

**EXPERIENTIAL LEARNING IN INTERNATIONAL JOINT
VENTURES: THE ROLE OF VENTURE NOVELTY AND
EXPERIENCE HETEROGENEITY**

by

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EXPERIENTIAL LEARNING IN INTERNATIONAL JOINT VENTURES: OBSTACLES AND OPPORTUNITIES

Abstract

This paper offers an empirical investigation into the challenges and prospects firms face in obtaining benefits from experience accumulation in the IJV setting. We find that the novelty of the focal IJV, both in terms of its skill requirements and in terms of the national culture in which it is embedded, moderates the effects of learning-by-doing. Moving beyond the effects of the firm's level of prior experience, we also investigate the heterogeneity of its IJV experience. The evidence suggests that the creativity that tends to accrue from heterogeneous experiences is helpful for novel IJVs that are more exploratory in nature. The empirical findings also point to the temporal tradeoffs firms face in investing in IJVs and the roles of cultural diversity and learning in the internationalization process.

INTRODUCTION

The extension of firms' alliance portfolios, the greater complexity of many alliances, and the difficulties firms face in managing alliances raise important questions such as whether an alliance capability exists and how firms might cultivate one (Dyer & Singh, 1998; Lyles, 1988). However, recent research on learning-by-doing in inter-firm collaboration has produced rather mixed findings. Anand and Khanna (2000) have found initial evidence for positive experience effects for joint ventures, but not for licensing agreements. Barkema, Shenkar, Vermeulen, and Bell (1997) report that IJV experience does not favor IJV survival. Simonin (1997) finds that experience by itself does not influence either tangible or intangible benefits from collaboration.

Beyond the practical issues surrounding the improvement of alliance management through learning-by-doing, the question of whether firms can enhance the performance of their IJVs through experience accumulation also is of theoretical importance. As we suggest below, arguments from the learning curve literature used to motivate predictions of positive experience effects for manufacturing and other administrative tasks defy facile transfer to the IJV context for several reasons. These theoretical considerations point to important obstacles to learning-by-doing in IJVs. They also highlight potential boundary conditions for the development of learning perspectives on IJVs.

Second, considerable debate currently exists on the root sources of IJV phenomena as well as the determinants of IJV performance. With the notable rise of transaction cost theory in the last two decades, one school of thought is that transactional attributes alone determine firms' governance design choices and the efficiency of alliances (e.g., Oxley, 1997). An opposing viewpoint can be found in the resource-based view (RBV) of the firm, which holds that parent firm resources in general, and those connected with experience accumulation in

particular, may be limited in supply and costly to imitate (Barney, 1991) and can therefore have an impact on the payoffs an IJV yields to a parent firm.

In this paper, we examine whether IJV experience accumulation by firms improves the value that parent firms derive from their IJVs. In the section that follows, we provide background theory on experiential learning and apply it to the IJV context. We then go on to discuss the obstacles of learning-by-doing in the IJV setting as compared to other empirical contexts in which experience effects have been documented. Unlike manufacturing activities and other administrative activities, IJVs are heterogeneous, casually ambiguous, and lack clear performance metrics. Based on these considerations, we focus on two contingencies that may explain why firms find it difficult to learn from prior IJVs and that may also elucidate conditions under which experiential learning does take place.

Specifically, the hypotheses developed in this paper go beyond the amount of the firm's prior alliance experience to highlight the importance of the novelty of the focal IJV in relation to the firm's past experiences with IJVs as well as the relevance of the heterogeneity of the firm's accumulated experience with IJVs. Methodological details appear in the next section, which is followed by a presentation of the research findings. The evidence suggests that the novelty of the focal IJV moderates the effects of learning-by-doing and that the impact of the heterogeneity of the firm's experience with IJVs depends on the novelty of the focal IJV. A section on the study's implications and the research opportunities it presents concludes.

LEARNING-BY-DOING IN IJVs

The prediction tested in prior research that experience with IJVs will improve the performance of a collaborative agreement can be derived from a number of streams of research considering the effects of experience accumulation in general. For example, the learning curve literature has demonstrated the beneficial effects of experience accumulation

in the manufacturing setting (Dutton & Thomas, 1984; Epple, Argote, & Devadas, 1991; Yelle, 1979); the behavioral school has examined experience effects in a broader range of organizational activities (Cyert & March, 1963; Levitt & March, 1988; March & Simon, 1958); and evolutionary economics suggests that a firm's routines evolve with experience, facilitating incremental refinements in tasks and performance improvements (e.g., Nelson & Winter, 1982).

The prediction on positive IJV experience effects also appears to be in accord with many writings on the managerial challenges posed by inter-firm collaboration. For instance, IJV neophytes need to address the unique demands that IJVs present throughout their life-cycles, ranging from understanding collaborative strategy to designing IJVs and selecting partners to implementing and adjusting relationships over time (e.g., Doz, 1996; Parkhe, 1996). To the extent that IJV experience leads to refinements in the execution of these different tasks, the following prediction should hold, which we state for the sake of completeness:

Hypothesis 1: The performance of an IJV will be positively related to a parent firm's level of IJV experience.

While this prediction is intuitively appealing, there are reasons why firms might not be able to derive benefits from their prior IJV experiences as expected. For example, learning-by-doing in the IJV setting may be hampered by the lack of clear performance measures for IJVs (Anderson, 1990; Geringer & Hebert, 1991). The difficulty managers have in appraising the performance of collaborative agreements also impedes their ability to understand cause and effect relationships for IJVs and to make incremental adjustments over time. Moreover, prior research has shown that novices tend to apply knowledge obtained in one task to new tasks that are superficially similar yet fundamentally different, a problem cognitive psychologists term negative transfer effects (e.g., Cohen & Bacdayan, 1994; Gick & Holyoak, 1987). As a consequence, performance initially declines before improving as

experience accumulates. If such negative transfer effects are at work in the IJV setting, an alternative hypothesis to H1 is that the IJV experience-performance relationship is U-shaped. In fact, Haleblian and Finkelstein (1999) find evidence for this pattern for corporate acquisitions.

