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Foreign expansion in service industries Separability and human capital intensity

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Abstract

We investigate the effect of operating in service industries, in which separability and human capital intensity factors influence the choice of foreign entry mode and expatriate staffing decisions. To look into this issue, we compared 14,863 instances of Japanese foreign direct investment (FDI) into manufacturing and three service industries (wholesale trade, retail trade, and financial services). Our theoretical and empirical analyses support the assertion that in situations where required capabilities must be developed through (1) close contacts with end customers and (2) high levels of professional skills, specialized know-how, and customization, wholly owned subsidiaries and expatriate staff are preferred. From our results, we draw implications for the FDI literature and offer a novel perspective on the factors influencing the internationalization of service firms.

Keywords: Foreign expansion; Service industries; Separability; Human capital intensity

1. Introduction

When expanding internationally, a firm must determine the appropriate mode for entering foreign markets. It must also decide whether to staff foreign subsidiaries with local and/or expatriate managers. Both decisions have important consequences for a firm's competitive advantage in new international markets (Edstrom and Galbraith, 1977; Hill et al., 1990). Indeed, while wholly owned subsidiaries and expatriate staff provide foreign investors with greater control over foreign operations, they also entail substantial resource commitments, such as capital and managerial resources, in the host country that cannot be easily redeployed to alternative locations.

Research on the choice of entry mode and expatriate staffing strategies has expanded considerably for some years, with a traditional focus on manufacturing firms (Anand and Delios, 1997; Li and Guisinger, 1992). However, the increased importance of services in developed economies and the fast growth of foreign investment in the service sector have fueled research on service multinationals (Aharoni and Nachum, 2000; Boddewyn et al.,1986; Dunning, 1989). Still, scholars have debated whether the determinants of foreign entry decisions are the same for service and manufacturing firms. One group suggests that theories of foreign direct investment (FDI) apply to global service firms (Dunning, 1989; Miller and Parkhe, 1998; Yannopoulos, 1983). Another group argues that crucial differences between goods and services make it difficult to generalize FDI theories across industry sectors (Boddewyn et al., 1986; Erramilli, 1992; Gronroos, 1999).

To widen the focus of this debate and enhance our understanding of foreign investment in the service sector, we developed an analytical framework for examining inter-industry differences in entry mode and expatriate staffing strategies among multinational firms that compete in services and manufacturing industries. This framework suggests that wholly owned subsidiaries and expatriate staff are preferred by MNCs competing in industries where required capabilities must be developed through (1) high levels of professional skills, specialized know-how, and customization and (2) close interactions with end customers. Empirical tests using

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a sample of 14,863 entries of Japanese multinational firms entering the Asian, North American, and European markets provide supporting evidence.

2. Foreign market entry decisions

Considerable attention has been given to identifying firm- and country-level determinants of foreign market entry decisions (Hill et al., 1990). A large portion of this literature has used internalization theory and transaction cost analysis to explain how companies enter foreign markets (Anderson and Gatignon, 1986; Davis et al., 2000). Various entry modes are available to firms, from export to licensing to ownership-based modes such as joint ventures and wholly owned subsidiaries. Full-control modes, such as greenfield or acquired wholly owned subsidiaries, have been differentiated from shared-control ones, such as a greenfield or partially acquired joint ventures. Full-control modes increase the degree of control that an MNC can exercise over its foreign subsidiaries, but also require greater resource commitments compared to shared-control modes (Anderson and Gatignon, 1986; Nitsch et al., 1996).

Research has also explored the complementary use of systems and procedures, such as staffing or human resource-based mechanisms (Mayrhofer and Brewster, 1996; Tung, 1982), to control foreign operations (Baliga and Jaeger, 1984). The use of expatriates deals with the limitations of solely using ownership to protect firm-specific assets. While a full-control mode such as a wholly owned subsidiary can help to address opportunism problems (Sohn, 1994) shirking or hold-up by local management remain possible (Alchian and Demsetz, 1972; Alchian and Woodward, 1988). Expatriate managers can reduce risks of opportunism and ensure that company policies are carried out effectively in foreign subsidiaries (Baliga and Jaeger, 1984; Edstrom and Galbraith, 1977; Roth and Nigh, 1992).

In expanding the focus of international research from manufacturing to service firms, scholars have explored whether theories of multinational manufacturing firms apply to multinational service activity (Boddewyn et al.,1986; Dunning, 1989) and the international expansion of service firms (Katrishen and Scordis, 1998; Li and Guisinger, 1992; Miller and Parkhe, 1998). For the entry mode decision, studies have highlighted the tendency of service firms to rely on wholly owned subsidiaries (Erramilli, 1992; Erramilli and Rao, 1993). A notable difference between the internationalization of services and manufacturing firms is that a service firm seldom requires large-scale investments in physical assets such as capital equipment and facilities to establish a presence in foreign markets. The value-creating assets of a service firm rest more on its human capital than on its physical infrastructure (Erramilli and Rao, 1993; Campbell and Verbeke, 1994). Accordingly, international investments in the service sector have been found to rely heavily on "people-transfers; that is, training programs, visits by experts and the *employment of expatriates*" (Grosse, 1996, p. 796 emphasis added).

This stream of research has also suggested that service MNCs face unique challenges when expanding abroad. The distinct nature of a service firm's assets exerts stresses on entry mode choice decisions and the use of expatriate managers. This idea has fueled the debate over the generalization of FDI theories across sectors and the development of service-specific frameworks (Carman and Langeard, 1980; Erramilli, 1992; Gronroos, 1999). Many researchers argue that there are crucial differences in the production and delivery of services and goods. Services differ from manufactured goods along features such as the intangibility of the offering, the separability of production and consumption, and the perishability of inventories (Lovelock and Yip, 1996; Zeithaml et al., 1985).

