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RESOURCE COMMITMENT, ENTRY TIMING, AND MARKET PERFORMANCE OF FOREIGN DIRECT INVESTMENTS IN EMERGING ECONOMIES: THE CASE OF JAPANESE INTERNATIONAL JOINT VENTURES IN CHINA

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This study examined whether early movers and technology leaders attained superior performance in emerging economic regions. We assessed the determinants and performance consequences of two key aspects of entry strategy, resource commitment to technology transfer and timing of entry, using survey data from over 220 Sino-Japanese joint ventures (JVs) in China. Both high commitment and early entry had positive impacts on the perceived economic performance of the JVs. Yet these relationships were found to be significantly contingent on several internal and external factors, such as the strategic importance of an investment, parental control of a JV, and the availability of supporting local infrastructure.

Emerging economic regions have been playing a critical role in global economies. Since their market liberalization and privatization policies were formally set forth, these areas have attracted many foreign investors (United Nations Conference on Trade and Development [UNCTAD], 1997). The successful entry and start-up of a business operation in these regions is therefore a central issue for contemporary multinational enterprises (MNEs). Nonetheless, some managers of foreign multinationals may see more uncertainty than opportunity in emerging economies with respect to local demand conditions, the availability of supporting industries and infrastructure, property rights protection, and general economic and political stability. Given the contradictory implications regarding potential opportunities and uncertainties in the emerging economic regions, managers of foreign multinationals are facing a dilemma. Two issues are critical: One, should a firm be the early mover and explore potential market opportunities before competitors enter these markets, or should it be a late entrant and wait until the uncertainties in the regions are resolved by earlier entrants? Two, should a firm be a technology leader and transfer advanced, core technology or skills to the emerging economic regions, or should it should be a technology follower and invest standard, less critical technology or skills in these regions?

The first issue involves the timing of entry and the second, the degree of resource commitment to technology transfer. Most previous studies have examined the determinants and performance of the timing and resource commitment of entry in a domestic context. Of the studies that have examined these issues in an international context, most have focused on either North American multinationals entering foreign countries or foreign firms investing in North America (Mascarenhas, 1992b, 1997; Mitchell, Shaver, & Yeung, 1994; Shaver, Mitchell, & Yeung, 1997). Few studies have provided empirical evidence or explored the implications concerning the issues associated with both determinants and performance of entry strategy in international markets (Lieberman & Montgomery, 1998). The primary purpose of the present study was, therefore, to fill this gap by examining factors influencing firms' decisions to enter emerging economic re-

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gions and the performance consequences of such entry.

We examined several hypotheses regarding the determinants and performance of both the commitment to technology transfer and the timing of entry. The sample used in the analysis comprised 220 joint ventures (JVs) formed by Japanese manufacturing firms in the People's Republic of China (hereafter, China). In the present study, we focused exclusively on the equity JV in the analysis because it has been a dominant and often a "forced" entry mode in most emerging regions (Beamish, 1985, 1993). We chose China as the location of investment for the analysis. With its relatively short history of an open economic policy and the large amount of inward investment made by foreign multinationals, we believe that China provides a good research environment for investigating the relatively early stage of the process of inward foreign direct investment (FDI) made by foreign multinationals. Few studies have examined the relationships to performance of the timing of foreign market entry and resource commitment to technology transfer in China simultaneously, although the literature on FDI in China and on Chinese enterprises has been rapidly increasing. The present study therefore provides new insight on the performance of FDI in emerging regions in general and in China in particular.

LITERATURE REVIEW

Resource Commitment, Entry Timing, and Market Performance

To attain superior profits in an overseas market, a firm should successfully commercialize goods in the local marketplace. For the successful commercialization of the goods, the firm can consider two alternative strategies. The first strategy is to transfer superior technological knowledge and build technology leadership in the host country.

Technology, or technological knowledge, is generally defined as "knowledge about how to produce a cheaper or better product at given input prices, or how to produce a given product at a lower cost than competing firms" (Caves, 1996: 3). Such knowledge takes the forms of patented design and process, or of know-how shared among the employees of a firm (Caves, 1996). Technological knowledge is one form of intangible asset that can serve as a source of competitive advantage when it is valuable, nonimitable, and nonsubstitutable (Barney, 1991). Since a new technology often creates a new product yet diffuses slowly to competitors, the pioneer of the technology can gain market share. This is because competitors are often bound by existing routines and sunk costs and remain committed to outmoded technology (Levitt & March, 1988; Nelson & Winter, 1982; Tushman & Anderson, 1986). When a firm can exploit technological knowledge across borders without losing its value, and the advantages generated by this knowledge outweigh its liabilities of foreignness, the firm can build a strong competitive position in a local marketplace (Caves, 1971; Hymer, 1976). Previous studies have suggested that, when engaging in FDI, firms tend to transfer technology that is newer, more advanced, and more related to their core businesses (Chang, 1995; Davidson & McFetridge, 1985; Kogut & Chang, 1996). Other studies have suggested a positive association between a parent firm's research and development expenditure (used as proxy for technology leadership) and both its level of multinationality (Dunning, 1980) and the market value of a given foreign subsidiary (Mishra & Gobeli, 1998; Morck & Yeung, 1992). These studies suggest that strong commitment to technology transfer leads to superior subsidiary performance in the local market.

Transfer of technology is, however, neither easy nor automatic. In his study of 26 international technology transfer projects, Teece (1977) found that transfer costs accounted for 19 percent of total project costs on the average, ranging from 2 percent to 59 percent; these numbers suggest that technology transfer does incur nontrivial costs. Similarly, Kogut and Zander (1992, 1993) suggested that the efficiency of knowledge transfer within an organization varied depending on the tacitness of the knowledge. On a different note, some studies have explored the factors that constrain knowledge transfer. Cohen and Levinthal (1990) argued that the successful diffusion of innovative knowledge requires recipients to have a high degree of absorptive capacity—the capability to acquire, assimilate, and exploit information regarding appropriate innovation. Szulanski (1996) examined 122 transfers of best practices in eight large companies and found that the internal transfer of knowledge was significantly constrained by a recipient's lack of absorptive capacity, causal ambiguity, and an "arduous" relationship between a source and recipient. In the context of knowledge transfer across borders, Lyles and Salk (1996) studied 201 international JVs in Hungary and found that their capacity to learn was a significant indicator of knowledge acquisition from the foreign parents.

