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# Entry Modes for Manufacturers' International After-Sales Service: Analysis of Transaction-specific, Firm-specific and Country-specific Determinants

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## Abstract and Key Results

- This paper investigates which criteria influence a company's entry mode choice for its after-sales service in a foreign country. With a focus on the decision between integrative and cooperative entry modes, an empirical study of 80 foreign entry mode decisions by German manufacturing companies identified determinants of particular importance for after-sales service.
- Country-specific variables exert a dominant influence on entry mode choice. Country risk, fluctuations in demand, and the availability of suitable service partners increase the probability of choosing a cooperative entry mode. Cultural distance from the host country leads to integrative modes. As transaction-specific variables, a difficult service quality evaluation is shown to increase the likelihood of establishing wholly-owned subsidiaries, as are high resource requirements. Service as competitive advantage also leads to the internalization of the service-function.
- The companies surveyed are highly satisfied with the entry mode chosen for their after-sales service in foreign markets, which implies that managerial implications can be drawn from the results.

**Keywords** Entry Modes · After-Sales Service · Services Internationalization · Competitive Strategy · Transaction Costs

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## Introduction

A company planning to conduct any business activities in a foreign market must choose an appropriate entry mode. Each task can be performed by vertically integrated organizational units (wholly-owned subsidiaries), by external organizational units, or jointly ("cooperative arrangements") (Kaynak/Demirbag/Tatoglu 2007, Luo 2007). Since a firm generally performs multiple tasks, it can use distinct entry modes for each of those different tasks (Bello et al. 1997, Wilson 1999).

The present study focuses on the business function of after-sales service (AS). It investigates which criteria determine a firm's choice between wholly-owned subsidiaries and cooperative arrangements for the provision of its AS in a foreign country. While the growing importance of such services is widely acknowledged (Dunning 1989, Asugman et al. 1997, Loomba 1998), there is relatively little published academic research on this topic in an international context (Parasuraman 1998, Nordin 2005).

The international management literature offers numerous investigations into entry modes for foreign market operations. However, previous investigations have focused predominantly on the manufacturing operations of industrial companies, as McLaughlin/Fitzsimmons' (1996) and Knight's (1999) reviews reveal, or the studies analyze, to a lesser extent, international entry modes of service companies (Boddewyn/Halbrich/Perry 1986, Dunning 1989, Vandermerwe/Chadwick 1989, Erramilli 1990, Erramilli/Rao 1993, Erramilli/D'Souza 1995). Far less research has been conducted on the internationalization of customer services, that is, services provided as a supplement to a manufacturing company's core offering. This business function is perceived by manufacturers more and more as an important competitive advantage (Asugman et al. 1997, Parasumaran 1998, Loomba 1998, Wilson 1999, Nordin 2005) and thus, investigations into the entry mode decision for this business function seem thoroughly worthwhile.

In how far the results of the research into manufacturing operations can be applied to service activities is not evident without further research. It seems clear that the decision on an appropriate entry mode needs to be considered on the basis of each specific value-added function, since the integration decision is made at the functional level (Dibbern et al. 2001).

Consequently, our study focuses on international after-sales service (AS) and we investigate the entry mode decision. The study concentrates on entry modes with a permanent presence in a specific foreign market, and in particular, on the decision of a company to fully internalize the service activities or to cooperate with other companies, e.g., service providers. This is a strategic decision and the choice between internalization and externalization is generally not easily reversed, at least not in the short term (Loomba 1998). More specifically, the research question relates to the extent to which a set of transaction-specific, host country-specific and firm-specific variables influence the selection of entry mode for international AS. For this investigation, we conducted a study using a sample of 80 manufacturing companies with after-sales service activities in foreign markets.

The remainder of this paper is organized as follows. After a discussion of the specific characteristics of after-sales service, we develop a number of hypotheses, based on various different theoretical arguments. Each hypothesis refers to the influence of a specific variable on the entry mode for the international AS. As potential influence factors, we

have selected variables that seem to play an important role in explaining the entry mode choice and that seem to have a specific relevance for service activities. We then introduce the methodology for the empirical study which tests the hypotheses. Subsequently, we present and discuss the results. In the final section, we consider the managerial implications of the study and draw some conclusions.

## Characteristics of After-Sales Service Activities

Manufacturers' customer service includes all services offered by a company to promote manufactured goods, such as the design of a customized machine, or provision of a hotline. These complementary services are associated directly with the main product and often form an integral part of the offering (Parasumaran 1998). Nearly all firms in the capital goods industry offer such supplementary services. Such services were long considered to be of little importance, as the core competence of the companies was perceived to be product quality and the associated production processes. However, because, from the customer perspective, many products are now similar or interchangeable in terms of quality, functionality and price, the ability of competing companies to provide problem solutions (rather than just products) is becoming more important. Supplementary services are an important part of the problem solution (Wilson 1999, Asugman et al. 1997, Saccani et al. 2007). Establishing a superior competitive position by the provision of services therefore appears to be becoming progressively more important over time (Loomba 1998, McLaughlin/Fitzsimmons 1996, Nordin 2005).

Industrial customer services encompass a wide range of activities. Service provided after the product purchase is referred to as after-sales service (Asugman et al. 1997, Loomba 1998). Components of AS include warranty services, maintenance, repairs, delivery of replacement parts, provision of a hotline, etc. (Asugman et al. 1997, Wilson 1999). AS often enhances the run-time and efficiency of the good being sold. For example, regular servicing reduces the down-time of a machine. The quick delivery of spare parts and fast repairs have similar benefits. As an intangible component of the offering, AS therefore makes a considerable contribution to the problem-solving capacity of a manufactured industrial good (Levitt 1983).[1]

With regard to the predominant characteristics of services, AS is often highly intangible and an intensive integration of an external factor (e.g., a machine needing maintenance) is necessary. Both aspects are seen as key characteristics of a service (Zeithaml 1981, Dunning 1989). Hence, AS is characterized to a large extent by typical service characteristics.

## Determinants of the Entry Mode Choice for After-sales Service

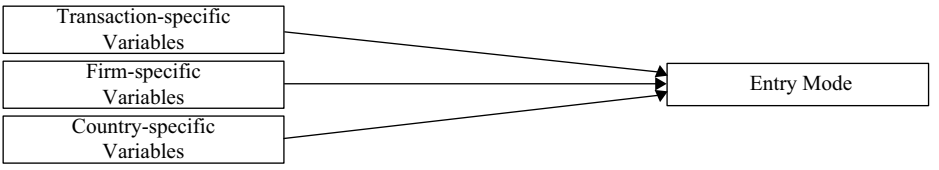
Even if a company uses exporting as the entry mode in a foreign market for its physical goods, it is often necessary to provide AS in that market via foreign direct investment or alternative non-equity forms of entry so as to establish a presence in this market, since frequently, at least parts of the service activities have to be performed abroad (Boddewyn/Halbrich/Perry 1986). This example also illustrates that entry modes used by a company can differ for different business functions.