Among these variables, the "separability" of production and consumption has been deemed of importance for service firms' internationalization (Erramilli and Rao, 1993). Separability characterizes transactions by the level of interaction required between providers and users (Hirsh, 1989). News delivery is an example of a separable service. Like most material goods, information may be designed, manufactured, and stocked for later delivery and consumption. Most other services (e.g., those provided by hotels or restaurants) necessitate the close physical proximity of buyers and sellers (Anand and Delios, 1997; Carman and Langeard, 1980; Zeithaml et al., 1985). Separable products or services can be transferred to overseas markets where they can be sold to a set of foreign consumers. Inseparable ones are *location-bound*. If foreign consumers are to access an inseparable service, the consumer must come to the site at which the service is produced. This feature of inseparable services, in which the product of location-bound resources must be consumed at the same time and location at which it is produced, has important implications for entry decisions in foreign markets (Erramilli and Rao, 1993, p. 35).

The degree of "idiosyncrasy" that characterizes a service is another key factor to consider when discussing the internationalization of service firms (Erramilli and Rao, 1993; Zeithaml et al., 1985). Because many services are *labor-intensive* or people-centered, the marked differences between employees in terms of skills, education, or specialized know-how create considerable variance in performance at service production or delivery. Firms can reduce this risk by substituting physical resources for the human element (as in the case of automated-teller machines) or through extensive education and training of employees. When training is extensive and when employees have a high level of skills when joining a firm, the degree of human capital is greater. According to Erramilli and Rao (1993), the production/delivery of services typically relies on a high intensity of human capital—the skills, talent, and knowledge of a firm's employees that are not easily transferred to different organizational or social contexts. Below, we contend that differences in human capital intensity faced by service firms

influence choices about market entry mode and the deployment of expatriate staff. When considered jointly with the degree of separability of service transactions, differences in human capital intensity can have major implications for entry mode choice and expatriate staffing decisions.

2.1. Entry mode choice

Firms face various costs when doing business abroad (Hymer, 1976), some of which relate to acquiring the experiential knowledge necessary to operate in a local market (Johanson and Vahlne, 1977). Such a process can take considerable time (Dierickx and Cool, 1989; Makino and Delios, 1996). Several scholars emphasize the utility of joint ventures to a firm when the demand for locally specific skills is high (Anand and Delios, 1997; Carman and Langeard, 1980).

Although joint ventures can be used to acquire local complementary assets, shared-control modes are less valuable in industries exhibiting high human capital intensity. In a joint venture, the foreign investor may find it difficult to produce service transactions that require important and specialized human skills, since social assets are typically difficult to codify and transmit across organizational boundaries (Kogut and Zander, 1993). In shared-control modes, the skills and specialized know-how possessed by employees face risks of appropriation and dissemination (Murray and Kotabe, 1999), as human expertise is difficult to protect, contractually, by patents or by copyrights (Dunning, 1989; Grosse, 1996). In such situations, a wholly owned entry permits a firm to address the imperfect transferability, appropriability, and free-riding shortcomings exhibited by joint ventures (Anderson and Gatignon, 1986; Contractor and Lorange, 1988; Hill et al., 1990; Kobrin, 1988; Teece, 1981). Therefore, a wholly owned subsidiary would represent a more efficient mode of market entry than a joint venture for firms operating in human capital intensive industries.

Hypothesis 1: The greater the human capital intensity in a firm's industry, the greater the frequency of entry by a wholly owned subsidiary.

By forcing the "buyer into intimate contact with the production process" (Carman and Langeard, 1980, p. 8), a business that is not separable has to conduct *face-to-face transactions* with its customers. This simultaneity requirement necessitates greater adaptation to local differences and local tastes, leading firms to acquire locally specific resources and capabilities (Anand and Delios, 1997). Yet, a close intimacy between providers and consumers throughout the production-delivery process creates important risks to a firm (Carman and Langeard, 1980; Erramilli and Rao, 1993; Zeithaml et al., 1985). In particular, where separability is low, the performance of employees who deal directly with customers is important for the maintenance of a firm's quality standards. Frequent transactions between buyers and sellers create a need for onsite quality assurance (Zeithaml et al., 1985). Quality problems may be overcome by establishing detailed contracts/monitoring procedures with local partners. However, the quality of a service transaction may still vary from one local provider to the other, raising an overall problem of consistency for the foreign investor (Carman and Langeard, 1980, p. 8). Another option is to keep transactions within the context of the firm's organizational boundaries by using a wholly owned subsidiary rather than a joint venture when entering a foreign market.

Hypothesis 2: The less separable a firm's industry, the greater the frequency of entry by a wholly owned subsidiary.

The risk stemming from delivering transactions that are not separable is likely to be especially important in industries with high human capital intensity. In such industries, it is difficult to find local partners whose employees have acquired the skills, knowledge, and specialized know-how that are necessary to meet a firm's quality standards. The expansion of Marriott in Warsaw represents a case in point (Loveman, 1997). The reverse of this idea is that industries with high human capital intensity and a high degree of separability are likely to be less sensitive to the influence of human capital intensity on mode choice. In fact, the human capital used in the production of the firm's product does not need to be sited where the product is consumed. This scenario typifies high-technology manufacturing industries that may require a high degree of specialized knowledge among employees, usually those involved in research and development, and that may produce unique, sophisticated products in the firm's home country market.