It should also be noted that technology transfer influences subsidiary performance not only because a transfer is difficult or costly but also because the transferred technology may not always be successfully commercialized in local marketplaces (Mitchell, 1989, 1991; Teece, 1986). Teece (1986),

for example, suggested that the level of technology appropriability, the existence of a dominant design in an industry, and the presence of complementary assets were critical conditions for successful commercialization of technology. Building on Teece's finding, Mitchell (1989, 1991) found evidence that market entrants possessing the specialized assets necessary for the commercialization of products tended to attain higher market shares in new industry subfields. These studies suggest that a firm's capability to integrate technology into the systems of local production and commercialization is critical for the commercial success of a foreign market entry. The transfer of this type of capability is especially important when a firm enters an emerging economic region, where established distribution networks and technical specifications and designs rarely exist (Yan, 1998).

Both the capability to transfer technological knowledge into a new local marketplace and the capability to profit from the commercialization of the transferred technology are highly specific to and owned by particular individuals within a firm. Technology transfer, therefore, often occurs through the expatriation of specialized technical staff members who share both the knowledge of the technology and the know-how needed to apply it to commercial ends. This specialized technical staff is more critical for the commercial success of an entry when the technology is highly tacit and/or its commercial application is difficult and complex (Hamel, 1991; Lyles & Salk, 1996).

Taken together, these arguments suggest that a firm's performance in a new foreign market is a function of both the uniqueness of the technology being transferred and the presence of a specialized technical staff that can convey the tacit aspects of the technology and commercialize it in the local marketplace. On this basis, we suggest that a firm's commitment to technology transfer is positively associated with its foreign market performance. Thus,

Hypothesis 1. There exists a positive relationship between a foreign firm's level of commitment to technology transfer and its local market performance.

The second strategy is to enter a local marketplace faster than rivals. An early mover, by definition, has a quasi monopoly before competition enters and is in a position to capture higher economic rents than would be possible in a competitive marketplace (von Hippel, 1988: 59). After entry, the early mover may gain or maintain advantages by preempting rivals in "riding down learning curves," acquiring scarce assets like locally available input factors and geographic space and developing a unique local buyer network (Lieberman & Montgomery, 1988). Early movers can also gain profits by influencing customers' attitudes and perceptions. According to Lieberman and Montgomery (1998), this can occur in three major ways. First, customers may build a preference structure that favors the pioneer's position as they learn about its brands (Carpenter & Nakamoto, 1989). Second, customers may develop switching costs that create barriers to late movers. Finally, customers may favor the early mover's product when it becomes the industry standard or dominant industrial design and thus allows compatibility with the largest base of external users (Tegarden, Hatfield, & Echols, 1999). Early movers, however, are also subject to certain disadvantages. Lieberman and Montgomery (1988) suggested that late entrants can gain advantages over an early mover when they possess capabilities to acquire the same technology at a lower cost, use superior technology to produce better or cheaper products, capture shifts in consumers' tastes more quickly, and make more intensive investments than early movers.

Empirical evidence from the studies of United States–based domestic market entry strategies has generally suggested that early movers tend to attain market performance that is superior to late entrants' (see Kerin, Varadarajan, and Peterson [1992], Lieberman and Montgomery [1998], and Szymanski, Troy, and Bharadwaj [1995] for reviews). For instance, Szymanski and colleagues reviewed empirical studies and found that approximately 70 percent of them reported positive effects of order of entry on market share.

However, several researchers have argued that entry order effects are significantly moderated by factors such as survivor bias and entrant capabilities. Golder and Tellis (1993) criticized the previous studies for excluding nonsurvivors from their analyses. In their study of 50 product categories, they found that nearly half of the market pioneers failed and that the early followers had much lower failure rates and higher market shares than the pioneers. Examining both the surviving and failed entrants simultaneously, Mitchell (1991) found that the early entrants tended to attain higher market shares yet had lower survival likelihoods than the late entrants, suggesting a trade-off between market share and survival affected the timing of entry.

With regard to entrant capacity, Mitchell (1991) found that industry incumbents (the entrants that possessed industry-specialized assets such as distribution networks) attained higher market shares than industry newcomers (entrants lacking such assets), irrespective of the order of entry. Yet Mitchell did find that, among the industry incumbents, the early movers appeared to have significantly

better market share performance. The cited studies generally suggest that early mover effects on market performance might be better specified as interactions than as direct effects (Lieberman & Montgomery, 1998; Szymanski et al., 1995).

In an international market context, studies suggest that early movers tend to have relatively high failure rates compared to early followers because the latter benefit from the experience of the former (Mitchell et al., 1994; Shaver et al., 1997; Yan, 1998). With regard to market performance, previous studies have shown strong evidence of the existence of early mover effects. Mascarenhas (1992a, 1992b, 1997) studied entry strategies in the international offshore drilling industry and found that early movers attained significantly higher market shares than late movers. He found this result consistently even after controlling for the size of a firm's initial resource commitment upon entry (Mascarenhas, 1997). Recent studies of entry strategies in China have shown even stronger and more consistent evidence of early mover advantages among foreign entrants. These studies showed that early entrants (foreign investors) in China attained higher performance in profitability, sales growth, and local competitive position, suggesting that there are noticeable early mover advantages in an emerging economic region (Luo, 1998; Luo & Peng, 1998; Pan & Chi, 1999; Pan, Li, & Tse, 1999).

Several possible factors may allow early movers to gain superior market performance in emerging economic regions. First, an early entrant may face less competition, which makes it easy for it to develop a monopoly in the local markets. In emerging regions, most local incumbents lack the strong capabilities and resources necessary to compete directly with foreign entrants.[1] Also, potential foreign entrants tend to adopt a wait-and-see strategy because there is a high degree of uncertainty in the local markets. Second, early entrants may establish brand loyalty more easily than late entrants in emerging economic regions, where dominant brands and design are absent. Finally, local governments in these regions often treat early foreign entrants more favorably.[2] Where such differential government treatment is critical for success, foreign firms may have motivation to move sooner rather than later.

Taking these arguments together, we expected that early movers, if they survived, would have better performance on the average than late entrants:

Hypothesis 2. There exists a positive relationship between early entry and market performance in an emerging economic region.

Influences on Resource Commitment and Timing of Entry

Emerging economic regions are generally characterized by relatively high market growth rates, short histories of economic liberalization, and a lack of established institutional systems that support domestic business activities. Khanna and Palepu (1997) suggested that the institutional context in an emerging economic region is typically characterized by underdeveloped capital markets, scarcity of skilled labor, lack of reliable market information, extensive state intervention for business operations, and lack of effective mechanisms to enforce contracts. Such "institutional voids" make market transactions in these regions less efficient and, from an investor's perspective, create significant uncertainty.