While these examples indicate obstacles to experiential learning in the IJV setting, and these obstacles make a test of the direct effects of IJV experience accumulation interesting, they also point to the need to specify more clearly the conditions under which experience accumulation is, or is not, effective in the IJV setting. Below we consider the role of the novelty of the focal IJV, and we move beyond the amount of the firm's prior experience with IJVs (represented in H1) to consider the heterogeneity in the firm's IJV experience base.

IJV Novelty

Cognitive psychology research provides arguments that help explain when IJV experience accumulation will tend to be more or less beneficial for parent firms. For instance, Holyoak (1985) suggests that erroneous generalizations can occur when two tasks have similar surface elements, those that are only loosely tied to outcomes, despite different structural elements, those that are causally or functionally tied to outcomes. Similarly, other research suggests that the effective transfer of knowledge hinges upon agents' abilities to abstract common dimensions and make appropriate generalizations (Gavetti & Levinthal, 2000; Holyoak & Thagard, 1995; Huff, 1990). Even tasks with common dimensions can pose knowledge transfer challenges because of the way the tasks need to be managed, however. For example, in a laboratory setting, Cohen and Bacdayan (1994) show that individuals tend to replicate skilled actions in new contexts mistakenly thought to be like the ones in which the procedures were developed. These arguments suggest that the greater the

novelty of the focal IJV relative to the firm's prior collaborations, the less useful will be the firm's prior experiences with IJVs.

To apply these concepts in the IJV setting in a more concrete way, one may characterize a firm's experience with IJVs based on the national culture in which they are embedded and the skill requirements of the IJVs' industries. For instance, consider a firm with experience in a few domestic JVs in its core business. If this firm enters into an IJV in an industry with similar skill requirements, or the IJV is based in a host country with a similar culture, it finds itself in relatively familiar territory. The skilled actions learned in prior IJVs are likely to transfer effectively to the new IJV. However, if the firm enters into a joint venture to explore a new industry, the firm will be less able to reap the benefits of its prior experiences with IJVs. In a similar fashion, for a JV in a culturally novel host country, the firms' prior experiences in coordinating and operating foreign affiliates will be less helpful (e.g., Anderson & Gatignon, 1986). Thus, we expect that the effects of IJV experience accumulation will be negatively related to the novelty of the IJV.

Hypothesis 2: The performance of an IJV will be negatively related to the interaction of the novelty of the IJV and the firm's level of IJV experience.

IJV Heterogeneity

Beyond characterizing the focal transaction as to its novelty along skill and cultural dimensions, we also wish to move beyond merely the amount of prior alliance experience considered in current research to assess the impact of the heterogeneity or homogeneity of IJV experience. This emphasis reflects the tension noted in organizational learning research on standardization versus heterogeneity (Argote, 1999). If IJV novelty is seen as a flow concept relating to the uniqueness of a venture's execution requirements, IJV heterogeneity can be thought of as a corresponding stock concept reflecting the diversity of a firm's prior collaborations.

The effects of experience heterogeneity on IJV performance are also likely to depend on the novelty of the focal IJV. This is due to two theoretical considerations. First, more novel IJVs tend to be more exploratory in nature, while more familiar IJVs have a significant exploitation component to them (Koza & Lewin, 1998; March, 1991). Second, the firm's ability to increase efficiency in more familiar IJVs versus obtain creative solutions in more novel IJVs depends upon the heterogeneity of the firm's prior experiences.

The learning curve literature suggests that the accumulation of relatively homogeneous experiences can be helpful in improving the efficiency of an activity (e.g., Dutton & Thomas, 1984; Yelle, 1979). Such efficiency improvements will be more relevant for ventures that are more familiar to the firm and tend to have an exploitation component (March, 1991). Prior research suggests that the routines and knowledge that develop from such experiences positively affect financial performance (Moorman & Miner, 1997). However, firms with homogeneous IJV experiences that are focused on exploiting their experience bases may suffer from redundant experience and competency traps (Lant & Mezias, 1990; Levitt & March, 1988). Thus, due to the adverse effects of path dependence, firms with homogeneous experiences will find novel IJVs that require new collaborative solutions particularly difficult to manage.

Creativity becomes relatively more important in novel, exploratory IJVs that require the firm to develop unique skills and adjust its business practices. Diverse knowledge obtained from heterogeneous experiences facilitates the search for novel solutions, even if the efficiency of the process suffers due to the need for conflict resolution or due to the lack of established routines. Research on group composition indicates that the heterogeneity of members' experiences contributes to greater creativity despite lesser efficiency (Eisenhardt & Tabrizi, 1995; Hambrick, Cho, & Chen, 1996; Watson, Kumar, & Michaelson, 1993). In sum, if heterogeneous IJV experiences enhance a firm's capacity to search for novel solutions

in more exploratory ventures, and more homogenous IJV experience improves the efficiency of IJVs that are more exploitative in nature, we predict that the effects of IJV heterogeneity will be contingent upon IJV novelty:

Hypothesis 3: The performance of an IJV will be positively related to the interaction of the novelty of the IJV and the heterogeneity of the firm's IJV experience.