Service characteristics exert an impact on the entry mode decision, which justifies a specific investigation on the subject (Brouthers/Brouthers 2003). For instance, the need for (at least a passive) integration of external factors into service provision significantly influences entry mode choice (Knight 1999, Erramilli 1990, Dunning 1989). Whereas production and consumption of physical goods are two separate activities, that is, companies usually manufacture goods at one location and then transport them to the customer, the provider and customer of a service usually have to interact in order to deliver the service. This leads to poor service transportability and exportability and it is normally assumed that service production should take place close to the market (Välinkangas/Lehtinen 1994).

Vandermerwe and Chadwick (1989) state that services tend to be more suited to wholly-owned subsidiaries and other forms of direct investment, than to exports, if those services are characterized simultaneously by low tangibility and a high level of interaction between producer and customer. While this conclusion would imply a high level of internalization for AS, the main argument is that a permanent local presence in the host market is preferable. However, such a local presence in a foreign market can also be achieved through a cooperative arrangement with a local partner (Ekeledo/Sivakumar 1998).

Thus, the question of the optimal entry mode should be analyzed in greater detail. Following a common categorization of potential influence factors on entry mode decisions (Anderson/Gatignon 1986, Hill et al. 1990, Malhotra et al. 2004, Brouthers/Brouthers 2003, Hoffmann/Schaper-Rinkel 2001, Randøy/Dibrell 2002), our conceptual framework comprises three levels of such factors: Transaction-specific, firm-specific, and country-specific factors (see Figure 1). In this framework transaction-level variables describe the properties of the specific AS provided. Within all three categories, we investigate

**Figure 1.** Conceptual Framework




variables with a particular relevance to AS.

## Transaction-specific Variables

### *Performance Evaluability*

Unlike tangible goods, services are difficult to standardize, partly because they are provided by people and partly because their provision entails the integration of a more or less heterogeneous external factor. In the case of AS, this could, for example, refer to repairing different kinds of damage to machinery or to training a customer's (heterogeneous) employees. One consequence of the integration of an external factor and the intangibility

of a service is that the quality of the service can rarely be evaluated before it is performed. The process characteristics of a service can often only be assessed after the service is delivered and certain quality characteristics not even after the service is performed (e.g., whether the inspection of a machine was really competent and professional). In the terminology of information economics, AS is thus characterized by relatively high levels of credence and experience qualities (Zeithaml 1981). This often leads to difficulty in ascertaining adherence and conformity to contracted agreements. When it is difficult to verify whether a certain level of service quality has been provided, integrative entry modes are likely to be preferred, since the assurance of a certain quality level is easier when the task is performed internally (Dunning 1989).

More specifically, this argument can be considered from two perspectives – the evaluation difficulty experienced by the service customer and the evaluation difficulty a manufacturing company itself experiences in assessing the service provided by a local unit (e.g., a cooperation partner):

- From the point of view of the customer, poor service evaluability increases perceived risk. In such a situation, trust in the service provider gains in relevance (Zeithaml 1981). Generally, it can be assumed that a relationship of trust with the goods supplier already exists. Casson (1999) argues that the internalization of service provision can provide some guarantee of service quality, by virtue of having more credibility than when the service is provided by third parties.
- From the perspective of the manufacturer considering his business relationship with potential outsourcing partners, the critical issue is the extent to which control mechanisms can guarantee service quality (Bello et al. 1997). Low service performance evaluability leads to behavioral uncertainty. Such uncertainty rises if the firm cannot accurately assess its agents' performance through objective, readily available output measures. In such cases, contracts with external service providers cannot easily be defined precisely, and quality standards are difficult to ascertain. Monitoring costs therefore rise substantially (Anderson/Gatignon 1986). In the terms of transaction cost theory, low evaluability can also add to the free-riding potential inherent in a transaction, since the foreign cooperation partner can gain short-term profits by providing low quality service at the expense of the long-term success of the manufacturing company (Anderson/Gatignon 1986). The greater degree of control available through vertical integration is assumed to embody greater evaluation capabilities. Thus, according to transaction cost theory, vertical integration is a likely response to the performance evaluation problem (Geyskens et al. 2006).

It is therefore postulated that:

*Hypothesis 1.* The more difficult the evaluation of service performance, the more likely companies are to choose integrative entry modes for their AS in a foreign market.

*Resource Requirements*

Resource requirements refer to the magnitude of resources (e.g., equipment, technical know-how, and human resources) needed to perform a specific task (Bello et al. 1997). Activities requiring substantial resource commitment are more likely to be performed in cooperation with other companies, since the need for a company to supplement its own resources with those of a partner has been shown to be an important motivation to enter a cooperative arrangement (Das/Teng 2000).

In addition, cooperative entry modes are a risk-reducing strategy, since a firm's own investment in the foreign location is reduced by sharing costs with its cooperation partners (Porter/Fuller 1986). Such risk sharing in a foreign market is likely to be more relevant when such an operation requires extensive resources (Das/Teng 2000).

From the perspective of transaction cost theory, resource requirements increase vertical integration costs for AS-activities, thereby reducing the propensity of companies towards a high degree of internalization (Erramilli/Rao 1993). Cooperative arrangements are recommended as a cost-efficient solution for AS in the case of high resource requirements (Armistead/Clark 1991). Summarizing, this is postulated as:

*Hypothesis 2*. The higher the resource requirements for the AS, the more likely companies are to choose cooperative entry modes for their AS in a foreign market.

Country-specific Variables

*Country Risk*

Political instability, economic and currency fluctuations, labor disputes, and similar events can exacerbate the unpredictability of the host country environment. Such uncertainty resulting from the economic or political situation of a foreign country is typically referred to as country risk (Anderson/Gatignon 1986, Erramilli/D'Souza 1995).

Organizational theories imply a lower degree of vertical integration as a response to increasing country risk, since companies confronted with uncertainty generally attempt to implement entry modes which leave as many options open as possible, thereby increasing their flexibility (Anderson/Gatignon 1986). In a highly unstable environment or when conditions are difficult to predict, cooperative strategies tend to be preferred, as they usually ensure greater flexibility and easier reversibility (Erramilli/Rao 1993, Hoffmann/Schaper-Rinkel 2001).[2]

Secondly, when there is a high level of country risk, companies attempt to reduce their risk exposure by keeping investment to a minimum (Brouthers 2002). As cooperation partners usually participate in investment, resource commitment by the company can be lower in the case of cooperative entry modes (Dunning 1989, Hoffmann/Schaper-Rinkel 2001).