Since the presence of uncertainty raises the level of the financial risk managers perceive in investment, rational managers may value the options of transferring less proprietary (more standard) technical know-how and delaying entry, especially when an investment would be irreversible and the difficulty of selling off the invested assets would be high (Rivoli & Salorio, 1996). However, a financial investment risk is only one consideration. Given a high growth rate and lack of established competitors in an emerging region, some managers may consider that the strategic risks of *not* investing there may be, at least in the long term, more critical than the financial risks of investing in the region. Actual entry decisions therefore should be considered in terms of managers' view of the relative significance of both types of risks. In this study, we specifically focused on three factors that would influence managers' attitudes toward these risks

[1] Researchers (Lecraw, 1983, 1993; Wells, 1981, 1983), have suggested that the firms in emerging economic regions typically engage in small-scale, labor-intensive production development and processes, whereas foreign multinationals engage in large-scale, capital-intensive production. The different capabilities of local incumbents and foreign entrants often constitute the basis of division of labor in competition in emerging economic regions, reducing rivalry in these regions (Kumar, 1981).

[2] In China, for example, there is a saying that "old friends are welcome," meaning that the local government would appreciate early entrants' initial goodwill and treat them more favorably than late foreign entrants (Choi, Beamish, & Sharp, 2000).

and, hence, their firms' entry decisions. These factors were the strategic importance of investment, parental control over local operations, and supporting infrastructure.

Strategic importance. An investment in a particular local market is considered strategically important when it is consonant with the primary focus and function of a firm's global strategy. Many multinational enterprises develop complex networks of production and distribution systems around the world whereby exchanges of resources and skills and collective learning take place between headquarters and subsidiaries and among subsidiaries (Ghoshal & Bartlett, 1990). For the successful implementation of global strategy, an MNE should carefully implement its entry strategy for each separate international market because the failure or success of the investment in one market will critically influence other activities within the network. Therefore, when investment in a particular local market is important to a firm's global strategy, the firm will become less averse to the financial risks of investment and more aware of the importance of developing a strong market position in the target local market through an aggressive entry strategy. We therefore expected that, as the importance of an investment increases, the investing firm will transfer more advanced, core technology to its local subsidiaries and enter the target local market faster than its rivals. The following hypotheses were formulated:

Hypothesis 3. There exists a positive relationship between a joint venture's degree of strategic importance and a foreign firm's level of commitment to technology transfer.

Hypothesis 4. There exists a positive relationship between a joint venture's degree of strategic importance and early entry.

Parental control. In the process of technology transfer, a foreign firm may face the risks of leakage of its proprietary technology and know-how to an alliance partner. Interfirm spillovers of proprietary technology occur because alliance partners often have an incentive to acquire each other's core technology or skills (Hamel, 1991). For this reason, alliance partners are viewed as potential competitors, although they are at the same time collaborating on some common or complementary functional activities (Hamel, Doz, & Prahalad, 1989). Several researchers have investigated factors that would affect the competitive and cooperative behaviors of alliance partners and have examined how these behaviors would influence the success of the strategic alliances. Khanna, Gulati, and Nohria (1998) suggested that the competitive aspects of alliances are most severe when a firm's ratio of "private" to "common" benefits is high. Park and Russo (1996) found that the presence of competition between joint venture partners outside their agreement significantly impaired the survival likelihood of the joint ventures.

To safeguard against potential interfirm spillover problems, alliance partners should either specify in alliance agreements each partner's obligatory duties regarding joint outcomes or should create incentives for both partners to work primarily for common benefit and secondarily for private benefit. Such incentives create a situation in which both partners gain or lose together from the performance of the alliance (Kogut, 1988). However, such incentives may not be easily created and shared by alliance partners when they have different interests in or payoff expectations for an alliance (Khanna et al., 1998).

In emerging economic regions, foreign and local partners have quite different interests in and expectations for alliances (Beamish, 1985). Typically, foreign partners bring advanced technology and expertise to alliances and try to appropriate maximum earnings by exploiting the transferred technology in the local marketplaces. Local partners, in contrast, try to access or acquire this technology and may seek the opportunity to use it for other product or geographic markets. The existence of such asymmetric interests and expectations often promotes opportunistic behaviors by a local partner (free riding) and provides a strong incentive for a foreign partner to seek control over an alliance's operations (Anderson & Gatignon, 1986). A foreign firm's need for control is particularly critical in emerging economic regions where effective systems for the protection of property rights hardly exist. In other words, we expected that, where a foreign partner can maintain relatively strong control over an alliance, it may make a stronger commitment to the transfer of updated technology and specialized technical staff to the alliance.

Hypothesis 5. There exists a positive relationship between the degree of a foreign parent's control over a joint venture and its level of commitment to technology transfer.

Foreign firms are usually at a disadvantage compared to local competitors with regard to access to location-specific information and resources (Caves, 1971; Hymer, 1976). Previous studies have suggested that one of the primary reasons for foreign firms to engage in JV formation with local partners is to gain quick access to a local market (Beamish, 1985; Kogut, 1989; Makino & Beamish, 1999). Ink-

pen and Beamish (1997) suggested that a local JV partner will possess greater bargaining power over and be less dependent on its foreign JV partner when the foreign partner possesses little knowledge of local market conditions. In support of this view, Makino and Delios (1996) found that the presence of local JV partners had a significant and positive impact on the financial performance of a JV when the parent firm had limited experience of the local operation. These findings generally imply that foreign firms tend to allow their local JV partners to keep a high level of control within the ventures when they are keen to enter unfamiliar local markets. This is the case especially when the firms invest in emerging economic regions in which they can rarely access reliable market information. Therefore:

Hypothesis 6. There exists a negative relationship between the degree of a foreign firm's control over a joint venture and early entry.

Supporting infrastructure. Cross-border transfer of technology is considered a means to build competitive advantage in a host country through its commercial application. Whether a technology transfer is successful depends in part on the availability of supporting local infrastructure. There are three types of such infrastructure. The first type involves complementary or "co-specialized" assets (Teece, 1986). These assets typically involve downstream activities of production, such as a distribution network. A local distribution network is needed to allow a firm to capitalize on proprietary technology for commercial application in the local market. The second type of infrastructure involves local human capital. Local managers and operating staff generally possess better access to local information than foreign expatriates and work primarily to facilitate the smooth introduction of products or services in the local marketplace. The final type of infrastructure involves the legal systems that guarantee the protection of intellectual property in a host country. The existence of reliable legal systems is a critical safeguard against the illegal use or application of patented technology and copyrights by local imitators in emerging economic regions.

