurial team performance (Kirkman and Rosen 1999). Therefore team size was included as a control variable in this study and was measured as the actual number of members on each team. Employee ownership can affect a member's commitment to an enterprise and willingness to work together productively (Buchko 1992; Rosen and Quarrey 1987). Therefore, stock ownership dispersion among entrepreneurial team members may have an effect on their shared leadership behavior and team performance and should be included as a control variable. Ownership dispersion was measured by the following formula (Jacquemin and Berry 1979):

$$\text{Owner Dispersion} = \sum_{i=1}^N S_i \ln\left(\frac{1}{S_i}\right)$$

where S_i is the percentage of shares owned by the i^{th} entrepreneurial team member. The value of ownership dispersion increases as ownership is spread more evenly across team members. We also controlled for firm age and industry (high tech or non-high tech), because those variables may influence resources, strategies, and performance (Shrader and Simon 1997).

Results

Data were gathered from 154 entrepreneurial teams (response rate=77 %) consisting of 516 entrepreneurs. Their average age was 28 years (SD=3.6). Of the 516 entrepreneurs, 42.1 % were female and 57.9 % were male. Of the 154 teams, 10 teams consisted of only 2 members for each team. These 10 teams were dropped because a diversity measure could not be calculated from a 2-member team. Thus, data analysis was based on usable data from 144 entrepreneurial teams.

Data aggregation and descriptive statistics

Because the team effectiveness scores were aggregated from individual scores, the viability of aggregation was computed. This was done by calculating within-group agreement ($r_{wg}=0.92$; James et al. 1984), intraclass correlations (ICC[1]=0.58), and the reliability of the means (ICC[2]=0.82; Bliese 2000). These measures showed that it was statistically appropriate to analyze this variable at the team level. To test for potential common method bias, Harman's single-factor analysis (Podsakoff et al. 2003) was conducted with exploratory factor analysis and confirmatory factor analysis. The exploratory factor analysis generated seven factors, and the first factor explained only 17 % of the total variance, suggesting that common method bias is not problematic. Table 1 presents the means, standard deviations, and zero-order correlations for all of the variables used in the analysis.

Tests of hypotheses

Hierarchical regression analysis was used to examine the relationships among informational diversity, shared leadership and entrepreneurial team performance. In Model 1, only control variables were entered. In Model 2, a team's four informational diversity variables were entered. In Model 3, shared leadership was included. In Models 4–7, the interactions of different types of informational diversity and shared leadership were entered to test the moderation of shared leadership. To verify that multicollinearity is not problematic in our results, we calculated variance inflation factors (VIF). VIF quantifies the severity of multicollinearity in a multiple regression analysis by calculating an index that measures how much the variance of an estimated regression coefficient is increased because of collinearity (Cohen et al. 2003). The maximum VIF found within our models was less than 2, which is below the commonly used standard of 10 (Cohen et al. 2003), indicating that multicollinearity is not problematic in our analyses. Table 2 shows the results of the hierarchical regression analyses.

To test hypotheses 1–4 that informational diversity positively relates to entrepreneurial team performance, the performance variable was regressed on the control variables (team size, ownership dispersion, firm age, and industry type) and the four types of informational diversity. The Model 1 analysis result of the team size and ownership dispersion control variables was not significant ($F=2.06$, n.s.). With diversity scores on education level, education specialty, functional specialty, and managerial skills added in Model 2, the model was significant ($F=4.17$, $p<.01$). Hypothesis 3, asserting that functional specialty diversity is positively related with entrepreneurial team performance, was supported ($\beta=.39$, $p<.01$). No support was found for diversity scores on educational level ($\beta=-.03$, n.s.), educational specialty ($\beta=-.07$, n.s.), and managerial skills ($\beta=.02$, n.s.). Thus Hypotheses 1, 2, and 4 were not supported.