A number of empirical studies, in the manufacturing sector as well as in the service sector, support the assumption that, under the condition of environmental uncertainty, cooperative strategies are more likely to be established than integrative entry modes

(cf. e.g., Erramilli/D'Souza 1995, Hoffmann/Schaper-Rinkel 2001). It is therefore postulated:

*Hypothesis 3*. The higher the country risk of a foreign market, the more likely companies are to choose cooperative entry modes for their AS in that foreign market.

*Fluctuations in AS Demand*

Another potential influence factor on the vertical integration decision is the volume and pattern of transactions to be processed. Transaction cost theory ignores production costs, but production cost theory stresses that externalization might only be considered as beneficial for a small volume of transactions, while an increasing scale of operations facilitates achieving lower average production costs through internalization (Bello et al. 1997). The greater the volume of demand (i.e., the more frequent the demand for AS in a foreign market), the lower the costs for internalized operations relative to externalized activities (Klassen/Rohleder 2001). Besides scale economies, production costs are also influenced by the volume uncertainty that can be caused by fluctuations in AS demand. The difficulty of accurately forecasting the capacity requirements increases cost and might result in either over-capacity or in customers experiencing waiting-times (Geyskens et al. 2006). This aspect appears to be particularly relevant for services. In conformity with the simultaneous production and consumption of a service and the associated perishability of services, a service can only be performed if there is a demand from the customer. Then, the provider must still be able to provide adequate capacity to satisfy this demand. This provision of service potential creates a high proportion of fixed and overhead costs. Because the costs also accrue when the service is not being used (since capacity cannot be stored), high idle-time costs may be incurred (Habib/Victor 1991, Knight 1999).

Additionally, an adjustment of service capacity across countries is difficult. In the case of physical goods production and fluctuating demand, the goods can be exported to other markets in order to adjust capacity. However, in the case of AS it is difficult to make use of service capacities from other countries or to dispose of excess capacity into other markets, because such services either cannot normally be exported at all or only to a limited extent (Knight 1999). A steady utilization of service capacity is therefore important for cost efficiency. Thus, a cooperative provision of services is likely to be advantageous when demand occurs infrequently, fluctuates substantially or generally remains at a low level. In these cases, it is unlikely that the fixed costs associated with the vertical integration of the activities can be justified (Anderson/Weitz 1986).

A third party service provider in the host country can carry out AS for several companies. It can distribute fixed costs over a large number of partners and compensate for demand fluctuations and generally ensure a smoother, more cost-efficient utilization of capacity (Heshmati 2003, Bello et al. 1997). The literature therefore recommends externalizing those services which are seldom carried out. Accordingly, we postulate that:

*Hypothesis 4*. The more the demand for AS fluctuates in a foreign market, the more likely companies are to choose cooperative entry modes for their AS in that market.

*Availability of Service Partners*

Finding suitable local business partners is an obvious condition for a cooperative mode of service provision in a host country. Yet, this issue is seldom discussed in the literature. One of the prerequisites for outsourcing as an appropriate choice for providing AS in a foreign market is that the market offers an adequate supply of service providers as potential partners. Empirical evidence shows that the absence of suitable partners is frequently a significant hindrance to the internationalization of services and can often only be overcome by means of internalization (Köhler 1995).

In addition to the extreme case of there being a complete lack of suitable service providers (which logically leads to internalization), too small a number of suitable partners can also significantly constrain cooperation, in terms of transaction cost theory. If suppliers of a service are readily available, a firm may make use of their specialization, expertise and economies of scope and scale in performing their function, confident that a new supplier may be found if the relationship is unsatisfactory. So if there are a sufficient number of service partners, there is a tendency to externalize activities to them, as the use of partners becomes more cost-efficient (Williamson 1985). Firms can thus avoid the cost of integration when the supplier market is competitive and the firm can have both, high return and low risk (Anderson/Gatignon 1986). If the availability of alternative intermediaries is restricted, this lack of competition in the market for suppliers increases the cost of a cooperative entry mode and increases the risk of opportunistic behavior of a partner (Anderson/Weitz 1986). According to transaction cost theory, a low incidence of suitable service partners is a form of market failure.

Klein et al. (1990) suggest that the assumption of a competitive market does not reflect reality in the majority of industries. In fact, the opposite is often the case, i.e. there is *small numbers bargaining*, implying few potential cooperation partners. In international markets, it can be assumed that there is significant heterogeneity in the availability of competent service companies as potential cooperation partners in the different country markets. Particularly in less developed countries, it is likely that the level of development of local service providers might result in the need to internalize AS (Hübner 1996). The following relationship is assumed:

*Hypothesis 5*. The greater the availability of suitable service partners in a foreign market, the more likely companies are to choose cooperative entry modes for their AS in that foreign market.

*Cultural Distance from the Home Market*

Cultural distance is a concept that is often and controversially discussed in the international management literature (cf. Shenkar 2001 with an overview). When providing AS, interaction between service provider and service customer occurs in what is, for the provider, a foreign cultural environment. The customer and service provider may have different expectations, attitudes, and perceptions, which can lead to considerable difficulties in the relationship (Eriksson et al. 1999). Intercultural differences become more relevant with increasing interaction intensity, since such differences can influence perceived qual-

ity and consequently customer satisfaction. Given that interaction intensity is often strong during the provision of AS, cultural distance is likely to exert a relevant influence on the internationalization of such services (Knight 1999, McLaughlin/Fitzsimmons 1996).

Cultural distance might thus result in a competitive disadvantage for the company relative to a local company, because it supposedly increases the liability of foreignness (Hymer 1976). Internalization theory highlights the potential to compensate for such a disadvantage through closer control over foreign operations. With internalized service provision, other company-specific advantages of the firm can be used more effectively, for example, specific service know-how or the company's reputation (Mahnke/Venzin 2003). When this occurs, a higher degree of control over the local AS providing unit is assumed to have a positive effect (Anderson/Gatignon 1986).

Cultural distance also increases coordination costs when cooperating with a local partner. From the perspective of transaction cost theory, cultural distance between the home country of the company and the host country adds to the degree of market failure. In addition, greater cultural distance is likely to exacerbate the differences in the understanding between the company and a local service provider of what good service provision is (Anderson/Gatignon 1986). Using transaction cost reasoning, we postulate:

*Hypothesis 6*. The greater the cultural distance between a company's home market and the host market, the more likely companies are to choose integrative entry modes for their AS in that market.