The lack of these types of infrastructure creates uncertainties with regard to the effectiveness of cross-border technology transfers. Where the effectiveness of a technology transfer is unknown, the investing firms may become more averse to the financial risks of investment. Consequently, they are more likely to reduce their levels of commitment to technology transfer and delay entry, unless they are well equipped to wait for the resolution of uncertainty. This discussion leads to the following:

Hypothesis 7. There exists a positive relationship between the availability of supporting local infrastructure and a foreign firm's level of commitment to technology transfer.

Hypothesis 8. There exists a positive relationship between the availability of supporting local infrastructure and early entry.

Other Relationships Examined in the Model

Most previous studies have used financial performance to define JV performance. However, using a single financial measure may be misleading as it cannot account for the diverse objectives or needs of all partners in a JV (Anderson, 1990; Hamel et al., 1989). Since a JV is formed by two or more firms that usually have different objectives, interests, and transfer pricing policies, its financial performance is not an adequate measure of how well the parent firm's primary objective is attained (Gulati, 1998). Indeed, a JV partner may perceive a venture as making satisfactory progress toward longer-term goals or nonfinancial goals, even if its current financial performance is not great (Anderson, 1990; Geringer & Hebert, 1991). For this reason, many researchers have recommended the use of a partner satisfaction measure to assess overall JV performance. In the present study, we used three different performance measures: perceived economic performance, employee retention likelihood, and overall satisfaction. We assumed that these performance measures were related hierarchically. Specifically, we assumed (1) that the extent of employee retention represents the level of employee satisfaction and motivation and has a positive impact on both perceived economic performance and overall satisfaction and (2) that perceived economic performance is positively associated with overall satisfaction.

We also examined the direct relationships between three exogenous factors (strategic importance, control, and infrastructure) and two of the performance measures (financial performance and employee retention rate) to control for the possibly confounding effects of these factors on performance.

METHODS

Sample

This research is based upon a questionnaire survey, 1,723 copies of which were distributed in August 1996 to Chinese executives of Japanese manufacturing subsidiaries in Shanghai, Hangzhou, Beijing, and Dalian in China. All potential respon-

dents were CEOs or presidents. The sampling frame was obtained from *Japanese Business in China* (Mitsubishi Research Institute, 1995). The cover letter and questionnaire were written in Chinese. The sample was restricted to Chinese executives because many of the Japanese subsidiaries did not have Japanese managers. To avoid a possible respondent bias stemming from the respondents' country of origin, we decided to focus exclusively on the Chinese managers.

We received 248 responses from 1,723 mailed questionnaires, of which 220 were usable. The rest of the questionnaires were either not returned, returned undelivered, or returned with incomplete information. A response rate of 14.4 percent seems to be low, yet is comparable to that for a recent survey distributed to American general managers of U.S.-Chinese JVs in China (14.6%; Ding, 1997).

We examined the potential response bias stemming from the exclusive use of a sample of Chinese managers using 43 subsidiaries in our sample that are also reported in the database *Kaigai Shinshutsu Kigyo Soran* (Toyo Keizai, 1997).[3] We examined whether the profitability item reported by Chinese managers in our study (variable y4 in Table 1, measured on a five-point Likert scale) was significantly correlated with the performance of the same subsidiaries reported by Japanese managers in the Toyo Keizai database (on a three-point scale rated negative, −1; even, 0; and positive, 1). Spearman correlational analysis showed that there was a significant correlation between both performance measures ($r = .55$, $p < .01$), suggesting that there might be little difference between the Chinese and Japanese responses.

We examined nonrespondent bias using 138 joint venture cases listed in the Toyo Keizai database. Of 138 cases, 43 were respondents for our survey, and 95 were nonrespondents. We compared four items of subsidiary information reported in the database—performance, Japanese equity ownership (percentage), subsidiary size (total number of employees), and subsidiary age (number of years since foundation)—between respondents and nonrespondents. The results of *t*-tests indicated that there were no statistically significant differences between respondents and nonrespondents on any of the subsidiary information. This evidence indicates that there was no important nonrespondent bias in our sample.

Since we obtained all data from a single source instrument (the self-report questionnaire), our data may suffer from common method variance. Following Podsakoff and Organ (1986), we used the Harman one-factor test to examine the extent of common method variance in our data. A principal components factor analysis with an unrotated solution indicated 14 factors with eigenvalues greater than 1.0, with the largest variance explained by a single factor being 20.5 percent. The result suggests that no single factor accounted for the majority of the covariance in the variables. From this evidence, we inferred that no substantial amount of common method variance was present in our data set.

We also examined possible parent firm effects on JV performance because previous research has suggested that parent firm attributes might play a critical role in determining the success of an alliance (e.g., Hamel, 1991; Khanna et al., 1998; Larson, 1992; Parkhe, 1993; Shan, Walker, & Kogut, 1994). We used four parent firm variables—sales, return on sales, the R&D-to-sales ratio, and the advertising-to-sales ratio—and examined their association with the profitability item (y4) in our dataset. Pearson's correlational analysis yielded no significant associations between the parent firm variables and the profitability item at the .10 level. This evidence implies no likely critical parent firm effects on JV performance.

Variables

The overall measurement model employs 16 items to measure the three exogenous and five endogenous constructs. The constructs are represented by five variables. Three capture exogenous constructs: the strategic importance of a JV to the Japanese parent (importance), the extent of a Japanese parent's control within a JV (control), and the availability of supporting infrastructure in local markets (infrastructure). The endogenous constructs are represented by two variables that are related to technology transfer. These variables are the degree of resource commitment to technology transfer (technology) and the timing of entry (timing).[4] We also used three general performance variables, employee retention rate (retention), per-

[3] See Beamish, Delios, and Lecraw (1997) for the details of this database.

[4] An anonymous reviewer suggested that we should control for firm size as this variable might affect the magnitude of a parent firm's technology transfer. Responding to this suggestion, we examined whether parent firm size was significantly associated with the technology variable, using Pearson's correlational analysis. The result showed no significant association between the two variables ($r = .03$, $p = .85$), indicating no critical firm size effects on technology transfer.