As with a separable industry, the difficulty of independent international expansion is low, even in nonseparable industries, when human capital intensity is low. This point is well illustrated by the case of Seiyu, an affiliate of the Saison group, a major retail, credit, and development conglomerate in Japan (JETRO, 1995). Seiyu, the fifth largest Japanese retailer, was established in 1963. It runs a chain of supermarkets, the popular Family Mart convenience stores, and about 200 other retail chains and services.

Competition in these different retail sectors tends to be mostly price-based in Japan. In these retail sectors, most of a retailer's cost-related advantages come from the development of computer systems and technologies that reduce the costs of sourcing and purchasing. Companies in the retail sector in Japan have been looking to reduce costs and increase price competitiveness by increasing sourcing from overseas. Even though cost-saving systems can be firm-specific, they are back-office functions. The service and management provided at the front-end of retail operations, tends to be standardized across industry competitors (JETRO, 1995). Consequently, Seiyu has relied on a high proportion of low-trained staff in its operations—nearly 60% of its 16,000 employees are part-time staff with little experience or specialized know-how. Driven by the 1990s economic slump in Japan, Seiyu has been working to

establish an overseas presence in Singapore, Thailand, Indonesia, and Vietnam by opening a number of stores jointly with local companies. This is a strategy followed by other leading retailers in Japan such as Jusco, which had joint venture stores in Shanghai, Hong Kong, and the United States as Talbots in the state of Maryland. The risks to Seiyu and Jusco by this strategy of high local involvement in a separable industry are limited, because the front-end of their retail operations is relatively standardized and involves few individual and customized skills. Thus, the potential for variability in service performance is low.

These examples underscore the idea that low separability may inflict costs and risk on a service firm's internationalization, because the production and consumption of a non-separable service are intertwined (Carman and Langeard, 1980). The cost, and the challenges of internationalization borne by a firm, however, are not necessarily high when the service provided at the point of consumption involves a low degree of human capital intensity as the risks involved in entering by a shared-control mode, such as a joint venture, are relatively limited (Erramilli and Rao, 1993).

Hypothesis 3: The frequency of entry by wholly owned subsidiaries will be greatest in industries exhibiting high human capital intensity and low separability.

2.2. Expatriate staffing decisions

Expatriates tend to be used in a foreign subsidiary for a variety of reasons and in a variety of contexts (Black et al., 1999; Peterson et al., 1996). We propose that human capital intensity and the separability of production and consumption influence staffing decisions and the propensity to use expatriate managers. As suggested earlier, it can be difficult to identify qualified local candidates with the necessary skills to deliver professional services in a successful and consistent manner. Expatriates represent an effective strategy to help foreign affiliates adhere to corporate objectives and practices (Edstrom and Galbraith, 1977; Kobrin, 1988; Mayrhofer and Brewster, 1996). Expatriates may have the required experience, knowledge, and socially embedded skills that can be transferred to local managers, through socialization processes or appropriate training programs. The deployment of expatriates is thus a key step in transferring and developing a firm's unique human capital in its new markets.

Hypothesis 4: The greater the human capital intensity in a firm's industry, the greater the proportion of expatriate staff in foreign subsidiaries.

For a foreign entrant, low levels of separability make it difficult to control service quality and to provide good service consistently because the product is delivered at the site of consumption. Carman and Langeard (1980, p. 19) noted that low separability drove many service firms to export personnel to overseas locations to train local workers. By helping to maintain quality standards, expatriates contribute to strengthen trust-based relationships established with a company's clients. Expatriates can be used to avoid perceptions of unfairness, reduce customer retaliation, and forestall serious damage to a firm's reputation (Seiders and Berry, 1998).

Hypothesis 5: The less separable a firm's industry, the greater the proportion of expatriate staff in foreign subsidiaries.

We also suggest that the influence of separability will be greatest in human-capital intensive industries. When the production and delivery of a product/service is people-centered, close contacts between producers and customers entail limited risks for the maintenance of corporate standards. By using more local employees, firms can acquire complementary assets while reducing the costs associated with the maintenance of expatriate staff (Kopp, 1994a). Where human capital intensity is high, however, a firm faces magnified risks in not using its highly trained in-house employees to deliver its services.

Hypothesis 6: The proportion of expatriate staff in foreign subsidiaries will be greatest in industries exhibiting high human capital intensity and low separability.

3. Methodology

3.1. Empirical setting

To test our hypotheses, we investigated Japanese foreign investments in the manufacturing sector and three service sectors: retail trade, wholesale trade, and financial services. These categories are 4 of the 10 broad industry categories identified in the Standard Industrial Classification (SIC) handbook (1987). Together, foreign investments in these categories accounted for 80% of the stock of Japanese investment worldwide in 1999. In our definition of the categories below, we outline how these categories differ in one of the traditional distinctions between manufacturing and service industries, namely the level of separability. Establishing differences between broad industry categories along the other dimension in our analysis, namely human capital intensity, is not as immediately clear as it is for separability. Even though we cannot a priori distinguish across the industries on their level of human capital intensity, we do expect considerable variance to exist across subsectors of the manufacturing, wholesale trade, retail trade, and financial services industries.

3.2. Industry categories

Services and manufacturing industries have many notable differences. Yet, research has identified that analytical frameworks developed with reference to manufacturing firms can be applied to services firms (Boddewyn et al., 1986; Erramilli and Rao, 1993). To promote an integration

of frameworks, we include the foreign entries in the manufacturing sector in our sample. Manufacturing firms can be most readily distinguished from services firms along the dimension of separability. However, we construct measures and tests to account for the substantial variance that exists within each broad industry category along the separability and the human capital intensity dimensions.