Competitive Strategy as a Firm-specific Variable

An increasing number of authors emphasize that the selection of entry mode is also affected by company strategy, particularly competitive strategy (Kogut 1988, Kim/Hwang 1992, Dunning 1993, Bello et al. 1997, Randøy/Dibrell 2002). According to Porter (1985), competitive strategy includes the strategic decision as to what competitive advantage should be used to differentiate the company from its competitors. Many competitive strategy frameworks only contain quality and price orientations as the two generic competitive strategies (Porter 1985), but other researchers have added other potential competitive advantages (e.g., Miller 1992). Recently, (manufacturer's) customer service has been mentioned more and more as a potential competitive advantage (e.g., Armistead/Clark 1991, Wilson 1999, Nordin 2005).

For a company intending to use its AS as a competitive advantage, control over this function is crucial. Vertical integration can be expected to improve service provision in the foreign market by providing more effective control over the activities and this control can offer a strategic advantage over competition (Anderson/Weitz 1986). Since a standardization of services is difficult, i.e., substantial variability in service performance quality is likely, entry mode plays a role in ensuring the consistency of service quality (Dunning 1989, Knight 1999). Since external factors are integrated into the provision of a service, the quality of the service process, and not only the service outcome is highly relevant for the assessment of service quality by the service customer. Consequently, when providing services abroad, many firms aim for as much control as possible of the service processes (Erramilli/Rao 1993).

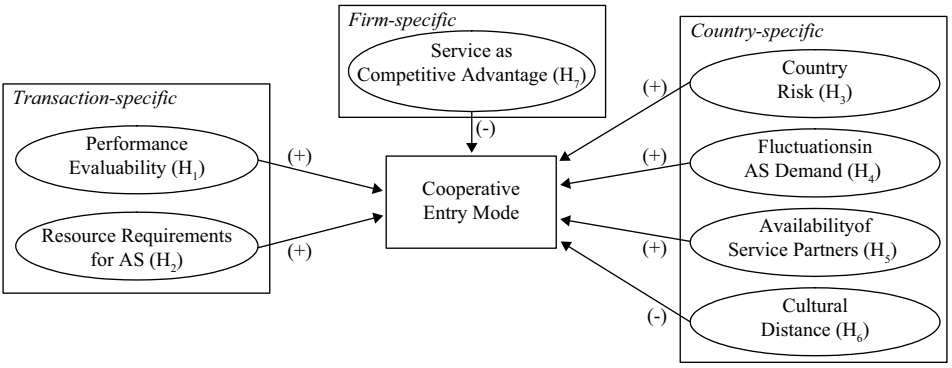
Since strategic competitive advantages need to be sustainable, it is also vital that superior performance be maintained over the long term. If service is viewed as a competitive advantage within the company strategy, then the service itself must become a core competency. Core competencies need to be developed internally, through a long-term, often path-dependent process (Dierickx/Cool 1990). A high level of competitive significance of a business activity therefore implies a high degree of company control over this activity, in order to maintain and develop core competencies. Outsourcing the activity to external partners does not seem a suitable option for core competences (Prahalad/Hamel 1990).

It can further be argued that the selection of services as a competitive advantage results in an increased need to keep AS processes confidential. If the services are to remain a sustainable advantage, the risk of dissemination must be avoided. The greater need to protect company know-how, to avoid an unwanted knowledge transfer to competitors, requires a greater degree of vertical integration, since cooperative modes are often attributed a high probability of knowledge dissemination (Tan et al. 2001). Following this reasoning, it is postulated:

*Hypothesis 7*. Companies that choose services as a competitive advantage tend towards a higher internalization of AS, that is, they are more likely to choose integrative entry modes for their AS in a foreign market.

A summary of the hypotheses is presented in Figure 2.

**Figure 2.** Study Hypotheses




## Methodology

### Sample and Measures

For the empirical analysis, individual decisions of manufacturing companies on the entry mode for AS in a single foreign market were the unit of analysis. In the questionnaire, respondents were instructed that maintenance/inspection, warranty provision, repair services, and associated provision of replacement parts were the types of activi-

ties considered as AS. Data for the investigation was collected between October 2003 and January 2004 from German companies in the two industries *machine manufacturing* and *electrical equipment, appliances & component manufacturing*. These industries were selected, because, according to industry experts, the provision of AS in a foreign market is particularly relevant in these two industries. The sample was drawn mostly from a database of the BDI (Bundesverband der Deutschen Industrie; Federation of German Industries), but also from a database of Schober International. We randomly selected 2,100 companies, and the managing director of each company was mailed a cover letter and questionnaire (by mail or e-mail). Since it was not known *ex ante* whether the companies in the data base were internationally active or whether they offered any after-sales service at all, only a low response rate was achieved, and a total of 120 questionnaires were returned (6 percent). After eliminating questionnaires with missing data on important questions and questionnaires from companies that do not carry out their AS with a permanent presence in the host country, 80 questionnaires were included in the analysis, roughly equally distributed over the sectors *machine manufacturing* and *electrical equipment*, *appliances & component manufacturing*.

In order to account for the low response rate, extensive testing for non-response bias was conducted, applying the procedure proposed by Armstrong/Overton (1977). After receipt of all questionnaires, early respondents (first third of completed and returned questionnaires) and late respondents (last third) were identified and compared. The groups did not differ significantly from one another in terms of number of employees, turnover, entry mode in foreign market or duration of engagement in foreign market. This was tested by ANOVA for the metric variables and $Chi^2$-tests for the dichotomous variables. Consequently, non-response bias, if any, should be negligible.

**Table 1.** Description of the Sample

| **Turnover** | **Percentage of Companies** | **No. of Employees** | **Percentage of Companies** |
|---|---|---|---|
| 0-10 Mio. EUR | 17.8% | 0-100 | 28.2% |
| 10-20 Mio. EUR | 8.7% | 101-200 | 27.1% |
| 20-30 Mio. EUR | 20.6% | 201-500 | 23.3% |
| 30-50 Mio. EUR | 27.9% | 501-1,000 | 10.7% |
| > 50 Mio. EUR | 25.0% | > 1,000 | 10.7% |
| **Country Market** | **Percentage of Companies** | **Share of Company Sales in this Country Market** | **Percentage of Companies** |
| Western Europe | 55.2% | 0-5 Percent | 32.1% |
| Eastern Europe | 5.9% | 5.1-10 Percent | 33.3% |
| Northern America | 10.7% | 10.1-20 Percent | 14.1% |
| Asia | 25.2% | 20.1-50 Percent | 19.2% |
| Others | 3.0% | > 50 Percent | 1.3% |

As shown in Table 1, the observations cover different sizes of companies with a very heterogeneous relevance of the foreign market in question (measured by the share of sales in that market). Geographically, the majority of foreign units are located in Western

European markets, but Asian and Northern American countries are also included in the sample with fairly high percentages.