TABLE 1
Means, Standard Deviations, and Correlations

	Variable	Mean	s.d.	x1	x2	x3	x4	x5	x6	x7	x8	y1	y2	y3	y4	y5	y6
x1	Role	3.83	1.14														
x2	Definition	4.45	0.98	.56**													
x3	Post	3.53	1.56	.33**	.27**												
x4	Equity	31.73	22.88	−.26**	−.25**	−.39**											
x5	Chairman	0.37	0.48	−.30**	−.17**	−.76**	.47**										
x6	Protection	3.99	1.10	.02	.21	−.01	.09	.02									
x7	Recruit	3.09	1.27	−.04	.00	−.13*	.04	.09	.46**								
x8	Distribution	3.45	1.20	−.03	.12	.05	.02	−.09	.45**	.41**							
y1	Technology	3.51	1.26	.49**	.59**	.26**	−.27**	−.32**	.03	.03	.05						
y2	Engineer	3.64	1.35	.32**	.42**	.42**	−.20**	−.31**	.18**	.03	.01	.57**					
y3	Timing	3.55	1.48	.15*	.18**	−.02	.05	.06	−.12	−.20**	−.10	−.02	.15*				
y4	Profitability	2.62	1.22	.14*	.09	.03	−.11	.00	−.12	−.03	−.01	.23**	.22**	.21**			
y5	Market share	2.36	1.21	.01	.08	.03	.01	.01	−.21**	−.07	−.06	.16**	.09	.21**	.51**		
y6	Retention	3.35	0.88	.06	.06	.00	−.05	−.09	.24**	.32**	.28**	.04	.10	−.14*	.23**	.12	
y7	Satisfaction	3.18	0.90	.15*	.22**	.04	−.08	−.12	.08	.05	.13*	.26**	.17**	.04	.51**	.41**	.59**

* $p < .05$
** $p < .01$

ceived economic performance (performance), and overall satisfaction (satisfaction).

Respondents recorded their responses to items on a five-point Likert scale with coding ranging from 1 (strongly disagree) to 5 (strongly agree), except for the equity ownership and performance variables. The equity ownership variable was measured on an interval scale. The three performance variables were measured with items on a five-point Likert scale, with coding ranging from 1 (poor) to 5 (extremely good). Table 1 shows the correlations among measured variables. The survey items and the scaling used to measure these constructs are summarized in the Appendix.[5]

Analysis

The analysis was conducted using LISREL VIII. LISREL is used to estimate the structural coefficients that reflect relationships among estimates of theoretic constructs rather than among observable variables themselves or simple linear composites of observables. Figure 1 provides the coefficients and *t*-values for the paths between latent variables. The associated parameter estimates, standard deviations, and *t*-values are reported in Table 2, and the total effects of the exogenous and prior endogenous constructs are summarized in Table 3. Table 4 provides a summary of the direct and indirect effects of the exogenous and prior endogenous constructs.

RESULTS

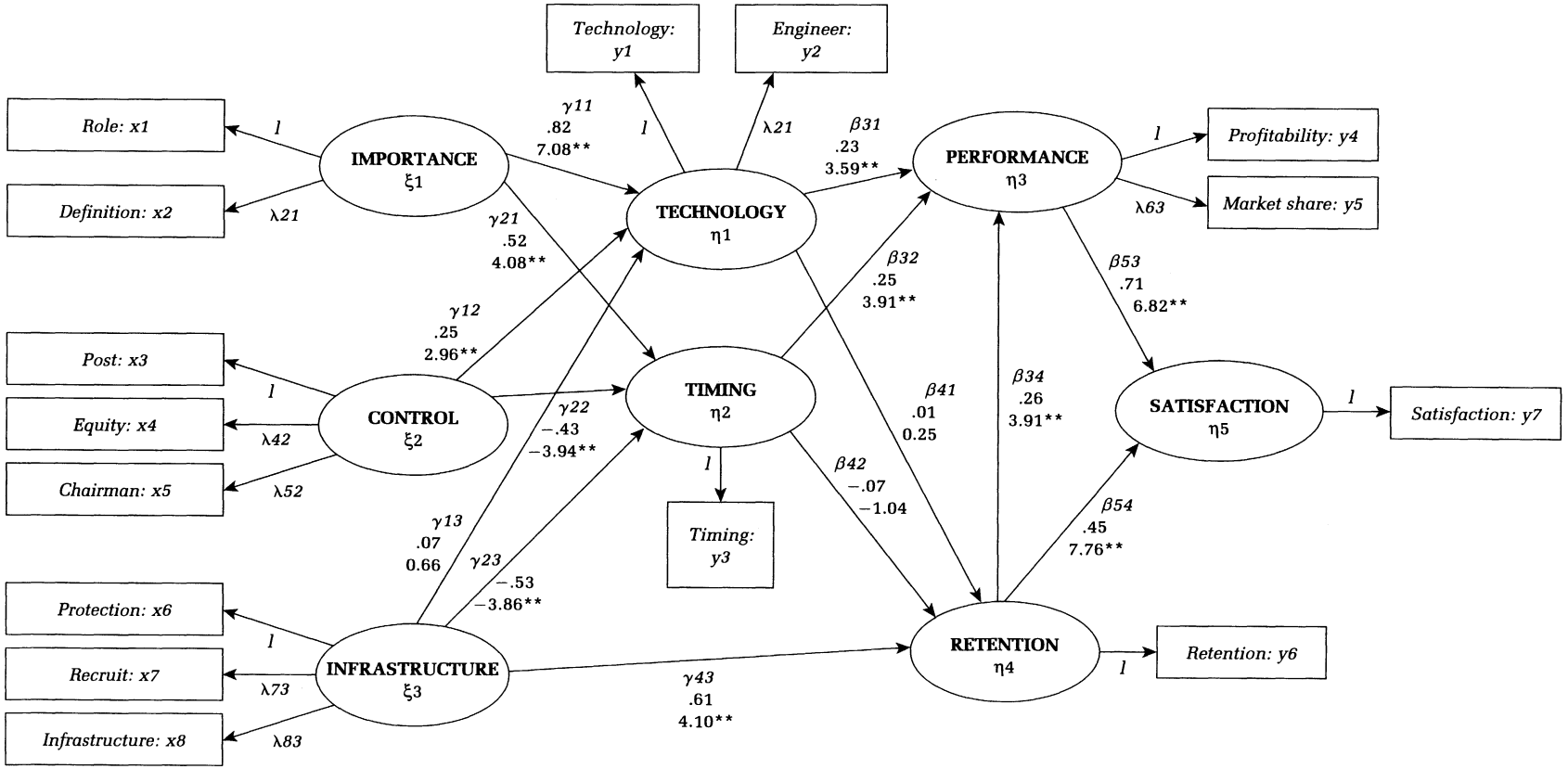
We tested the proposed hypotheses using generalized least square (GLS) techniques.