The literature on the services industry distinguishes *manufacturing* firms (SIC 20–29) from services along several characteristics, most notably the separability of production and consumption (Lovelock and Yip, 1996; Zeithaml et al., 1985). Even though the production of products in such industries as electronic equipment, food products, and textiles manufacturing involve different levels of technological sophistication and require different skill levels among employees, each product is similarly separable. These industries' products can be designed in Japan, manufactured in Taiwan, and assembled in another overseas location, which is perhaps close to major consumer markets.

In *retail trade* (SIC 52–59), consumers need to experience, try out, or inspect goods before making purchase decisions. Not surprisingly, the importance of value-added services at the point of product exchange (information assistance, merchandise sampling) has often been emphasized (Anand and Delios, 1997). Retail operations are largely undertaken at the point of consumption, in close interaction with customers, and thus are not separable.

Wholesale trade companies (SIC 50 and 51) buy large lots of goods usually from manufacturers, to sell them in smaller quantities to a set of institutional customers (businesses, governments, and other wholesalers). Wholesale trading companies provide services such as transaction intermediation, technical, logistical, and financial advice, as well as marketing services (Kojima and Ozawa, 1984). Most value-added activities, such as obtaining favorable investment terms or securing local financing, can be performed in isolation, in absence from a producer–consumer interaction, and are more separable than the products of retail firms (Dunning, 1989; Lovelock and Yip, 1996).

The *financial services industry* comprises a variety of actors that offer several types of services to customers, businesses, or governments. Commercial banks and thrift institutions (SIC 60 and 61) provide a full range of depository, saving, and lending services. Security and commodity traders (SIC 62) sell newly issued stocks, bonds, and other financial products to individual and institutional investors. Insurance carriers and agents (SIC 63 and 64) explain and sell life insurance, property-casualty, and health plan policies that provide clients with protection and reimbursement for their losses. Real estate offices (SIC 65) rent, buy, sell, manage, and appraise estate and properties for their clients. Holding and investment offices (SIC 67) assist customers in raising funds for financing capital expenditures and other forms of spending. Many financial services, particularly those that can be computerized and automated, are separable. Other services, such as money management counseling, mortgage planning, risk assessment services, require face-to-face interaction with highly skilled and trained professionals. These services have lower levels of separability and have inspired service firms to internationalize by following important customers abroad (Nigh et al., 1986; Terpstra and Yu, 1988).

3.3. Sample

Our sample comprised foreign entries in these four sectors that were a foreign subsidiary operation. We did not include representative, branch, bureau, or liaison offices in our definition of foreign subsidiaries. Our source (described later) permitted us to clearly distinguish between a foreign subsidiary and a representative, branch, bureau, or liaison office. We focused on foreign subsidiaries to ensure the operation was engaged actively in local sales in the local market. Among all subsidiaries, we used three criteria to develop our sample. The subsidiary (1) had to be in North America, Europe, or Asia (88.3% of all cases); (2) it had to belong to the manufacturing, wholesale trade, retail trade, or financial services industry (80% of all cases); and (3) it had to be established as a wholly owned subsidiary or a joint venture, as defined in Section 3.4. Once these three criteria were applied, the sample numbered 14,863 entries: 7475 in the manufacturing sector, 4966 in wholesale trade, 320 in retail trade, and 2102 in financial services.

3.4. Variables

3.4.1. Entry mode

Wholly owned subsidiaries are a greenfield or acquired subsidiary in which one partner possessed more than 95% of its equity. A joint venture is a greenfield or partially acquired subsidiary in which more than one firm possessed at least 5% of the subsidiary's equity.

3.4.2. Expatriate ratio

This is the ratio of Japanese expatriates to total subsidiary employment.

3.4.3. Human capital intensity and separability

Our first measure of human capital intensity was the percentage of a two-digit SIC industry's employees with a bachelor degree or higher. We determined this from a special tabulation of the *Current Population Survey* conducted by the U.S. Bureau of the Census for the Bureau of Labor Statistics. The second measure of human capital intensity used Japanese data from 1994 and 1995 on the extent of an employee's unique contribution to a firm, as published in Daiwa Research Institute's *Analyst's Guide*. We obtained three items: value added per employee, labor costs per employee, and sales per employee. With these three items, we constructed a factor score for each two-digit SIC industry in our sample. Greater scores on this measure imply higher levels of human capital intensity—greater profes-

sional skills, more specialized know-how, and customization.

We based our measure of separability on Hirsh's (1989, p. 66) "S-factor," which measures the degree to which products or services are produced in isolation and in interaction with the customer. Anand and Delios (1997) operationalized the S-factor as the percentage of employees in downstream occupations (e.g., sales workers, sales agents, salespersons). We developed a measure identical to Anand and Delios (1997), but using U.S. data. We created a second measure using Japanese data available in the *Analyst's Guide*. Using this guide, we determined mean expenditures by industry for direct selling expenses plus sales, general, and administrative expenses. Greater scores on this measure imply greater levels of interaction between producers and customers; that is, transactions are less separable or bounded to local resources. We tested hypotheses using the United States- and the Japanese-based measures, and obtained qualitatively similar results. Therefore, we only report the results for the Japanese measures.