In Table 2, a complete list of the measures is reported. A detailed explanation of the measurement scales appears in the appendix. The reliability of multi-item scales was assessed using Cronbach's Alpha. When reliability was indicated, items were aggregated separately with a principle component analysis (PCA) for each construct. Each PCA yielded one factor.

**Table 2.** Measures and Reliability Assessment

| Variable | No. of Items | Cronbach's Alpha | Average Variance Extracted | Remarks |
|---|---|---|---|---|
| Entry mode | 1 | - | - | Dummy: cooperative mode = 1, integrative mode = 0 |
| Performance evaluability | 2 | 0.656 | 74.3% | |
| Resource requirements | 3 | 0.807 | 72.3% | |
| Country risk | 1 | - | - | 5-point scale, high risk=5 |
| Fluctuation in AS demand | 2 | 0.797 | 83.1% | |
| Availability of service partners | 3 | 0.765 | 68.4% | |
| Cultural distance | 2 | 0.845 | 86.6% | |
| Service most important competitive advantage? | 1 | - | - | Dummy, yes = 1, no = 0 |
| Asset specificity | 3 | 0.694 | 62.4% | |
| Satisfaction with chosen entry mode | 1 | - | - | 5-point scale, high satisfaction = 5 |
| Planned changes in entry mode? | 1 | - | - | Dummy, yes = 1, no = 0 |

For scales with three or less items and in the early stages of a research project, the threshold value for Cronbach's Alpha accepted in literature is .5 or .6 (Churchill 1979, p. 68, drawing on Nunnally 1978, Kim/Hwang 1992, p. 39). For this study, even the lowest Alpha is close to .7.

## Data Analysis

The dependent variable in this analysis is the entry mode for AS-provision in the foreign market, a binary measure. For the hypotheses testing, logistic regression is utilized to estimate the effects. This method has frequently been employed in previous studies in order to analyze international market entry mode choices (e.g., Kogut/Singh 1988, Kim/Hwang 1992, Erramilli/Rao 1993, Brouthers/Nakos 2004). Prior to executing the logistic regression, we examined a correlation matrix for possible signs of multicollinearity, but none of the coefficients appeared to be large enough to warrant concerns of multicollinearity.

The binary logistic regression model analyzes the influence of the independent variables on the probability that a company will choose a cooperative entry mode for its AS over an integrative, full-control mode. The probability of choosing a cooperative mode is calculated as

$$p = \frac{1}{1+e^{-z}} \text{ with } z = b_1 \cdot x_1 + b_2 \cdot x_2 + \ldots + b_n \cdot x_n + a,$$

where $b_i$ are the regression coefficients to be estimated, $x_i$ are the explanatory variables and $a$ the intercept.

The efficacy of the model is expressed in a $Chi^2$-value which measures the difference between the model fit for a null model, including only the intercept, and the model to be tested. A significant value indicates that the goodness of fit for the current model, including the independent variables, is improved compared to the null model. The predictive value of the model can be evaluated by the correct classification rate, compared to the random selection and by Nagelkerke's $r^2$.

## Findings and Discussion

The hypotheses tests are based on Model 1 (Table 3) which uses the entry mode as the dependent variable, and the postulated influence factors as the independent variables. The fit and the statistical results of the model estimation are reported in Table 3.

With a model $Chi^2$-value of 86.800, the model is statistically highly significant (7 degrees of freedom, p = 0.000). This indicates that the independent variables, taken together, discriminate well between integrative and cooperative mode choice. Nagelkerke's $r^2$ of 0.884 indicates that the variables considered here almost fully explain the varia-

**Table 3.** Logistic Regression Results

| **n = 80** | | **Model 1** | | **Model 2 (incl. interaction term)** | |
|---|---|---|---|---|---|
| **Variables** | **Expected Sign** | **Parameter Estimate B** | **Wald's-t-value** | **Parameter Estimate B** | **Wald's-t-value** |
| Performance evaluability | + | 3.049 | 4.115* | 4.074 | 3.988* |
| Resource requirements | + | -2.505 | 3.653* | -7.614 | 3.672* |
| Country risk | + | 8.631 | 4.912* | 10.981 | 5.492** |
| Fluctuation in AS demand | + | 2.853 | 4.253* | 3.399 | 3.209* |
| Availability of service partners | + | 6.174 | 4.629* | 7.931 | 3.836* |
| Cultural distance | - | -3.762 | 4.481* | -4.362 | 5.299** |
| Service as competitive advantage | - | -2.592 | 3.604* | -3.034 | 4.344* |
| Resource requirements x country risk | + | - | - | 3.079 | 2.988* |
| Intercept | | - 14.070 | 5.340* | -17.260 | 5.823** |
| | | Model Statistics (df = 7) | | Model Statistics (df = 8) | |
| | | $\chi^2 = 86.800$ | | $\chi^2 = 91.985$ | |
| | | p = 0.000 | | p = 0.000 | |
| | | Nagelkerke's $r^2 = 0.884$ | | Nagelkerke's $r^2 = 0.912$ | |
| | | Correct Classification: 92.5% | | Correct Classification: 93.8% | |
| | | -2 Log Likelihood: 23.654 | | -2 Log Likelihood: 18.558 | |

** p < 0.05; ** p < 0.01 (one-tailed)*

tion in the choice of entry mode for the AS of the companies in their foreign markets. In addition, the model fit can be considered as very good, since the model correctly classifies 92.5 percent of the control mode choices, a substantial improvement over the chance rate of 50.3 percent.

Before proceeding with further discussion and interpretation of the findings, it should be noted that the results in Table 3 are descriptive findings. That is, the coefficients reveal the criteria that are used to select an entry mode, as in most previous studies. Thus, it is not evident whether these results can be translated into normative recommendations (Brouthers 2002). An additional analysis is therefore conducted, with respect to the satisfaction of companies with their chosen entry mode.

**Table 4.** Analysis of Satisfaction

| | Entry Mode | | | F-value | Sign. of F-value |
|---|---|---|---|---|---|
| | cooperative (n = 37) | integrative (n = 43) | total (n = 80) | | |
| Satisfaction with Entry Mode | 3.97 | 4.02 | 4.00 | 0.057 | 0.812 |

Table 4 shows that the surveyed companies are largely satisfied with the entry mode for their AS, regardless of whether they have chosen a cooperative or an integrative entry mode for their AS. In addition, over 86 percent of companies are not planning to change their entry mode within the next few years. Consequently, if certain influence factors on the mode choice are found in this investigation, normative statements can be derived as well (with the obvious caution), since the chosen entry mode is still considered to be adequate by the companies under given conditions.