First, we examined the overall fit of the model to the data. The chi-square statistic indicates whether the variance-covariance matrix of observables reproduced by the model is not equal to the observed variance-covariance matrix. Our model had an adequate fit to the data, as was indicated by an insignificant chi-square value of 73.5 ($df = 68$, $p = .30$). The overall chi-square goodness-of-fit test with a *p*-value actually exceeding .10 indicated that the model was well specified (Keats & Hitt, 1988). In addition, the adjusted goodness-of-fit index (AGFI = .92), comparative fit index (CFI = .98), relative fit index (RFI = .76), root-mean-square residual (RMSR = .08), and root-mean-square error of approximation (RMSEA = .04) were all within acceptable ranges. In addition, since the rank conditions of the model (Bollen, 1989) were satisfactory, we concluded that there were no critical identification problems in the model.

Table 2 shows that the measurement model looks good, with all the items significantly associated with the corresponding latent variables at the .01 level. The goodness-of-fit statistics for the structural equations indicate very good fit for satisfaction and degree of resource commitment to tech-

[5] The coefficient alphas of importance, infrastructure, technology, and performance were .71, .74, .80, and .73, respectively, all of which exceeded the .70 level recommended by Nunnally (1978). We cannot present the internal consistency coefficients of the remaining variables, timing, retention, satisfaction, and control. The first three are single-item variables, and control includes the item measured on a continuous scale (x4).

FIGURE 1
Paths between Latent Variables[a]



[a] Coefficient values appear above *t*-values ($p < .01$).

TABLE 2
LISREL Results: Measurement Model[a]

Item	Variable	Parameter	Estimates	s.d.	*t*
Role	Importance	1			
Definition	Importance	$\lambda_{21(x)}$	1.18	.13	9.06**
Post	Control	1			
Equity	Control	$\lambda_{42(x)}$	−0.54	.22	−2.50**
Chairman	Control	$\lambda_{52(x)}$	−0.89	.09	−9.09**
Protection	Infrastructure	1			
Recruit	Infrastructure	$\lambda_{73(x)}$	1.12	.17	6.59**
Distribution	Infrastructure	$\lambda_{83(x)}$	0.91	.15	6.29**
Technology	Technology	1			
Engineer	Technology	$\lambda_{21(y)}$	0.73	.08	8.88**
Timing	Timing	1			
Profitability	Performance	1			
Market share	Performance	$\lambda_{53(y)}$	0.76	.11	7.10**
Retention	Retention	1			
Satisfaction	Satisfaction	1			

[a] Estimates are for the effects of items on variables.

nology transfer, with adjusted multiple squared correlation coefficients (R^2s) of over .50. There was good fit for timing of entry and perceived economic performance (adjusted R^2s = .27 and .25). The employee retention equation was only a fair fit (adjusted R^2 = .18).

Consistent with Hypotheses 1 and 2, the results of the analysis suggested that both the degree of resource commitment to technology transfer (β_{31} = .23, t = 3.59) and the timing of entry (β_{32} = .25, t = 3.91) had a significant and positive direct impact on performance. As shown in Table 4, technology had a significant and positive indirect impact on satisfaction. Neither technology nor timing was significantly associated with retention.

The results also suggested that the three exogenous variables, strategic importance, a Japanese parent's control, and supporting infrastructure, significantly influenced technology transfer. Consistent with Hypotheses 3 and 4, strategic importance had a significant and positive impact on both technology (γ_{11} = .82, t = 7.08) and timing (γ_{21} = .52, t = 4.08). As predicted by Hypotheses 5 and 6, the extent of Japanese parent control had a significantly positive impact on technology (γ_{12} = .25, t = 2.96) and had a significant and negative impact on timing (γ_{22} = −.43, t = −3.94).

Contradicting Hypotheses 7 and 8, the availability of supporting infrastructure had a significant and negative impact on timing (γ_{23} = −.53, t = −3.86) and had no significant impact on technology (γ_{13} − .07, t = 0.66). These results suggest that the Japanese firms were more likely to be early movers when investing in areas where infrastructure (for instance, local distribution networks, local human capital, and legal systems for property right protection) were less developed, and they chose to be technology leaders or followers, irrespective of the availability of sophisticated supporting infrastructure.

The results in Table 4 show that strategic importance had both direct and indirect impacts on perceived economic performance and overall satisfaction. The extent of a Japanese parent's control was not significantly and indirectly associated with either performance or satisfaction. The availability of supporting infrastructure was the only variable that was significantly and positively associated with employee retention likelihood (γ_{43} = .61, t = 4.10) and had a significant and positive indirect impact on satisfaction.

As expected, retention was significantly and positively associated with performance (β_{34} = .26, t = 3.91). Also, both retention (β_{54} = .45, t = 7.76) and performance (β_{53} = .71, t = 6.82) were significantly and positively associated with satisfaction. As Table 4 shows, the two exogenous variables, importance and infrastructure, had a significant and positive indirect impact on satisfaction.

The results are suggestive even beyond the hypothesis tests. Table 4 shows the standardized coefficients and the indirect effects of both exogenous and endogenous variables on the intermediate variables—technology and timing—as well as on the three results variables: performance, retention, and

TABLE 3
LISREL Results by Generalized Least Squares Analysis[a]

Variable	Technology η_1	Timing η_2	Performance η_3	Retention η_4	Satisfaction η_5
	γ_{11}	γ_{21}			
Importance	.82	.52			
ξ_1	(.12)	(.13)			
	7.08	4.08			
	γ_{12}	γ_{22}			
Control	.25	−.43			
ξ_2	(.08)	(.11)			
	2.96	−3.94			
	γ_{13}	γ_{23}		γ_{43}	
Infrastructure	.07	−.53		.61	
ξ_3	(.11)	(.14)		(.15)	
	0.66	−3.86		4.10	
			β_{31}	β_{41}	
Technology			.23	.01	
η_1			(.06)	(.07)	
			3.59	0.25	
			β_{32}	β_{42}	
Timing			.25	−.07	
η_2			(.06)	(.07)	
			3.91	−1.04	
					β_{53}
Performance					.71
η_3					(.10)
					6.82
			β_{34}		β_{54}
Retention			.26		.45
η_4			(.06)		(.05)
			3.91		7.76
Adjusted R^2	.53	.25	.27	.18	.63