Table 1 Descriptive statistics

	Mean	S.D.	1	2	3	4	5	6	7	8
1 Team size	3.5	.68								
2 Ownership dispersion	.2	.33	-.06							
3 Firm age	1.71	.79	-.01	.07						
4 Shared leadership	3.5	.64	.00	-.03	-.04					
5 Education level diversity	.4	.22	.25	.04	-.06	.00				
6 Education major diversity	.6	.16	0.28**	.06	-.05	.11	0.18*			
7 Functional diversity	.6	.14	0.43**	-.11	.18	.15	0.35**	0.46**		
8 Skill diversity	.5	.14	0.22**	-.05	-.15	.09	.07	0.36**	0.37**	
9 Team performance	42.4	8.57	-.03	-.13	-.13	0.45**	.06	.06	0.31**	.10

$N=144$ teams

* $p<.05$

** $p<.01$

Table 2 Results of hierarchical regression models: team performance

	Model 1 β	Model 2 β	Model 3 β	Model 4 β	Model 5 β	Model 6 β	Model 7 β
Team size	-.06	-.19	-.16	-.16	-.16	-.16	-.12
Ownership dispersion	-.13	-.09	-.08	-.08	-.08	-.08	-.09
Firm age	-.11	-.06	-.05	-.05	-.06	-.05	-.07
Industry	-.14	-.12	-.13	-.13	-.12	-.13	-.06
Education level diversity		-.03	-.01	.60	-.01	-.01	.02
Education major diversity		-.07	-.09	-.1	-.42	-.09	-.13
Functional diversity		.39**	.32**	.32**	.35**	.37	.24*
Skill diversity		.02	.01	.01	-.02	.01	-1.66**
Shared leadership			.40**	.59**	.20	.43	-.68**
Education level diversity×Shared leadership				-.65			
Education major diversity×Shared leadership					.41		
Functional diversity×Shared leadership						-.05	
Skill diversity×Shared leadership							2.12**
Model F statistics	2.06	4.17**	8.27**	6.62**	6.38**	17.30**	10.75**
R ²	.06	.16	.32	.33	.32	.40	.32
Adjusted R ²	.03	.11	.27	.28	.27	.35	.27
ΔR^2	.06	.10	.16	.01	.00	.08	.16

$N=144$ teams; β : Standardized regression coefficient

* $p<.05$

** $p<.01$

In Model 3, shared leadership was included into the regression to test Hypothesis 5, which specifies a positive relationship between shared leadership and entrepreneurial team performance. The model explains a significant amount of the variance in entrepreneurial team performance ($R^2=.32$, $p<.01$). The results indicate a positive and significant relationship between shared leadership and entrepreneurial team performance ($\beta=.4$, $p<.01$), supporting Hypothesis 5.

To test hypotheses 6–9 that shared leadership moderates the relationship between different types of informational diversity and entrepreneurial team performance, the interaction between each of the four dimensions of informational diversity and shared leadership were included in Models 4–7. The interaction of skill diversity and shared leadership had a positive coefficient ($\beta=2.12$, $p<.01$). This supported Hypothesis 9 that the positive relationship between skill diversity and entrepreneurial team performance is greater on teams with higher levels of shared leadership. Figure 2 depicts the pattern of relationships using the procedures outlined in Aiken and West (1993). It is noteworthy that team performance is lower with high skill diversity in the absence of shared leadership. The interactions of the other three informational diversity dimensions and shared leadership were not significant, and thus Hypotheses 6, 7, and 8 were not supported.

Discussion

Significant findings emerged from this study. Functional specialty diversity can improve entrepreneurial team performance. Managerial skill diversity can improve entrepreneurial team performance when leadership is shared among team members. Education level differences and education major diversity do not appear to play significant roles in entrepreneurial team performance. Shared leadership improves entrepreneurial team performance and moderates the relationship between managerial skill diversity and entrepreneurial team performance.

The primary focus of this study is the relationship between informational diversity and entrepreneurial performance. This issue is important since the composition and functioning of entrepreneurial teams are traditionally viewed as fundamental factors that shape consequent performance of start-ups competing in rapidly changing, highly competitive markets. Despite widespread interest in entrepreneurial teams, the shared leadership mechanism that links team diversity and entrepreneurial team performance had not been previously examined.

Implications

The current study suggests implications regarding the relationship between team diversity and entrepreneurial team performance. Overall, the findings show that informational diversity accounts for 11 % of the variation in entrepreneurial team performance. Functional diversity is primarily responsible for this relationship and not educational level diversity, educational background diversity or managerial skill diversity. Foo et al. (2005) claimed that diversity related to tasks was more beneficial for team performance than other kinds of diversity. Clearly, entrepreneurial teams can benefit from members bringing different functional experiences to entrepreneurial tasks, and some degree of functionally defined role specialization probably facilitates realizing this benefit.