METHODS

Sample

The Securities Data Corporation (SDC) database was used to identify announcements of joint ventures formed abroad by US parent firms during the 1995-1997 time frame. To avoid pooling together qualitatively different governance forms, we focused on equity joint ventures and excluded from the sample other types of collaboration such as non-equity structures (e.g., licensing, R&D, and marketing agreements). As discussed below, IJV performance was measured using stock returns data, so in order to collect this information, we focused on the US parent firm as the focal firm in the joint venture. In the event that more than one US parent firm participated in the IJV, one firm was randomly selected for analysis. The base sample for which stock returns data were available consists of 1318 IJVs. These joint ventures operated in 94 countries and 65 industries at the two-digit SIC level. The incidence of joint venture formation was highest in the motor vehicles and transportation equipment industry (i.e., SIC 37), with 8.9 percent of the transactions, and 45.7 percent of the joint ventures operated in the manufacturing sector. Additional descriptive statistics appear in the results section below.

Measures and Data

Dependent variable. The performance effects of the IJV on the parent firm were measured using event study methodology. This technique captures the parent firm's stock price change surrounding the IJV formation announcement after adjusting for general stock market movements and the firm's systematic risk. We first estimated the Sharpe-Lintner market model for each firm:

$$(3) R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}.$$

R_{it} is the return on security i in period t , R_{mt} is the return on the value-weighted market portfolio, and ε_{it} is the error term (i.e., $N(0, \sigma^2)$). Daily returns data were obtained from the Center for Research in Security Prices (CRSP) data files. The trading days used were $t = -250$ to $t = -50$, where $t = 0$ corresponds to the date of the IJV formation announcement.

When multiple announcements appeared for a single joint venture, the earliest announcement date was used for $t = 0$, and dates provided by the Securities Data Corporation (SDC) database were individually verified with manual, on-line searches of the Lexis-Nexis database.

Equation (3) was then used to forecast firm-specific stock returns based on the firm's systematic risk and general market movements surrounding the IJV formation announcement, and abnormal returns were calculated as follows:

$$(4) AR_{it} = R_{it} - (a_i + b_i R_{mt}),$$

where a_i and b_i are the firm-specific OLS parameter estimates obtained from estimation of equation (3). The total firm valuation effect of the IJV formation announcement can be measured by summing abnormal returns within an event window given by $t \in [\tau, \kappa]$:

$$(5) CAR_{i,\tau,\kappa} = \sum_{t=\tau}^{\kappa} AR_{it}.$$

We used $CAR_{i,-1,1}$ as the estimate of the firm valuation effect of IJV formation. We re-estimated the multivariate models using $CAR_{i,-2,2}$ as a dependent variable in order to test the robustness of the findings to the construction of the event window. When using this second dependent variable based on a wider interval, we obtained similar findings.

Explanatory variables. The parent firm's IJV experience was measured as the number of joint ventures formed by the firm outside of the United States in the previous ten years. In order to remedy significant positive skewness, we redefined *IJV Experience* to be the log of one plus the number of IJVs since the logarithmic transformation has been shown to correct skewness (Tabachnick & Fidell, 1996), some firms invested in zero prior IJVs, and the log of zero is undefined. Data on this variable were obtained from the SDC database.

In order to test H2 and H3, we calculated measures of novelty and heterogeneity in two ways. We first calculated skill novelty and heterogeneity based on the sectoral diversity of the firm's prior joint ventures. Firms often engage in joint ventures in non-core domains (Balakrishnan & Koza, 1993; Stopford & Wells, 1972), and joint ventures established in different industries will have very different skill requirements (e.g., Chang, 1996; Montgomery & Hariharan, 1991). We characterized each industry's skill requirements in order to calculate measures of IJV novelty and heterogeneity. We then calculated analogous measures for cultural novelty and heterogeneity based on the geographic locations of the firm's prior experiences with joint ventures.

In order to calculate skill novelty and heterogeneity, we obtained Occupational Employment Survey (OES) data for 1998 from the Bureau of Labor Statistics. Prior studies on corporate diversification have used this data to gauge the knowledge base of a firm or to compare the knowledge requirements of destination industries for expanding firms (Chang & Singh, 1999; Farjoun, 1998). We used the OES data to obtain a distribution of employment across seven occupational divisions (e.g., managerial and administrative; professional,

paraprofessional, and technical; sales; clerical and administrative support; service; agricultural, forestry, fishing, and related; and production, construction, operating, maintenance, and materials handling) for all industries at the 3-digit SIC level.

Using data on the distribution of employment in the focal transaction's industry and the distribution of employment in the industry of each of the firms' prior joint ventures, *Skill Novelty* was defined as the average distance between the focal transaction f and the joint ventures in the firm's experience set (i.e., $j \in J$) as follows:

$$(6) \text{ Skill Novelty} = \frac{1}{N} \sum_{j=1}^N \left[\sum_{i=1}^7 \frac{(P_{ij} - P_{if})^2}{s_i^2} \right]^{0.5},$$

where P_{ij} is the percentage of employees in occupational division i for joint venture j 's industry; P_{if} is the percentage of employees in occupational division i for the focal joint venture f ; and s_i^2 is the sample variance of employment percentages in occupational division i across all industries, which we use to weight the squared difference term. The skill distance between the focal joint venture f and joint venture j is calculated for all N joint ventures in the firm's experience base. SIC data for the focal IJV and previous joint ventures were obtained from the SDC database. For this measure and all other measures of novelty and heterogeneity, we included firms with at least three prior joint ventures.