[a] $N = 220$; $\chi^2 = 73.51$, $df = 68$, $p = .30$; adjusted good-of-fit index = .92; comparative fit index = .98; relative fit index = .76; root-mean-square residual = .07; root-mean-square error of approximation = .05. Values in upper rows are standardized estimates. Values in middle rows are standard deviations. Values in lower rows are *t*'s.

satisfaction.[6] Consider first the two intermediate variables, technology and timing. For technology, importance is about ten times as predictive as infrastructure (.82 vs. .07). In sharp contrast, timing has a more equal balance between the impacts of importance (.52), control (−.43), and infrastructure (−.53), although there is the same ordering of these variables, with infrastructure having the most important impact and control the least. Thus, facilitating timing requires a more extensive domain of actions than does facilitating technology.

Turning to the three results variables, we show in Table 4 that four of the variables have a significant impact on performance. The standardized coefficients indicate that importance (.31) is the most important predictor of performance, followed by retention (.26), technology (.24), and timing (.23). Interestingly, technology and timing have almost equal power to predict performance (.24 and .23). For retention, which had by far the poorest fit of the five equations, only infrastructure is significant, but its level (.65) indicates fairly substantial impact. Finally, for satisfaction, all variables are significant, with performance (.71) and retention (.64) having stronger impacts than the other variables.

DISCUSSION

The purpose of this study was to investigate determinants and performance consequences of foreign market entry strategy in one of the major emerging economic regions—China. Consistent with our prediction, the results show that the greater the resource commitment to technology transfer, and the faster the entry, the more likely it was that JVs attained superior economic performance. Our evidence also shows that the timing of entry and resource commitment to technology transfer had almost equal power to predict performance.

The finding that technology leaders and early movers tended to attain superior economic performance in China relative to technology followers and late movers implies that a wait-and-see approach may not always be a better strategy in emerging economic regions. This idea suggests an interesting conceptual twist in foreign firms' international expansion strategies. In previous studies of internationalization, researchers have tended to treat uncertainties in foreign markets as given and have viewed a firm's international expansion as either an adaptive or a learning process in unfamiliar local environments (Chang, 1995; Johanson & Vahlne, 1977, 1990). This perspective suggests that firms investing in a country with a greater uncertainty tend to perceive a higher level of investment risk and, thus, engage in less resource commitment in foreign direct investment (Johanson & Vahlne, 1977, 1990). However, the results of the present study suggest that the Japanese firms tended to pursue both technology leadership and early mover

[6] The standardized coefficients may be viewed as the typical change or variation in a dependent variable induced by or associated with a typical variation in the independent variable (Goldberger, 1964). As noted in Goldberger, "typical" is calibrated by the sample standard deviation for each variable. Thus, if the standardized coefficient of variable *A* is twice the standardized coefficient of variable *B* when both are predictors in an equation for *C*, the interpretation would be that variable *A* is twice as important as variable *B* in accounting for variation in variable *C*.

TABLE 4
Effects of Exogenous and Prior Endogenous Constructs[a]

	Technology η_1			Timing η_2			Performance η_3			Retention η_4			Satisfaction η_5		
Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
Importance	.82		.82	.52		.52		.31	.31		−.02	−.02		.21	.21
ξ_1	7.08		7.08	4.08		4.08		4.22	4.22		−0.38	−0.38		3.11	3.11
Control	.25		.25	−.43		−.43		−.04	−.04		.04	.04		−.01	−.01
ξ_2	2.96		2.96	−3.94		−3.94		−0.85	−0.85		0.93	0.93		−0.27	−0.27
Infrastructure	.07		.07	−.53		−.53		.06	.06	.61	.04	.65		.33	.33
ξ_3	0.66		0.66	−3.86		−3.86		0.80	0.80	4.10	1.03	4.58		3.46	3.46
Technology							.23	.01	.24	.02		.02		.18	.18
η_1							3.59	0.25	3.48	0.25		0.25		2.62	2.62
Timing							.25	−.02	.23	−.08		−.08		.13	.13
η_2							3.91	−0.99	3.45	−1.04		−1.04		1.92	1.92
Performance													.71		.71
η_3													6.82		6.82
Retention							.26		.26				.45	.19	.64
η_4							3.91		3.91				7.76	3.51	11.00

[a] Values in upper rows are standardized effects. Values in lower rows are *t*'s.

advantages in China. This evidence suggests that the level of perceived uncertainty in a local market may not always be a major constraint for market entry into an emerging economic region.

Our study provides several implications concerning the factors influencing foreign firms' entry strategies in emerging economies. First, our evidence suggests that the firms that viewed entry into China as strategically important were more likely to be both technology leaders and early movers and in turn attained superior perceived economic performance. One interpretation of this finding is that a foreign firm's strong commitment to the success of its investment may be critical for successful entry into China. Abramson and Ai (1996) found that North American firms with positive (negative) expectations about doing business in China were much more likely to attain successful (unsuccessful) performance. In a network-based society like China, the key to successful entry may be to develop strong personal connections (or *guanxi*) with key local players and gain recognition from the local business community. In order to do so, foreign firms should emphasize the importance of the investment to the local community and show their commitment to the success of the investment.

Second, our evidence suggests that the extent of a foreign firm's control over a JV was negatively associated with early entry, yet was positively associated with the degree of resource commitment to technology transfer. This pattern implies that foreign firms' decisions regarding the choice of control mode in foreign investment in emerging economic regions may be based on an interplay between the potential risks of interpartner spillover within a JV and the potential contributions from local JV partners with respect to local market access. The risks increase the firms' incentives to secure dominant control over their JV partners, and the contributions motivate the firms to share control with local partners. One important implication of this evidence is that foreign firms strictly pursuing dominant control over their local JV partners may fail to gain their local partners' assistance for entry into a local market and, hence, may miss the chance to gain early mover advantages. As previous studies have suggested, local partners' contributions in market access are often very critical for successful JV performance in emerging economic regions (Beamish, 1985, 1993; Makino & Delios, 1996). The key issue that a foreign firm wishing to gain early mover advantages should consider is not securing dominant control within a JV but gaining sufficient contributions from the partners. To gain further understanding of entry strategy, therefore, researchers conducting future studies should examine how resource commitment and timing of entry would be influenced by the choice of entry mode and alliance partners.