3.5. Control variables

For country-level control variables, we included measures of *country risk and a nation's openness to FDI* (Delios and Beamish, 1999; Kim and Hwang, 1992; Shan, 1991). We derived the host country risk variable from indices published in *Euromoney* in 1996. Data on local ownership restrictions were obtained from the World Competitiveness Report (1996) using the item that reported on the openness of 47 countries to foreign equity participation. We also included measures of *cultural distance*, using Kogut and Singh's (1988) index. Our final country-level control measured a host country's *population* and its level of *GDP* in 1996. Both were taken as logarithms (Grubaugh, 1987; Wheeler and Mody, 1992).

We attempted to capture features of manufacturing firms that might influence choices about entry mode and expatriate employment independent of our other independent variables. One such variable is the level of technology involved in the production of a firm's product. Where technology is high, a firm faces a greater risk of technological leakage when making a market entry (Delios and Beamish, 1999). The tacitness of a firm's technology also creates difficulties in contracting for technology (Oxley, 1997), thereby leading toward a preference for wholly owned entry. This variable was estimated with the ratio of R&D expenses to sales revenues for the parent firm's industry in Japan and was obtained from the *Analyst's Guide*. This R&D variable complements our measure of human-capital intensity. It also helped ensure that results obtained for the human capital intensity variable are not simply due to differences in technology levels across industries, which we consider to be a different concept than human capital intensity.

We also controlled for organizational experience (Johanson and Vahlne, 1977; Makino and Delios, 1996) measured with the logarithm of the years of FDI experience by a parent firm, at the time of a subsidiary's founding. We included measures of *subsidiary size*, taken as the number of employees in a subsidiary, and *subsidiary age* or the years since a subsidiary was founded (Anand and Delios, 1997; Hennart, 1991).

4. Analysis and results

We first examined how the four basic industries varied in their mean levels of human capital intensity and separability. As Table 1 shows, manufacturing and retail trade involved lower *average* levels of human capital intensity than wholesale trade and financial services ($p < .001$). Consistent with our earlier description of the sectors, in general, wholesale trade and manufacturing were more separable than retail trade and financial services ($p < .001$). We next proceeded with statistical tests based on variance in the human capital intensity and separability measures across two-digit SIC industries. The tests for Hypotheses 3 and 6 required an interaction term between human capital intensity and separability. The correlation between these two variables was .892, hence we "centered" the human capital intensity and separability measures for each value by subtracting the mean value for each. This procedure reduces the correlation between an interaction and its composite terms, without altering substantive interpretations of the coefficients (Aiken and West, 1991; Erramilli and Rao, 1993). Other variables did not exhibit collinearity problems (Table 2). Regression diagnostics, such as variance inflation factors and a hierarchical model building process, further reduced concerns about multicollinearity.

4.1. The choice of entry mode

Our first test of the hypotheses involves an examination of entry mode tendencies by industry category. The data reported in Table 3 provide support to Hypotheses 1–3. The preference for a wholly owned subsidiary is lowest in the manufacturing and retail trade sectors, greater in wholesale trade, and greatest in financial services (74.5%). A chi-square test established the significance of these differences at the $p < .001$ level. The propensity to use wholly owned subsidiaries over joint ventures appears to increase as transactions become increasingly dependent upon human capital

Table 1
Across-industry variation of separability and human capital intensity

	Manuf. ($n = 7475$)	Retail ($n = 320$)	Wholesale ($n = 4966$)	Finance ($n = 2102$)	Significance *
Separability	36,232	48,368	28,496	54,527	$< .001$
Human capital intensity	− 0.1773	0.4232	2.9507	1.5879	$< .001$

All mean differences are significant at the 1% level.
* (p, one-way ANOVA test).

Table 2
Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Country risk														
2. Cultural distance	−.173**													
3. FDI openness	.484**	−.079**												
4. Population	−.494**	.205**	−.545**											
5. GDP	.568**	−.409**	.114**	−.043**										
6. Subsidiary age	.252**	−.149**	.168**	−.315**	.117**									
7. Subsidiary size	−.068**	.016	−.064**	.032**	.004	.064**								
8. Host country experience	.100**	−.038**	.008	−.006	.262**	−.143**	−.013							
9. Industry R&D	.038**	−.011	−.017	−.014	−.020*	.014	.022*	−.065**						
10. Manufacturing	−.370**	.089**	−.442**	.346**	−.110**	−.156**	.172**	−.038**	.072**					
11. Retail	−.004	−.002	.003	.014	−.008	−.012	.002	−.016*	−.166**	−.149**				
12. Finance	.195**	.018	.219**	−.135**	.139**	−.021*	−.072**	.085**	−.191**	−.408**	−.060**			
13. Human capital intensity	.338**	−.103**	.400**	−.328**	.083**	.175**	−.167**	.023**	.018*	−.913**	−.073**	.129**		
14. Separability	.024**	.050**	.041**	−.019*	.015	−.048**	.068**	.023**	−.041**	−.015	.100**	.416**	−.118**	
15. Human capital intensity separability	−.106**	.062**	−.111**	.110**	−.039**	−.062**	−.021*	.002	−.054**	.329**	−.100**	.125**	−.418**	−.292**

* Correlation is significant at the .05 level (two-tailed).
** Correlation is significant at the .01 level (two-tailed).

intensity and, also, less separable, thus providing support to Hypotheses 1 and 2. Consistent with Hypothesis 3, the propensity to enter by wholly owned subsidiary was greatest in financial services.

We made a second test of Hypotheses 1–3 using logistic regression in order to control for other influences on entry mode behavior by industry category, and to make an examination of our hypotheses across more precisely defined industry categories (i.e., two-digit SIC industries). The tests compared the propensity to expand by a wholly owned subsidiary vs. a joint venture.