By contrast, skill heterogeneity can be seen a stock measure of the diversity of the firm's previous joint ventures. For example, if the skill requirements of a given joint venture can be proxied by the vector $\mathbf{p}_k = \langle p_{1k}, p_{2k}, \dots, p_{6k}, p_{7k} \rangle$, where the vector elements represent employment percentages across seven occupational divisions in the IJV's industry k , our measure of skill heterogeneity provides a proxy of how skill requirements vary across all the industries transcended by the firm's prior joint ventures:

$$(7) \text{ Skill Heterogeneity} = \left[\frac{1}{7} \sum_{i=1}^7 \frac{V_i^2}{s_i^2} \right]^{0.5},$$

where v_i^2 is the sample variance in employment percentages in occupational division i across the industries in which the firm has joint venture experience (i.e., $j \in J$). As before, this variance is weighted by s_i^2 , the sample variance of employment percentages in occupational division i across all industries.

Measures for cultural novelty and cultural heterogeneity were measured in the same way using Hofstede's (1980) four scales for host countries' uncertainty avoidance, individuality, tolerance of power, and masculinity. We defined *Cultural Novelty* as the average distance between the focal transaction f and the joint ventures in the firm's experience base (i.e., $j \in J$):

$$(8) \text{ Cultural Novelty} = \frac{1}{N} \sum_{j=1}^N \left[\sum_{i=1}^4 \frac{(I_{ij} - I_{if})^2}{s_i^2} \right]^{0.5},$$

where I_{ij} is the score for scale i for the host country of joint venture j , I_{if} is the score for scale i for the host country of the focal joint venture f , and s_i^2 is the sample variance in scale i . This measure of cultural novelty, which compares a focal joint venture with the prior joint ventures formed by the firm, is akin to Kogut and Singh's (1988) measure of cultural distance, which compares the national cultures of two countries. Data on host country locations for the focal IJV and previous joint ventures were obtained from SDC.

Following the same procedure as above, *Cultural Heterogeneity* was defined as follows:

$$(9) \text{ Cultural Heterogeneity} = \left[\frac{1}{4} \sum_{i=1}^4 \frac{v_i^2}{s_i^2} \right]^{0.5},$$

where v_i^2 is the sample variance in scores for Hofstede's (1980) scale i across host countries in which the firm has invested in joint ventures ($i = 1, 2, 3, 4$), and s_i^2 is the sample variance of scale i across all countries.

Control variables. In addition to these theoretical variables, several control variables were implemented in the multivariate analysis. We first controlled for firm size because firms with greater levels of IJV experience are apt to be larger in size, and larger firms are likely to have greater project diversity (Scherer & Ross, 1990) as well as financial or other resources that can affect IJV implementation and performance. *Firm Size* was measured as the logarithm of the parent firm's total assets using data from the Compustat dataset. As for the IJV experience variable, the logarithmic transformation was utilized to address significant positive skewness.

We also addressed the host country's attractiveness by incorporating a control for the host market's growth since firms may form relatively novel IJVs in part as a response to favorable demand conditions. *Host Market Growth* was measured as the average annual growth rate in real GDP for the five-year period preceding the IJV formation announcement. Data for this variable were obtained from the Statistical Yearbook and the World Data database.

To account for venture features and the control structure of the IJV in particular, we controlled for the parent firm's equity stake. *Equity Stake* was measured as the parent firm's equity percentage in the joint venture.

Finally, to control for the venture's competitive conditions, industry level fixed effects were incorporated into the model. A series of dummy variables for the two-digit SIC industries of the IJVs captured these effects. Data for these variables and for parent firms' equity stakes were obtained from SDC.

RESULTS

Table 1 presents the average abnormal returns from IJV formation for event days surrounding the formation announcement. Many of the mean valuation effects are negative, and the percentage of IJV formation announcements yielding positive abnormal returns is consistently below fifty percent. The cumulative abnormal return over trading days $t = -1$ to $t = 1$ is -1.83 percent ($p < 0.001$), indicating that firms' recent investments in IJVs do not create value on average. To address the possibility that univariate outliers might be influencing these results, we trimmed observations beyond three standard deviations from the means, but we continued to observe negative average abnormal returns for trading days throughout the event window.

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Insert Table 1 about here
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Descriptive statistics and a correlation matrix appear in Table 2. The average firm had \$52.7 billion in total assets and had formed 24.9 international joint ventures. As one would expect, larger firms tend to have greater IJV experience ($p < 0.001$), enter IJVs in industries with more diverse skill requirements ($p < 0.001$), and take on IJVs with greater skill and cultural novelty ($p < 0.001$ and $p < 0.01$, respectively). The maximum level of experience was 119 IJVs, and experienced collaborators tend to form IJVs with greater skill and cultural novelty at the margin ($p < 0.001$ and $p < 0.05$, respectively). Host country growth rates ranged from -16.3 percent to 10.10 percent and averaged 3.75 percent. Firms appear to establish culturally novel IJVs in part due to positive growth conditions in host markets ($p < 0.001$).

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Insert Table 2 about here
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The correlations among the explanatory variables indicate the importance of using multivariate analysis to examine the partial effects of our theoretical variables on IJV

performance, and they also reveal the potential for multicollinearity problems. Assessments of variance inflation factors (VIFs) indicated that multicollinearity was present for the full models with interaction effects, so the variables forming the interactions (e.g., IJV experience, skill and cultural novelty, and skill and cultural heterogeneity) were standardized prior to forming the multiplicative terms. For variables presented in the models discussed below, this procedure resulted in a maximum VIF of 2.9, significantly below the rule of thumb cutoff of ten indicating multicollinearity problems (Neter, Wasserman, & Kutner, 1985).