Transaction-specific Variable*s*

$H_1$ suggests that companies are less likely to use a cooperative entry mode for their AS in a foreign market when the service performance becomes more difficult to evaluate. This influence factor was investigated, because the problem of assessing performance quality is generally considered to be more severe for services than for goods. The logistic regression supports Hypothesis $H_1$. The significant coefficient is in accordance with the postulated effect. The more difficult the quality assessment, the more likely a company is to choose an integrative mode for its AS in a foreign market.

As the significant regression coefficient indicates, resource requirements influence the choice of entry mode, but, in contrast to hypothesis $H_2$, the regression coefficient is negative. Based on our analysis, it appears that vertical integration is indeed more likely when resource requirements are higher. Hypothesis $H_2$ must thus be rejected. Previous studies have also yielded this result on service entry mode, but have been unable to provide a coherent theoretical explanation. Erramilli/Rao (1993) suggest the possibility of a quadratic relationship between resource requirements and preferences for an integrative entry mode. That is, medium level of resource requirements would increase the likelihood of cooperative modes, whereas low and high levels would lead to an integrative mode. The data in our study is therefore also investigated with respect to

such a relationship. After classifying the variable resource requirements into 5 groups, the entry mode choice of the groups was compared. However, this did not provide unambiguous support for a U-form relationship either. One explanation for the negative relationship could be that the positive influence of resource requirements on the choice of a cooperative entry mode implied by transaction cost theory is superimposed by another, negative effect. It is possible that high levels of resource requirements increase company motivation to exert a greater degree of control over their foreign operations, so that they prefer vertical integration. Klein et al. (1990) and Erramilli and D'Souza (1995) suggest that vertical integration increases the level of market knowledge available to companies. With increasing market knowledge and the improved control provided by vertical integration, a company can react faster to market changes. This, in turn, should increase the protection of the company's greater investment in the case of higher resource requirements.

A more detailed analysis of the data shows that the cost of providing AS in a foreign market is not strongly influenced by equipment and machinery costs, but mainly by investment in human resources. Therefore, the decision in favor of integrative modes when resource requirements are high, could indicate the level of effort exerted by a company to protect its investment in those human resources. Since resources bound up in employees are generally acknowledged to be highly mobile, this might represent a substantial risk of loss.

Another explanation for the negative relationship between resource requirements and the choice of cooperative arrangements may be that, where there are greater resource requirements, the period a company is committed to a contractual partnership is likely to be relatively long. In order to ensure that the specific investment of a foreign partner reaches amortization, the uncertainty of the transaction is frequently reduced by longer-term contracts. For the manufacturing company, the general risk and loss of flexibility associated with such a long-term contract might become very similar to that of an integrative arrangement. If that were the case, an integrative mode might be preferred, due to better control at the same cost (Anderson/Gatignon 1986).

### Country-specific Variables

The hypothesized effects of country-specific determinants are supported fully by the model's estimations. As predicted by Hypothesis $H_3$, the coefficient for country risk is significant and positive. Thus, $H_3$ is confirmed. The greater the country risk, the greater the likelihood that a company will sacrifice a high degree of control and instead, use a cooperative mode. In the study, country risk exerts the greatest influence on choice of entry mode. This is emphasized by the highest value of the Wald statistic in Model 1.

Since country risk and resource requirements might potentially interact with one another, the effect of resource requirements of the AS is investigated further in the present study. The direct influence of resource requirements is negative (as discussed above), i.e., when resource requirements are greater, there is a tendency for companies to choose integrative modes. The proposition that high resource requirements would lead to a cooperative mode was based primarily on the assumption that companies try to reduce investment risk in uncertain foreign markets. However, as a more detailed

analysis of the sample reveals, the sample contains only a few incidences of operations in high risk countries. The overall mean for country risk is 1.35 (on a 5-point scale) which is thus in the "very low" risk category. Only 5 percent of the cases concern foreign markets associated with medium or high risk. The observed effect of resource requirements could therefore be attributed to the predominance of a low level of country risk in the survey sample. In order to investigate this possibility, a second model is computed (Table 3, Model 2). In this model, the main effects are supplemented by an interaction term (resource requirements x country risk). The $Chi^2$ of the logistic regression improves to 91.985 through the inclusion of the new term (for a single degree of freedom difference, the improvement is significant at a level of 5 percent). With a positive and significant coefficient, an interaction effect is found in the sample. This indicates that resource requirements *do* have a positive effect on the use of cooperative modes in the case of high country risk. However in the case of low country risk, higher resource requirements lead companies to increase their local control and to increase their willingness to bear the investment costs without involving cooperation partners. Such an interaction effect was also discussed and supported empirically by Erramilli/D'Souza (1995). Therefore, while $H_2$ must be rejected, the level of resources required still has to be considered as an influence factor on mode choice, but only in high-risk situations.

The positive and significant coefficient for fluctuation in AS demand provides support for Hypothesis H4. The more constant the AS demand and the greater the frequency of demand, the greater the vertical integration of service provision in foreign markets. If demand is generally low or infrequent, companies tend to resort to cooperative modes, because capacity adjustment (among other things) is then easier for local cooperation partners.

Consistent with hypothesis H5, the results suggest that the availability of service providers exerts a substantial effect on the decision as to whether or not to enter cooperative arrangements. According to the surveyed companies, total unavailability of service providers is not a real problem in most cases. But in many foreign markets, it is only a very low number of competent service providers that is available as cooperation partner. Accordingly, externalization would by no means be impossible, but it would be associated with high transaction costs.

A final country-specific factor under consideration is cultural distance. In this context, the empirical data fully confirms hypothesis $H_6$. The hypothesized negative influence of cultural distance on the use of cooperative modes is supported by the sample data.

### Competitive Strategy

With regard to competitive strategy, the significant negative coefficient supports the predicted relationship and thus, Hypothesis $H_7$. Service-orientated companies, or, more precisely, companies that aim to establish services as their main competitive advantage, enter cooperative, shared-control modes in significantly fewer instances and instead tend to integrate AS vertically in foreign markets. The greater control afforded by internalized activities is probably important for this relationship, because such aspects as long-term

maintenance and the further development of core competencies can be controlled far more effectively than in the case of externalization.

## Asset Specificity

Asset specificity is expected to have a fundamental effect on entry mode choice, primarily due to transaction cost theory considerations (Williams 1985). Many empirical studies have revealed a positive effect of specificity on vertical integration (Geyskens et al. 2006). However, since the present investigation is based on a survey of manufacturers of machines and electrical equipment, very low variance for this variable in the sample was expected *ex ante* and therefore, no hypothesis was formulated. However, the effect of asset specificity is investigated in a separate step.