The models in Table 4 were all significant and substantive predictors of entry mode choice. Model 1 provides a baseline estimation using control variables. In Model 2, we added the categorical variables for industry membership in which wholesale trade is the reference category. A chi-square test for overall model fit shows that the categorical variables significantly improves the fit of the model over its baseline. The signs for the coefficient estimates on the manufacturing, retail trade, and finance dummy variables are consistent with our hypotheses. The negative coefficients on the manufacturing and retail variables ($p < .001$) suggests that these entries are less likely to involve a wholly owned subsidiary compared to wholesale trade entries. The positive coefficient on the finance variable reflects the greater tendency of finance subsidiaries to be wholly owned compared to wholesale trade. Thus, the frequency of entry by wholly owned subsidiary increases when human capital intensity and the interactions between suppliers and customers become more prominent. These findings support Hypotheses 1–3.

Table 3
Choice of entry mode

	Manuf. (%, $n = 7475$)	Retail (%, $n = 320$)	Wholesale (%, $n = 4966$)	Finance (%, $n = 2102$)	Total (%)
Wholly owned	36.9	45.6	69.1	76.2	53.4
Joint venture	63.1	54.4	30.9	23.8	46.6

For differences in categories, $\chi^2 = 1762$, $df = 3$, $p < .001$.

Models 3 and 4 test the effect of the human capital intensity and separability variables on the likelihood of a wholly owned entry. A chi-square test for overall model fit shows that the addition of these two continuous variables significantly improved the baseline model. In Model 3, the human capital intensity variable was positively signed and significant ($p < .001$). In Model 4, when adding the separability variable, the coefficients on the two focal variables were positively signed and significant. These results support Hypotheses 1 and 2. Model 5 tests the interaction between human capital intensity and separability. The interaction term was positively signed, thus providing empirical support to Hypothesis 3.

4.2. Expatriate employment

Table 5 displays employment data for the three industries. The mean number of employees and expatriates was significantly larger in manufacturing entries ($p < .001$). When measured on a proportional basis, entries in wholesale trade and finance used significantly more expatriates than entries in manufacturing and retail trade ($p < .001$). Also, as a proportion of total employment, expatriate employment was significantly greater ($p < .001$) in financial services than in wholesale trade. These trends hold when we compare sub-

Table 4
Logistic regression model: entry mode choice

	Joint venture (0) vs. wholly owned (1)				
	Model 1	Model 2	Model 3	Model 4	Model 5
Country-level controls					
Country risk	.077*** (202.924)	.065*** (140.711)	.067*** (151.250)	.067*** (150.156)	.066*** (145.383)
Culture distance	−.060 (3.274)	−.044 (1.666)	−.045 (1.797)	−.046 (1.868)	−.045 (1.815)
FDI openness	.561*** (172.249)	.444*** (101.360)	.484*** (122.098)	.477*** 118.781	.473*** (116.515)
Population	.330** (8.511)	.360** (9.952)	.367*** (10.359)	.363** (10.122)	.356** (9.728)
GDP	.059*** (9.550)	.090*** (20.755)	.087*** (19.778)	.088*** (20.574)	.092*** (22.283)
Industry-level control					
R&D intensity	.183*** (60.622)	.222*** (80.798)	.177*** (54.606)	.181*** (57.284)	.185*** (59.571)
Firm-level controls					
Subsidiary age	.000 (0.003)	−.009 (1.260)	−.004 (0.239)	−.005 (0.483)	−.006 (0.588)
Subsidiary size	−.003 (0.891)	.004 (1.170)	.002 (0.275)	.001 (0.137)	.002 (0.364)
Host country experience	−.004*** (108.901)	−.004*** (125.191)	−.004*** (121.662)	−.004*** (122.267)	−.004*** (124.360)
Industry membership					
Manufacturing		−.825*** (135.691)			
Retail trade		−.342† (2.718)			
Finance		.530*** (27.297)			
Independent variables					
Human capital intensity			.375*** (137.145)	.390*** (150.156)	.440*** (145.207)
Separability				.123*** (18.248)	.159*** (25.258)
Human capital intensity × Separability					.127** (8.383)
Constant	−6.718*** (237.429)	−5.460*** (147.940)	−5.957*** (181.647)	−5.927*** (180.083)	−5.837*** (173.992)
Model indices					
% correctly classified	75.8	75.9	75.9	75.8	75.7
Log-likelihood	7472.492	7223.374	7334.64	7316.243	7307.794
Model χ^2	2036.435	2285.553	2174.281	2192.684	2201.133
Significance of model (p)	<.001	<.001	<.001	<.001	<.001

Wald statistics in parentheses for logistic regressions.
** $p<.01$, two-tailed test.
*** $p<.001$, two-tailed test.
† $p<.10$, two-tailed test.

sidiaries of similar size. As an example, in subsidiaries in the category of 21–50 employees in size, manufacturing subsidiaries employed a mean of 2.31 expatriates. Retail had a mean of 2.43, while wholesale trade and financial services were greater at 3.57 and 5.43, respectively. Thus, the proportion of expatriate staff in foreign subsidiaries is greatest in industries characterized by high levels of human capital intensity and low levels of separability as suggested in Hypotheses 4–6.

Table 5
Expatriate employment

	Manufacturing ($n=7475$)	Retail ($n=320$)	Wholesale ($n=4966$)	Finance ($n=2102$)	Significance (p)
Expatriate employment (%)	5.81	8.36	19	27.39	<.001
Number of expatriates	4.30	3.90	3.89	2.95	<.001
Number of employees	346.54	225.30	64.68	48.43	<.001

The expatriate employment percentage row was not computed as the ratio of the means from the two preceding employment categories reported in Table 6. Instead, it is a mean calculated using each subsidiary's expatriate employment percentage. This method gives a greater mean for expatriate employment, but the ranking across categories is the same whichever method is used.