Table 3 presents the estimation results for models using the skill novelty and heterogeneity constructs. Model 1 present a baseline model consisting of the control variables and the effects of experiential learning without the novelty and heterogeneity contingencies. Model 2 adds the direct effects of these variables, and Models 3 and 4 add the Skill Novelty * IJV Experience and Skill Novelty * Skill Heterogeneity interactions. All four models are significant at the 0.001 level.

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Insert Table 3 about here
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Our first hypothesis on the positive effects of IJV experience applied prior arguments on experiential learning to the IJV context. Models 1 and 2, however, indicate that, if anything, IJV experience has an adverse impact on the shareholder wealth implications of international joint ventures ($p < 0.10$). In Table 4, which offers multivariate results for models including the cultural novelty and heterogeneity variables, IJV experience has no apparent impact on the firm valuation effects of IJVs. Thus, there is no support for H1.

Recent findings by Haleblan and Finkelstein (1999) on experiential learning in the acquisition literature indicate that the relationship between acquisition experience and performance is U-shaped, which they attribute to negative transfer effects at low levels of

experience. To determine if such negative transfer effects are present in the IJV setting, and to assess whether they might explain our insignificant finding for IJV experience, we re-estimated the models by incorporating a squared term for IJV experience. However, the results did not support a U-shaped relationship for IJV experience effects.

Our second hypothesis posited that the IJV's novelty will negatively moderate the relationship between IJV experience and IJV performance. The overall impact of IJV experience on IJV performance is indicated by the greater explanatory power of model 3 relative to a model without the interaction and direct effect of IJV experience ($p < 0.01$). The negative interaction effect between IJV experience and skill novelty indicates that firms' prior experiences with IJVs are less helpful for IJVs with greater skill novelty ($p < 0.01$), providing support for H2. In fact, taking the partial derivative of the model with respect to IJV experience indicates that IJV experience has an adverse impact on the performance of novel IJVs. As model 4 indicates, the negative interaction between skill novelty and IJV experience is robust to the inclusion of the interaction between skill novelty and heterogeneity ($p < 0.01$). Thus, the results support the basic proposition that the payoffs associated with IJV experience accumulation are contingent upon characteristics of the focal transaction. We also tested to see if heterogeneity moderates the IJV experience – performance relationship, but found no evidence for this interaction.

Our third hypothesis predicted a positive interaction between the heterogeneity of the firm's IJV experience base and the novelty of the focal transaction. However, the interaction effect in model 4 is insignificant, and this interaction is also insignificant in a model that excludes the Skill Novelty * IJV Experience interaction.

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Insert Table 4 about here
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Table 4 presents estimation results for models incorporating the cultural dimensions of heterogeneity and novelty. Model 1 includes the direct effects of experience, novelty, and heterogeneity in addition to the control variables, Model 2 adds the Cultural Novelty * IJV Experience interaction, and Model 3 incorporates the Cultural Novelty * Cultural Heterogeneity interaction. All three models are significant at the 0.001 level. As before, a negative interaction effect is present between novelty and IJV experience ($p < 0.05$ in models 2 and 3), a significant hierarchical F-value comparing model 2 with a reduced model omitting the interaction term and the direct effect for IJV experience confirms the overall effect of IJV experience ($p < 0.05$), and IJV experience appears to adversely effect the performance of culturally novel international joint ventures. By contrast, for culturally novel IJVs, the cultural heterogeneity of prior IJV experiences is more beneficial than for IJVs in more familiar cultures ($p < 0.05$).

DISCUSSION

Some prior studies have shown that firms' investments in IJVs enhance shareholder wealth in general (e.g., Lummer & McConnell, 1990), but the evidence on IJVs' average valuation effects is mixed, with other studies reporting insignificant (e.g., Finnerty, Owers, & Rogers, 1986) or negative (e.g., Lee & Wyatt, 1990) average abnormal returns. In this analysis of firms' international joint ventures formed in the more recent 1995-1997 period, the average firm valuation effect of IJV formation is negative. Future research is needed to explain these different findings for IJVs formed over multiple decades.

In this paper, we have provided theoretical underpinnings for the recent prediction that IJV performance will be enhanced through experience with international joint ventures. We also have noted several obstacles that stand in the way of experiential learning in the IJV context and reasons why predictions regarding learning-by-doing documented for manufacturing or administrative tasks may not extend easily to the IJV setting. The

arguments we develop suggest that the relationship between IJV experience and performance may be non-linear and may be moderated by contingencies relating to the features of focal transaction relative to the firm's IJV experience base. Thus, our arguments and findings may resolve in part some of the mixed findings in prior studies on experiential learning in alliances.

We find that characteristics of the focal transaction shape the performance implications of the firm's prior IJV experience. For example, IJVs that are based in industries with skill requirements that are novel relative to those for prior joint ventures likely require the firm to rely more on the partner's capabilities and emphasize flexibility in comparison with IJVs in industries in which the firm has developed its knowledge base through prior collaborations. Likewise, the firms' IJVs into host countries with different cultures relative to prior IJVs require the firm to alter the degree to which it institutes its own internal controls in the IJV and the degree to which it relies on the local partner to tailor business practices and products to the local environment. The empirical evidence presented here shows that prior IJV experience, if obtained in domains distinct from the skill and cultural domains of the focal IJV, can harm rather than advance the performance of IJVs.

Our results also emphasize that not only is the amount of prior IJV experience important, but so too is the heterogeneity of that experience. We have suggested that the performance implications of heterogeneous or homogenous experience are conditional upon the novelty of the focal IJV. For more familiar ventures, homogenous experience can be useful in enhancing the efficiency of the IJV, whereas for novel IJVs, the creativity thought to accrue from more heterogeneous experiences can be beneficial. We find that culturally heterogeneous IJV experience is more helpful for culturally novel IJVs than for more familiar ones.