In fact, the survey reveals that the asset specificity of AS in the sample is very high overall. A total of 77.7 percent of respondents emphasizes that their service employees require a (very) high level of company-specific knowledge and even 80.6 percent confirm that the knowledge needed to provide their AS can only be acquired by long-term experience with the company.

Due to the low variance of this variable (expected from preliminary expert interviews), a test for a direct and/or moderated effect is not conducted. Instead, the variable asset specificity is dichotomized; the surveyed cases are classified as "high specificity" or "low specificity" by means of a median split. Differences in the mean values of different independent variables are then compared within each of the two groups separately (with entry mode as a second grouping variable). Consistent with transaction cost theory, the comparison displayed in Table 5 indicates that asset specificity is an important determinant in choosing an entry mode, even if the results should be interpreted with caution, given that, in some cells, there are only a few cases.

When assets are highly specific (right columns in Table 5), companies tend to choose a strong vertical integration for their AS. Twenty-seven companies (out of 41, that is, 66

**Table 5.** Comparison of Means for High and Low Asset Specificity

| | Low Specificity (n = 39) | | | | High Specificity (n = 41) | | | |
|---|---|---|---|---|---|---|---|---|
| | Entry Mode | | | | Entry Mode | | | |
| | cooperative (n = 23) | integrative (n = 16) | F-value | Sign. of F-value | cooperative (n = 14) | integrative (n = 27) | F-value | Sign. of F-value |
| Performance evaluability | 0.79 | -0.48 | 19.771 | 0.000 | 0.48 | -0.94 | 17.128 | 0.000 |
| Resource requirements | -0.72 | 0.12 | 8.040 | 0.007 | 0.15 | 0.50 | 1.709 | 0.199 |
| Country risk | 1.57 | 1.13 | 7.196 | 0.011 | 1.71 | 1.11 | 6.078 | 0.018 |
| Fluctuation in AS demand | 0.77 | -0.41 | 18.603 | 0.000 | 0.07 | -0.84 | 6.941 | 0.012 |
| Availability of service partners | 1.05 | -0.47 | 43.469 | 0.000 | 0.50 | -0.63 | 14.591 | 0.000 |
| Cultural distance | 0.29 | -0.20 | 2.757 | 0.105 | 0.00 | -0.23 | 2.390 | 0.130 |

percent) choose integrative modes in the case of high specificity, whereas only 16 companies (out of 39, that is 41 percent) use integrative modes in the event of low specificity.

The relationship between the independent variables and choice of entry mode appears to be stronger when the asset specificity of AS is low. The means of the variables differ considerably more between the entry modes when there is high specificity of AS (i.e., in the left columns). This becomes evident by comparing the F-values, as the values are higher for each individual variable in the case of low specificity. This confirms that under low specificity, the option of cooperative entry modes for AS provision is fully available to the companies, and only then do other considerations apart from transaction costs influence the decision, whereas in the case of high specificity, the integrative arrangement is the most commonly selected option (Bello et al. 1997). Hence, when specificity is high, reducing transaction costs becomes the dominant concern in the choice of entry mode and the other variables considered have a lower influence on the decision.

## Implications and Conclusions

Most investigations of market entry modes have focused on manufacturing companies, and within this group of companies, on the manufacturing and distribution activities. Only a small proportion of the overall body of research has dealt with services. To the best of the authors' knowledge, there is almost no research on entry modes for customer services, especially after-sales service in foreign markets.

Our study focused on the entry mode decision for international AS provision. The primary research question dealt with the influence factors on this decision. The very satisfactory model statistics confirm that the variables under investigation can indeed be used to explain this entry mode decision. In addition, the variance in entry modes can be explained by the analyzed variables to a very high degree. Since the companies in our sample are highly satisfied with their chosen entry mode and, in the majority of cases, they do not intend to change the chosen mode within the next few years, the empirical results can also be used (with caution!) to derive normative managerial implications.

In our study, we stressed the impact of a number of variables, taking a detailed look at transaction-specific and country-specific variables, as well as one firm-specific determinant. We also focused particularly on variables which have seldom been included in previous research.

By far the strongest influence on the entry mode decision is exerted by two country-specific variables. High country risk leads to a preference for cooperative entry modes. This finding parallels the effect that country risk has on manufacturing operations. The result is thus not surprising, but has not yet been investigated empirically for international AS. There is also a very close relationship with the entry mode decision for the availability of service partners in the host market. While the previous literature has mentioned the phenomenon of a complete lack of adequate partners, we were able to demonstrate the need for a larger number of suitable partners to form an adequate supplier market. With a low number of potential partners, cooperation is still possible in principal, but would lead to very high monitoring costs. Only in the case of many potential partners, does market pressure serve as an efficient control mechanism and reduce transaction costs sufficiently to promote the cooperative option.

A more complicated influence is exerted by cultural distance. It was found that, when there is a high cultural distance between host and home country, companies are more likely to provide their AS through wholly-owned subsidiaries. Companies are better able to overcome the disadvantage of culturally different country markets (i.e., liability of foreignness), when they can fully exploit their monopolistic advantages. This is likely to be facilitated by integrative entry modes. Also, cultural differences between a company and its potential service partners in a foreign market would increase the transaction cost of cooperative modes, so that vertical integration can also be recommended from a transaction cost perspective.

Another country-specific influence factor is rooted heavily in the specific characteristics of a service. Fluctuations in demand are particularly relevant to services. Asynchronous production and consumption could lead to idle-time costs. The possibility of adjusting after-sales service capacity within a company is limited in an international context. Based on the arguments offered by the outsourcing literature, we have shown that strongly fluctuating demand leads to the choice of cooperative entry modes for AS, due to production cost considerations.

The results with respect to these four country-specific variables implies the recommendation that companies use an entry mode choice for their after-sales service activities that is tailored to the needs of the specific host country. While companies might be tempted to use similar entry mode strategies for different target markets, the most important influence factors in our study are heterogeneous between different countries and this should lead companies to a differentiated approach. While this consideration has been proposed in the context of multinational companies in general (e.g., Ghoshal/Nohria 1989), we have supported its validity with respect to AS.

Within the transaction-specific group of influence factors, the difficulty of assessing the performance of AS operations was highlighted as a factor with a particularly strong effect. The high percentage of credence and experience qualities that often characterize AS reduces the likelihood of a cooperative entry mode. From the point of view of a company and its relationship with potential local service providers, as well as its relationship to its customers, vertical integration appears to be advisable when the evaluability of service quality is low. In a similar manner to the evaluability of service quality, we identified an influence of asset specificity. Since the results correspond strongly with transaction cost theory, we do not comment further on the findings regarding that variable. Both results emphasize the need to look precisely into the properties of the specific activity to be carried out in the foreign market, as a basis for the entry mode choice. However, while transaction cost theory focuses solely on this type of variable, our results show that they are of secondary importance, compared to country-specific influences.