We sought additional empirical support for our hypotheses using an ordinary least squares (OLS) model, with the dependent variable (percent expatriate employees) as a continuous variable (Table 6). Model 1 provides a baseline estimation. Model 2 adds the industry variables. Models 3 and 4 estimate the direct impact of the human capital intensity and separability variables. Model 5 tests the interaction between these two variables. The addition of the industry dummies significantly improved model fit, as suggested by the significant F test ($p<.001$). Consistent with Hypothesis 4, entries in the manufacturing and retail industries used proportionally fewer expatriates (negative and significant coefficient on manufacturing and retail) than wholesale trade subsidiaries ($p<.001$). Entries in the fin-

Table 6
OLS regression: expatriate employment levels

	Percentage of expatriate staff in subsidiary				
	Model 1	Model 2	Model 3	Model 4	Model 5
Country-level controls					
Country risk	.168*** (7.035)	.067** (2.976)	.096*** (4.058)	.089*** (3.802)	.072*** (3.121)
Culture distance	.044** (3.088)	.052*** (3.957)	.052*** (3.755)	.051*** (3.754)	.051*** (3.769)
FDI openness	.175*** (11.433)	.087*** (6.053)	.121*** (7.982)	.113*** (7.484)	.106*** (7.104)
GDP	.080*** (4.032)	.106*** (5.756)	.115*** (5.907)	.120*** (6.209)	.133*** (6.953)
Population	−.030 (−1.606)	−.025 (−1.418)	−.022 (−1.201)	−.023 (−1.265)	−.025 (−1.422)
Firm-level controls					
Subsidiary age	−.095*** (−7.027)	−.122*** (−9.746)	−.103*** (−7.790)	−.110*** (−8.466)	−.115*** (−8.957)
Subsidiary size	−.104*** (−8.608)	−.060*** (−5.323)	−.076*** (−6.422)	−.080*** (−6.840)	−.069*** (−5.932)
Host country experience	−.068*** (−5.443)	−.079*** (−6.894)	−.079*** (−6.491)	−.081*** (−6.719)	−.088*** (−7.362)
Industry-level control					
R&D intensity	−.093*** (−7.720)	−.049*** (−4.251)	−.104*** (−8.883)	−.099*** (−8.522)	−.090*** (−7.806)
Industry membership					
Manufacturing		−.253*** (−17.939)			
Retail trade		−.065*** (−5.630)			
Finance		.232*** (18.363)			
Independent variables					
Human capital intensity			.243*** (18.218)	.263*** (19.765)	.351*** (23.293)
Separability				.135*** (11.514)	.195*** (15.444)
Human capital intensity × Separability					.166*** (11.967)
Model indices					
Significance of model (P)	<.001	<.001	<.001	<.001	<.001
F value	101.100	180.492	129.156	132.020	135.798
R^2	.131	.264	.176	.194	.212

The t statistics for linear regressions are in parentheses.
** $p<.01$, two-tailed test.
*** $p<.001$, two-tailed test.

ance sector were the most likely to use expatriates as a proportion of total staff (positive and significant coefficient on the finance dummy).

Models 3, 4, and 5 test the effect of the focal variables on the proportion of expatriates. In Model 3, the coefficient for the human capital intensity variable was positively signed and significant ($p<.001$). In Model 4, the coefficients for the human capital intensity and separability variables were both positive and significant ($p<.001$). In Model 5, the addition of the interaction term between these two variables significantly improved model fit from 19.4% to 21.2%. Its coefficient was positively signed and significant ($p<.001$). Thus, Hypotheses 4–6 are supported.

Importantly, these results involve a definition of expatriate employment that emphasized the intensity of expatriate employment use, instead of the absolute number of expatriate employees in the subsidiary. We used the proportion of expatriate employees because we expected the number of expatriates employed would vary positively with the number of employees in the subsidiary. Hence, in our empirical tests, we tried to identify sources of variation in the proportion of expatriates.

An alternative perspective of expatriate employment would suggest that expatriate employment levels are determined independent of the number of employees in a subsidiary. This perspective would entail that most firms face basic requirements for expatriate employment that cut across different sized entries made in different industry categories. Consequently, Model 5 was reestimated with the absolute number of expatriate employees in the subsidiary as the dependent variable in two subsamples of subsidiaries (Table 6). One subsample comprised subsidiaries above the mean level of subsidiary size, and the other comprised subsidiaries at and below the mean level in size. In the below-mean group, we observe that all three coefficients for the focal variables are positively signed and significant at the 1% level. Thus, in smaller subsidiaries, human capital intensity and separability have separate and interactive influences on both the intensity of expatriate employment use and the absolute number of expatriate employees, which support Hypotheses 4–6. However, in

the above-mean subsidiary size sample, that is large subsidiaries, only the coefficient for the separability variable is positively signed and significant. In short, in large subsidiaries, Hypothesis 5 was supported, but not Hypotheses 4 and 6.