Our results and the stock vs. flow quality of IJV heterogeneity and novelty also point to temporal tradeoffs firms face in investing in IJVs: Firms with homogenous IJV experience may have difficulties benefiting from this experience in managing novel IJVs but, as heterogeneity increases as a result of these investments, future novel IJVs may benefit from the increasing heterogeneity of experience (e.g., Sitkin, 1992). This tension is also consistent with the roles of cultural diversity and learning in the internationalization process (Johanson & Vahlne, 1977).

Based on the scope of this study's research design, this work could be extended in several directions. Beyond obvious opportunities to explore whether the findings generalize to non-US firms or other types of alliances, there are a number of directions for future research. First, our paper has focused on one firm per IJV, and we have examined experience accumulation and the shareholder wealth effects of partnering from that firm's perspective. Future research could examine the role of the non-focal firm's experience base in determining the focal firm's performance and could also consider joint value creation and appropriation in alliances and the roles played by the two firms' prior experiences.

Second, our study has focused on the shareholder wealth effects of IJV formation, but future research could examine other implications of experience accumulation. Specifically, a study with qualitative data on performance could assess experience effects along multiple dimensions of alliance performance and could also consider the implications of different types of experience for the management of alliances.

Third, we have focused on the skill and cultural dimensions of novelty and heterogeneity, but extensions could consider other dimensions of novelty and heterogeneity as well as other contingencies affecting experiential learning in alliances. Because our measures are constructed based on the industries and countries in which IJVs operate, other measures of novelty and heterogeneity might be developed with more fine-grained

information to explore the impact of specific alliance attributes such as the technologies involved, control structures, or alliances' value chain configurations. In developing our contingency measures, we have weighted prior experiences equivalently, so future research might explore this assumption explicitly in several ways. One could assess the role of the timing of prior experiences by assessing the lumpiness of experience to determine if time compression effects are present. An alternative would be to assess whether recency (Argote, Beckman, & Epple, 1990; Baum & Ingram, 1998) or imprinting (Doz, 1996; Stinchcombe, 1965) effects exist that make current or initial alliance experiences more relevant. It is also plausible that the effects of experiential learning may differ according to the mixture of successes and failures in the firm's alliance experience base.

Finally, this study has focused on the role of experiential learning for the performance of IJVs. Given that firms might be able to improve their collaborative capabilities through more systematic means of articulating, codifying, and diffusing knowledge and putting in place structural solutions for managing alliances (Harbison & Pekar, 1997; Kale, 1999), it would be valuable to investigate the relative effectiveness of these alternative approaches in different situations. The continued challenges face in managing alliances effectively and the theoretical relevance of the issue of alliance capability development indicate that these avenues for future research on inter-firm collaboration are worthy of more study.

REFERENCES

- Adler, N. J., & Graham, J. L. 1989. Cross-cultural interaction: The international comparison fallacy? Journal of International Business Studies, 20: 515-537.
- Anand, B. N., & Khanna, T. 2000. Do firms learn to create value? The case of alliances. Strategic Management Journal, 21: 295-316.
- Anderson, E. 1990. Two firms, one frontier: On assessing joint venture performance. Sloan Management Review, 31: 19-30.
- Anderson, E., & Gatignon, H. 1986. Modes of foreign entry: A transaction cost analysis and propositions. Journal of International Business Studies, 17: 1-26.
- Argote, L. 1999. Organizational learning: Creating, retaining and transferring knowledge. Kluwer Academic Publishers.
- Argote, L., Beckman, S. L., Epple D. 1990. The persistence and transfer of learning in industrial settings. Management Science, 36: 140-154.
- Balakrishnan, S., & Koza, M. P. 1993. Information asymmetry, adverse selection, and joint ventures. Journal of Economic Behavior and Organization, 20: 99-117.
- Barkema, H. G., Shenkar, O., Vermeulen, F., & Bell, J. H. J. 1997. Working abroad, working with others: How firms learn to operate international joint ventures. Academy of Management Journal, 40: 426-442.
- Barney, J. B. 1991. Firm resources and sustained competitive advantage. Journal of Management, 17: 99-120.
- Baum, J. A. C., Ingram, P. 1998. Survival-enhancing learning in the Manhattan hotel industry, 1898-1980. Management Science, 44: 996-1016.
- Chang, S. J. 1996. An evolutionary perspective on diversification and corporate restructuring: Entry, exit, and economic performance during 1981-1989. Strategic Management Journal, 17: 587-612.
- Chang, S. J., & Singh, H. 1999. The impact of modes of entry and resource fit on modes of exit by multibusiness firms. Strategic Management Journal, 20: 1019-1035.
- Cohen, W. M., & Bacdayan, P. 1994. Organizational routines are stored as procedural memory: Evidence from a laboratory study. Organization Science, 5: 554-568.
- Cyert, R. M. & March, J. G. 1963. A behavioral theory of the firm. Englewood Cliffs, NJ: Prentice-Hall.
- Doz, Y. L. 1996. The evolution of cooperation in strategic alliances: Initial conditions or learning processes? Strategic Management Journal, 17 (Summer Special Issue): 55-84.