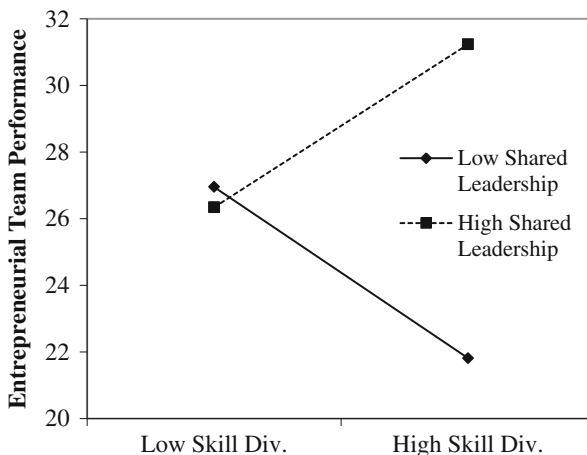


Fig. 2 Results of moderating effect of shared leadership on the link between skill diversity and entrepreneurial team performance

Another implication of the current study concerns the relationship between shared leadership and entrepreneurial team performance. Although the importance of shared leadership has been suggested by previous researchers (Gibb 1954; Katz and Kahn 1978), the leadership behavior of individual leaders has been the primary focus of most team leadership research (Kozlowski and Bell 2003). Previous research suggested that shared leadership was appropriate for certain types of knowledge work characterized as interdependent, creative, and complex (Carson et al. 2007; Pearce 2004). Entrepreneurial tasks are typically characterized by these features, and the present study revealed the relevance of shared leadership for entrepreneurial team performance. The finding that shared leadership improved entrepreneurial team performance does not suggest that shared leadership is always preferred to hierarchical leadership. Indeed, as shown by O'Toole et al. (2002), shared leadership offers both advantages and disadvantages potentially. The present research suggests entrepreneurial teams can realize performance advantages from shared leadership.

Having uncovered relationships between informational diversity and entrepreneurial team performance and between shared leadership and team performance, this study was then able to investigate the moderating effects of shared leadership on the diversity-performance relationships. Current theoretical frameworks such as social categorization theory (Tajfel 1982) and attraction-selection-attrition theory (Berscheid and Walster 1978; Byrne 1971) appear insufficient for resolving the mixed findings regarding the informational diversity – performance link. The findings of this study provide evidence that shared leadership may provide a contextual condition within which entrepreneurial teams can benefit from the diversity team members bring. The results suggest that when team members share leadership influence, the entrepreneurial teams benefit from skill diversity. When teams could not share leadership, skill diversity actually harmed entrepreneurial team performance. It appears that it is not enough to just bring people with diverse skills together; it is also necessary for entrepreneurial teams to develop strong internal leadership patterns to bolster effectiveness. Shared leadership allows different and appropriate skills to emerge and interact.

Besides theoretical contributions, this study has implications for policy makers and practitioners. First, this study provides policy implications for government agencies, foundations, and universities who provide support for start-ups in incubators. These institutions should know the importance of entrepreneurial team composition and team process to start-up performance and should provide entrepreneurial teams support in team development pursuant to these guidelines.

Second, the study provides entrepreneurs with implications regarding team member composition. The findings suggest that entrepreneurial team founders should select team members with diverse functional experience and management skills. Also, to really benefit from the informational diversity team members bring, entrepreneurial teams should share leadership. Each team member should be willing and able to assume leadership roles when tasks require.

It is important to consider the limitations of this study when interpreting the findings. The university-based sample may limit the generalizability of the results, especially since the sample was from a single university incubator. Furthermore, since only new start-ups were considered in the current study, it is limited in the extent to which the findings could be generalized to later stages of new ventures. It may be that

the relative importance of hierarchical versus shared leadership is dependent on the developmental stage of the organization (Ensley et al. 2006). Therefore, it might be useful to examine the relationships among team diversity, shared leadership and entrepreneurial team performance longitudinally across stages in the entrepreneurship life cycle. Relatedly, the cross-sectional nature of the research design does not allow us to draw causal conclusions, indicating further the need for longitudinal research. Moreover, future research should adopt other performance measures (e.g. innovation, profitability, or revenue) that are applicable to different stages of venture development. Finally, another direction for future research is to understand team diversity, shared leadership, and entrepreneurial team performance with a cross-cultural design (Zhou and Shi 2011). Because this study focused on a single culture, future research should explore conditions across cultures.

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