5. Discussion

Our findings offer a number of insights into the determinants of foreign market entry decisions. Consistent with our hypotheses, the propensity to use wholly owned subsidiaries over joint ventures and the reliance on expatriate managers increased with the levels of human capital intensity and customer interaction within an industry. The proportion of wholly owned subsidiaries and expatriate managers was greater in financial services firms than in wholesale trade, retail trade, and manufacturing firms, supporting the notion of a "service continuum" spanning across these four industries. One endpoint in this continuum is in financial services in which three out of four entries were made by wholly owned subsidiaries and, on average, expatriate managers accounted for 27% of employment. In contrast, at the other end of the service continuum, a majority of manufacturing entries was made by joint ventures and the entries had a mean expatriate employment percentage of about 5%.

A crucial assumption in our analyses was that the risk of market failure is more important for the production and delivery of transactions that are heavily dependent upon employee specialized know-how, and not easily separable. Under such conditions, adverse selection, free-riding, and appropriability concerns should lead foreign investors to establish control modes (a wholly owned subsidiary and a high percentage of expatriate managers) that protect the rent potential of an expansion. Even if appropriability is not an issue, market failure in the transfer of a firm's assets can arise from differences in the capabilities of firms; that is, varying capacities to integrate via joint-ventures and the use of local staff a firm's skills and knowledge into the functioning of its foreign operations (Kogut and Zander, 1993). When capabilities rely on extensive levels of professional skills and extensive contacts with customers, firms face substantial ambiguity when attempting to transfer firm-specific advantages across organizational boundaries (Simonin, 1999). This contingency motivates firms to use wholly owned subsidiaries and to deploy expatriates in foreign expansions (Madhok, 1997).

Our results challenge a few conventional notions about the way global service firms structure foreign subsidiaries. It is often assumed that services operations are heavily dependent on country-specific skills for the conduct of their international operations (Carman and Langeard, 1980), leading them to favor joint ventures and local managers instead of wholly owned subsidiaries (Johansson, 1990). While this assertion may apply to services that require low human capital intensity (e.g., the retail industry), our results clearly indicate that not all services are the same. Industry characteristics influence how service firms enter international markets, and how staff is used in a foreign subsidiary.

In terms of expatriate staffing strategies, Japanese companies have often been criticized for their "rice-paper ceiling" policy, an artificial barrier to advancement for local and third-country employees (Kopp, 1994b). We questioned this perspective by examining for a contingent relationship between the proportion of Japanese expatriate staff and two key sector characteristics. Rather than adopting a systematic policy against non-Japanese employees, Japanese MNCs appear to adopt human resource practices that balance the need for acquiring local skills with that of protecting firm-specific assets against the risk of imperfect transferability. This conclusion must be made with some caution, however, as base levels of expatriate employment exhibited some consistency across industry segments (Table 5). Further, in the case of larger subsidiaries, significant empirical evidence was observed for the intensity of expatriate employment, not from the absolute number of expatriate employees. Further research relying on a survey instrument could potentially provide stronger support for this claim.

5.1. Implications

One implication of this research relates to our understanding of the distinctive features of a service firms' internationalization process. To be operational in foreign markets, global service firms need relatively minimal physical commitments, as few investments in capital equipment and operating facilities are usually required. However, certain services industries are also faced with the challenge of transferring to foreign subsidiaries the social assets, skills, and capabilities that have been developed through extensive education and training of employees, as well as close contacts with end-customers. As transferring such human capital entails substantial risks and difficulties, many global service firms tend to rely on wholly owned subsidiaries and expatriate management staff when expanding internationally.

A second implication relates to the stream of research on entry mode. Most studies have looked at the entry mode behavior of manufacturing firms using a transaction cost or internalization framework (Anderson and Gatignon, 1986; Hennart, 1991). These frameworks emphasize the specific and proprietary characteristics of a firm's assets as drivers of its entry mode decisions. Typical operationalization of these characteristics involves looking at expenditure patterns on R&D or advertising, that are applicable to manufacturing firms but less so to service firms. While not completely different, our focus is unique since it emphasizes the characteristics of the human assets in a firm—where they are concentrated in a firm's value chain and the degree of training embodied in a typical employee in a

firm. This focus can be applied more broadly than previous approaches to the study of the behavior of manufacturing and service firms. Extensions of this research would help to resolve the impasse that exists between the integration of research in manufacturing firms and those in the services sectors.

A third implication relates to the practice of global strategic management. Our study suggests that certain "service" characteristics, such as human capital intensity and the inseparability of the production–consumption process create problems in the control and coordination of international activities (Fryer, 1991; Reardon et al., 1996). A remedy to these problems is the use of wholly owned entries and the deployment of expatriate managers. This remedy applies not only to services, but also to several manufacturing firms, which are increasingly incorporating service features into their products.

5.2. Conclusion

The purpose of this paper was to examine how service characteristics such as the degree of human capital intensity and the separability of a firm's business influenced entry mode and expatriate staffing decisions. Drawing from a sample of entries in Asia, Europe, and North America by Japanese firms, we compared and contrasted the organizational mode established upon market entry, and the employment of expatriate managers in the manufacturing, retail trade, wholesale trade, and financial services sectors. Our results outlined the stark differences in entry mode selection and expatriate staffing decisions across these four industry categories. The propensity to use wholly owned subsidiaries over joint ventures and expatriate managers was greatest in financial services, where service characteristics are most important, and lowest in manufacturing. Our findings also supported the assertion that in situations where required capabilities involve (1) close interactions with end customers and (2) extensive levels of professional skills, specialized know-how, and customization, wholly owned subsidiaries, and expatriate staff were preferred. To the extent that firms from all sectors, whether in manufacturing or services, increasingly rely on assets that are dependent upon human capital and not easily separable for delivering their offerings in the marketplace, our analysis points to ways in which this reliance can be incorporated into a framework for understanding strategic choices, such as foreign market entry decisions.

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