- Dutton, J. M., & Thomas, A. 1984. Treating progress functions as a managerial opportunity. Academy of Management Review, 9: 235-247.
- Dyer, J. H., & Singh, H. 1998. The relational view: Cooperative strategy and sources of interorganizational competitive advantage. Academy of Management Review, 23: 660-679.
- Eisenhardt, K. M., & Tabrizi, B. N. 1995. Accelerating adaptive processes: Product innovation in the global computer industry. Administrative Science Quarterly, 40: 84-110.
- Epple, D., Argote, L., & Devadas, R. 1991. Organizational learning curves: A method for investigating intra-plant transfer of knowledge acquired through learning by doing. Organization Science, 2: 58-70.
- Farjoun, M. 1998. The independent and joint effects of the skill and physical bases of relatedness in diversification. Strategic Management Journal, 19: 611-630.
- Finnerty, J. E., Owers, J. E., & Rogers, R. C. 1986. The valuation impact of joint ventures. Management International Review, 26: 14-26.
- Gavetti, G., & Levinthal, D. 2000. Looking forward and looking backward: Cognitive and experiential search. Administrative Science Quarterly, forthcoming.
- Geringer, J. M., & Hebert, L. 1991. Measuring the performance of international joint ventures. Journal of International Business Studies, 22: 249-263.
- Gick, M. L., & Holyoak, K. J. 1987. The cognitive basis of knowledge transfer. In Cormier, S. M., & Hagman, J. D. (Eds.), Transfer of learning: Contemporary research and applications. New York: Academic Press.
- Haleblian, J., & Finkelstein, S. 1999. The influence of organization acquisition experience on acquisition performance: a behavioral learning theory perspective. Administrative Science Quarterly, 44: 29-56.
- Hambrick, D. C, Cho, T. S., & Chen, M.-J. 1996. The influence of top management team heterogeneity on firms' competitive moves. Administrative Science Quarterly, 41: 659-684.
- Harbison, J. R., & Pekar, P., Jr. 1998. Smart alliances. San Francisco, CA: Jossey-Bass.
- Hofstede, G. 1980. Culture's consequences: International differences in work-related values. Beverly Hills, CA: Sage.
- Holyoak, K. J. 1985. The pragmatics of analogical transfer. In Bower, G. H. (Ed.), The psychology of learning and motivation (Vol. 10). New York: Academic Press.
- Holyoak, K. J., & Thagard, P. 1995. Mental leaps. Cambridge, MA: MIT Press.
- Huff, A. 1990. Mapping strategic thought. New York: Wiley.

- Johanson, J., & Vahlne, J. E. 1977. The internationalization process of a firm: A model of knowledge development and increasing foreign market commitments. Journal of International Business Studies, 9: 22-32.
- Kale, P. 1999. Alliance capability and success: A knowledge-based approach. Unpublished dissertation, University of Pennsylvania.
- Kogut, B., & Singh, H. 1988. The effect of national culture on the choice of entry mode. Journal of International Business Studies, 19: 411-432.
- Koza, M., & Lewin, A. 1998. The co-evolution of strategic alliances. Organization Science, 9: 255-264.
- Lant, T. K., & Mezias, S. J. 1990. Managing discontinuous change: A simulation study of organizational learning and entrepreneurship. Strategic Management Journal, 11: 147-179.
- Lee, I., & Wyatt, S. B. 1990. The effects of international joint ventures on shareholder wealth. The Financial Review, 25: 641-649.
- Levitt, B., & March, J. G. 1988. Organizational learning. Annual Review of Sociology, 14: 319-340.
- Lummer, S. L., & McConnell, J. J. 1990. Stock valuation effects of international joint ventures. In Rhee, S. G., & Chang, R. P. (Eds.), Pacific basin capital market research: 531-546. North-Holland: Elsevier Science Publishers B. V.
- Lyles, M. 1988. Learning among joint venture-sophisticated firms. In Contractor, F. J., & Lorange, P. (Eds.), Cooperative strategies in international business. Lexington, MA: D. C. Heath.
- March, J. G. 1991. Exploration and exploitation in organizational learning. Organization Science, 2: 71-87.
- March, J. G., & Simon, H. A. 1958. Organizations. New York: John Wiley.
- Montgomery, C. A., & Hariharan, S. 1991. Diversified expansion by large established firms. Journal of Economic Behavior and Organization, 15: 71-89.
- Moorman, C., & Miner, A. S. 1997. The impact of organizational memory on new product performance and creativity. Journal of Marketing Research, 34: 91-106.
- Nelson, R. & Winter, S. 1982. An evolutionary theory of economic change. Cambridge, MA: Harvard University Press.
- Neter, J., Wasserman, W., & Kutner, M. H. 1985. Applied linear statistical models (Second Edition). Homewood, IL: Irwin.

- Oxley, J. E., 1997. Appropriability hazards and governance in strategic alliances: A transaction cost approach. Journal of Law, Economics, and Organization, 13: 387-409.
- Parkhe, A. 1991. Interfirm diversity, organizational learning, and longevity in global strategic alliances. Journal of International Business Studies, 22: 579-601.
- Parkhe, A. 1996. International joint ventures. In Punnett, B. J., & Shenkar, O. (Eds.), Handbook for international management research. Cambridge, MA: Blackwell.
- Scherer, F. M., & Ross, D. 1990. Industrial market structure and economic performance (Third Edition). Boston, MA: Houghton Mifflin.
- Simonin, B. L. 1997. The importance of collaborative know-how: An empirical test of the learning organization. Academy of Management Journal, 40: 1150-1174.
- Sitkin, S. B. 1992. Learning through failure: The strategy of small losses. Staw, B. M., & Cummings, L. L. (Eds.). Research in Organizational Behavior, 14: 231-266. Greenwich, CT: JAI Press.
- Stinchcombe, A. L. 1965. Social structure and organizations. In March, J. G. (Ed.), Handbook of organizations: 153-93. Chicago, IL: Rand McNally.
- Stopford, J. M., & Wells, L. T. 1972. Managing the multinational enterprise. New York, NY: Basic Books.
- Tabachnick, B. G., & Fidell, L. S. 1996. Using multivariate statistics (Third Edition). New York, NY: Harper Collins.
- Yelle, L. E. 1979. The learning curve: Historical review and comprehensive survey. Decision Sciences, 10: 302-328.
- Watson, W. E., Kumar, K., & Michaelson, L. K. 1993. Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. Academy of Management Journal, 36: 590-602.