Third, our findings suggest that the availability of sophisticated infrastructure may not be critical for a foreign firm to be an early mover in an emerging economic region. Contrary to our prediction, the results of our analysis suggested that the availability of supporting infrastructure was negatively associated with early entry and had no impact on the resource

commitment to technology transfer. One possible reason for this finding is that it may be too late for a firm to become an early mover by the time infrastructure like distribution networks is ready. Some successful early movers have actually developed the necessary infrastructure by themselves and built leading market positions in local marketplaces. Honda's successful investment strategy in the U.S. motorcycle industry in the late 1950s is a good example. At that time, the U.S. motorcycle industry was dominated by Harley-Davidson, and Honda found no access to established local distribution networks for their smaller motorcycles. Honda's management team nonetheless targeted a large, untapped, small-motorcycle segment of the market and eventually developed its own distribution networks across the nation (Pascale, 1984). This example suggests that foreign firms have a chance to succeed in gaining early mover advantages even in the absence of sufficient supporting infrastructure in a target local market. As this example implies, a future study should examine the possibility that, in the absence of established infrastructure, successful early movers develop it themselves.

Limitations

The limitations of this study are threefold. First, we did not preclude from the analysis the survivor bias for the performance consequences of technology transfer. The survivor bias is a critical issue in studies of international business in general and those of entry timing in particular (Golder & Tellis, 1993; Mascarenhas, 1992a, 1992b; Mitchell, 1989). Given that many early movers in China might be terminated or taken over owing to poor performance in the early stages of local market development, the sample we used in the analysis may contain only financially successful JVs. Researchers conducting a future study should investigate the performance of market entry strategy controlling for both entry timing and the survival of foreign subsidiaries in emerging economic regions.

Second, our study is limited in the scope of its research design. Given the diversity among emerging economic regions, researchers should widen the scope of the study of strategies in these regions to control for country-specific factors that could influence firms' entry strategies. The present study, however, focused only on a single host country, China, and a single home country, Japan. The question of whether the findings of the present study are generalizable to other emerging economies or other home countries of entrants remains unanswered. More studies should be conducted to examine the determinants and performance of foreign entry strategy into different emerging regions and different home country contexts.

Finally, we used survey information from the Chinese recipients of the transfers of technological knowledge and did not include the valuation of the transfers from the transferrers' (the Japanese parents') perspective. Some may argue that the Japanese managers should have been the respondents, as the Chinese managers may have had little a priori understanding of transferred technology, especially when the technology had tacit components. In contrast, one could make the case that the Chinese managers are the relevant actors in technology transfer and thereby should be the respondents. The Chinese managers are indeed the ones who are reacting and whose satisfaction, retention, and perhaps even performance are likely to be impacted.

Perhaps neither of the two arguments is right, as they may reflect distinct perspectives. After all, neither the magnitude nor the direction of potential biases in the valuation of transferred technology is known. In this study, we took the recipient's perspective because we believed that the valuation of a transferred technology can be better assessed by the recipients who are responsible for the success or failure of commercializing the technology in a local marketplace.

Most previous studies of cross-border knowledge transfer have focused exclusively on either the transferrer's perspective (e.g., Kogut & Zander, 1993) or the recipient's perspective (e.g., Lyles & Salk, 1996). Szulanski (1996) "triangulated" the perceptions of transferrers, recipients, and external observers of transfers to validate findings. But he did not examine how the perceptions of these different parties would differ. A future study might extend this line of research and examine whether and when the same results are obtained from different perspectives.

Conclusion

The present study examined determinants and performance of foreign market entry strategy in China. The study identified factors influencing market entry strategy and found significant associations between the perceived economic performance of a joint venture and two characteristics, the degree of resource commitment to technology transfer and the timing of entry.

Although an increasing number of studies have investigated the characteristics and formation of foreign investment in China, most studies have used publicly available data or survey data from relatively small samples, and few of the existing

studies have examined the performance consequences of investment at the subsidiary level. The present study is one of the few large-sample studies that have examined the performance consequences of the market entry strategies of foreign (Japanese) firms in China.

Finally, on a methodological note, this study assessed the identification of the system of equations (not a widespread, yet an important, practice in management, marketing, and strategy applications of LISREL) to safeguard the interpretation of the findings. It also illustrates how the calibration of a model clarifies the relative importance of various input variables. This process adds specificity and insight to the important, albeit limited, testing of hypotheses.

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APPENDIX
Survey Items Used to Measure Constructs and Scaling

Items with verbal anchors in parentheses had 1–5 response scales.

Latent Exogenous Variables

δ1. Strategic importance
- x1, role: The JV plays a significant role to the Japanese parent's overall global strategy (very unlikely–very likely)
- x2, definition: The role that the JV is expected to play for the Japanese parent is clearly defined (not clearly defined–clearly defined)

δ2. The extent of a Japanese parent's control
- x3, post: The Japanese expatriates occupy significant management posts in the JV (very unlikely–very likely)
- x4, equity: The extent of equity share owned by the Chinese partner (0–100%)
- x5, chairman: The chairman of the JV is a Chinese (no, 0; 1, yes)

δ3. Availability of supporting infrastructure
- x6, protection: The legal protection of intellectual property rights, patented technology and trademark is sufficient (not sufficient–very sufficient)
- x7, recruit: It is easy to recruit skilled local human resources (very difficult–very easy)
- x8, infrastructure: Local distribution network and infrastructure are well developed (not developed–very well developed)

Latent Endogenous Variables

$\eta 1$. The resource commitment to technology transfer
- y1, technology: The Japanese parent has provided the JV with updated technology and know-how (very unlikely–very likely)
- y2, engineer: The Japanese parent has sent skilled engineers and product managers to the JV (very unlikely–very likely)

$\eta 2$. Timing of entry
- y3, timing: The Japanese parent's entry into the Chinese market through the JV is much earlier (or later) than its rivals (much later–much earlier)

$\eta 3$. Perceived economic performance
- y4, profitability: Perceived profitability of the JV (very unsatisfactory–very satisfactory)
- y5, market share: Perceived brand loyalty and market share of the JV (very unsatisfactory–very satisfactory)

$\eta 4$. Employee retention rate
- y6, retention: The subjective assessment of the retention rate of local employees (very low–very high)

$\eta 5$. Overall satisfaction
- y7, satisfaction: The subjective assessment of overall performance of the JV (very unsatisfactory–very satisfactory)

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