TABLE 1
Firm Valuation Effects of IJV Formation^a

Event day t	Mean Abnormal Return % (AR)	Percent with Positive ARs
-5	-0.30	45.22
-4	-0.64**	44.00
-3	-0.54*	45.52
-2	-0.90***	46.05
-1	-0.73**	45.07
0	-0.28	44.99
1	-0.82***	44.92
2	-0.79***	45.22
3	-0.99***	43.17
4	-1.07***	44.61
5	-0.70**	44.54

^a N=1318. † p<0.10; * p<0.05; ** p<0.01; *** p<0.001.

TABLE 2
Descriptive Statistics and Correlation Matrix^b

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. CAR _{i,-1,1}	-1.58	11.77	---								
2. Firm Size	9.74	1.73	0.16 ^{***}	---							
3. Host Market Growth	3.75	4.90	0.04	-0.02	---						
4. Equity Stake	46.77	12.22	-0.01	0.03	0.03	---					
5. IJV Experience	0.51	0.81	0.11 ^{***}	0.69 ^{***}	-0.05	-0.01	---				
6. Skill Novelty	0.02	0.99	0.09 ^{**}	0.31 ^{***}	-0.06 [†]	-0.07 [*]	0.19 ^{***}	---			
7. Skill Heterogeneity	-0.01	0.97	0.06 [†]	0.30 ^{***}	-0.06 [†]	-0.02	0.01	0.34 ^{***}	---		
8. Cultural Novelty	0.01	0.99	0.03	0.11 ^{**}	0.53 ^{***}	-0.02	0.09 [*]	-0.03	0.03	---	
9. Cultural Heterogeneity	0.01	0.99	-0.05	0.05	-0.02	0.03	0.03	-0.01	-0.01	0.05	---

^b Sample sizes in the cells range from 585 to 1091. International joint venture experience, novelty, and heterogeneity variables have been standardized for model estimation and also appear in standardized form in this table.

[†] p<0.10; * p<0.05; ** p<0.01; *** p<0.001.

TABLE 3
Multivariate Results for Skill Novelty and Heterogeneity^c

Independent Variable	(1)	(2)	(3)	(4)
Intercept	-16.49 ^{***} (3.81)	-16.79 ^{***} (3.89)	-17.86 ^{***} (3.91)	-17.95 ^{***} (3.91)
Firm Size	1.73 ^{***} (0.33)	1.70 ^{***} (0.34)	1.79 ^{***} (0.34)	1.80 ^{***} (0.34)
Host Market Growth	0.19 ^{**} (0.07)	0.20 ^{**} (0.07)	0.20 ^{**} (0.07)	0.20 ^{**} (0.07)
Equity Stake	-0.04 (0.03)	-0.04 (0.03)	-0.03 (0.03)	-0.03 (0.03)
Industry Fixed Effects	Incl.	Incl.	Incl.	Incl.
IJV Experience	-1.12 [†] (0.65)	-1.21 [†] (0.67)	-1.13 [†] (0.67)	-1.18 [†] (0.67)
Skill Novelty	---	0.73 (0.51)	1.49 ^{**} (0.56)	1.53 ^{**} (0.57)
Skill Heterogeneity	---	0.18 (0.54)	-0.05 (0.55)	-0.01 (0.55)
Skill Novelty * IJV Experience	---	---	-1.44 ^{**} (0.48)	-1.42 ^{**} (0.48)
Skill Novelty * Skill Heterogeneity	---	---	---	-0.23 (0.39)
Model F	2.31 ^{***}	2.32 ^{***}	2.46 ^{***}	2.42 ^{***}
R-squared	0.11	0.11	0.12	0.12
N	899	896	897	897

^c Standard errors appear in parentheses. [†] p<0.10; * p<0.05; ** p<0.01; *** p<0.001.

TABLE 4
Multivariate Results for Cultural Novelty and Heterogeneity^d

Independent Variable	(1)	(2)	(3)
Intercept	-18.85*** (4.89)	-18.05*** (4.88)	-18.49*** (4.87)
Firm Size	1.84*** (0.42)	1.73*** (0.42)	1.75*** (0.42)
Host Market Growth	0.08 (0.26)	0.20 (0.26)	0.25 (0.26)
Equity Stake	-0.06 (0.04)	-0.06 (0.04)	-0.06 (0.04)
Industry Fixed Effects	Incl.	Incl.	Incl.
IJV Experience	-0.81 (0.83)	-0.64 (0.82)	-0.70 (0.82)
Cultural Novelty	0.35 (0.55)	0.78 (0.57)	0.90 (0.58)
Cultural Heterogeneity	-0.54 (0.50)	-0.50 (0.49)	-0.51 (0.49)
Cultural Novelty * IJV Experience	---	-1.33* (0.55)	-1.36* (0.55)
Cultural Novelty * Cultural Heterogeneity	---	---	0.93* (0.48)
Model F	1.86***	1.96***	2.01***
R-squared	0.15	0.16	0.16
N	554	554	554

^d Standard errors appear in parentheses. [†] p<0.10; * p<0.05; ** p<0.01; *** p<0.001.