Further studies into the effect of resource requirements for a service seem necessary, given that the results published to date are ambiguous. Indeed, the expected influence could not be confirmed by this study either. A clear explanation for this discrepancy is lacking, although the interaction effect with country risk, which was demonstrated in our study, indicates the area which future studies could investigate. If country risk is moderate or low, resource requirements might be of little, if any, concern for the companies in their entry mode decision. However, we have shown that in the case of high country risk, a substantial level of resources required for the AS leads to a cooperative entry mode. Yet,

since our study only includes a very small number of high risk countries, our results can only be seen as exploratory. Future studies should use samples with host countries which vary substantially from one another in terms of country risk, so as to further investigate the combined influence of country risk and resource requirements on the entry mode choice.

Finally, we analyzed the effect of firm strategy on the AS entry mode choice. Dunning (1993) and others have already called for more intensive research on companies' strategic motives so as to gain a more profound understanding of entry mode decisions. Kogut (1988) argued that a company might even accept higher transaction costs if the entry mode supports its competitive positioning, relative to other companies. Our results confirm the notion that companies which are more service-oriented tend to carry out their international AS operations themselves. This facilitates tighter control of after-sales activities. We thus advise companies to internalize their AS activities in foreign markets, if they intend to leverage those activities as a competitive advantage.

Therefore, at the industry level, we would expect a trend towards a vertical integration of AS activities which are still often provided by local service-partners. Such a trend is likely to be caused by the steadily increasing importance of service as competitive advantage.

Our research demonstrates to researchers and practitioners that recommendations for designing entry modes should not be driven by transaction cost economics alone, but that other theories also need to be considered (Bello et al. 1997, Brouthers 2002). This entails investigating additional determinants which cannot be explained by transaction costs. The company-strategy approach and resource-based view seem to be promising perspectives for further research. In our study, host country characteristics, production costs and strategic considerations were important influence factors. With respect to further research, confirming the influence of a company's competitive strategy on the entry mode decision is of particular interest, since it also confirms the influence of strategic motives. We selected one particular strategic variable that has a rather obvious connection to the provision of AS. However, future research should include further elements of strategy and of company motives, so as to add to our knowledge of strategy as a firm-specific influence factor on entry mode choice (Pla-Barber 2001).

## Endnotes

1 Customers are not necessarily prepared to pay for such customer services, which increases the necessity to provide them in as cost efficient a manner as possible. The question of vertical integration of this function becomes even more relevant in the context of this argument (Loomba 1998).

2 Based on transaction cost reasoning, Klein et al. (1990) postulate the converse association, i.e., high environmental volatility leads to vertical integration, as there will be higher monitoring costs for external partners. Their empirical results do not confirm this relationship unambiguously (p. 204). In the discussion of their hypothesis, they do include the remark (p. 200) that risk caused by volatile market conditions increases the requirement for flexibility. They assume, however, that transaction cost considerations over-compensate for this effect.

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## Appendix: Measurement

Based on several investigations of market-entry strategy (e.g., Erramilli/Rao 1993, Erramilli/D'Souza 1995), information on the entry mode for the AS was acquired through a nominal question (a list of six possible modes and one open-ended response option were given to respondents) and then classified in a dichotomous variable, equaling 0 for integrative entry modes and 1 for cooperative entry modes.

The *performance evaluability* of the AS was captured in a 2-item scale following Dunning (1989), Hübner (1996), and Anderson and Weitz (1986). One question asked about the possibility of defining and monitoring quality standards ("*It is easy to define quality standards for our technical after-sales service and to monitor compliance with these standards*", on a scale from 1 "don't agree at all with this statement" to 5 "fully agree with this statement"). One question captured the variability of service quality ("*The level of service quality of our after-sales service can be kept constant, i.e., the after-sales service can be carried out uniformly well each time*.", scale from 1 "don't agree at all with this statement" to 5 "fully agree with this statement").

The *resource requirements* for the AS were measured with a 3-item scale based on Klein et al. (1990). Two items enquired about the absolute level of investment required for equipment and machinery as well as for service personnel and a third tested the level of fixed assets for the AS.

In order to measure the *asset specificity* of AS, three items were based on Dibbern et al. (2001) and Klein et al. (1990). Respondents were asked to what extent transaction-specific physical assets (e.g., customized machinery) are necessary to carry out the AS, to what extent idiosyncratic knowledge of the firm's activities is necessary and to what extent this can be considered as "tacit knowledge", which is not easily transferred.

In order to capture the *competitive strategy*, from four possible competitive advantages in the capital goods industry (according to Porter 1985, Miller 1992, and Armistead and Clark 1991), respondents were asked to choose the most important competitive advantage for their company. The variable was then dichotomized as follows: If service was selected as the most important competitive advantage, it was recorded as a 1 and if another competitive advantage was chosen, it was recorded as 0.

Host *country risk* was based on the "Aon Risk Index". This is a country risk index developed by the Aon Corporation (an insurance and reinsurance broker, the worldwide largest company in risk management). The degree of country risk was scaled from 1 to 5, where 1 represents low risk and 5 high risk.

The *fluctuation in AS demand* was measured by means of two items (from Klassen/Rohleder 2001), which dealt with the frequency and constancy of demand.

The *availability* of potential *service partners* was measured with a 3-item scale based on Gruhler (1994) and Anderson and Weitz (1986). The items focused on the availability of service partners with adequate competence, their willingness to become involved in cooperation, and the reliability of the local service providers.

*Cultural distance* was based on two indices developed from a procedure by Kogut and Singh (1988). An index was created using Hofstede's cultural dimensions (Hofstede 1991) which computed the distance between Germany (as home country) and the host country as follows:

$$CD_j = \left[ \sum_{i=1}^{n} \frac{\left(I_{ij} - I_{iD}\right)^2}{V_i} \right] \Big/ n$$

where j stands for the host country, $I_{ij}$ stands for the index for the i-th cultural dimension for the host country, $I_{iD}$ for the index for the i-th cultural dimension for Germany, $V_i$ the variance of the index of the i-th cultural dimension, and $CD_j$ is the cultural distance of the host country from Germany. Smaller values indicated cultural similarity with Germany. n is the number of cultural dimensions (mainly because data on the long-term orientation of a country, i.e., Hofstede's 5$^{th}$ dimension, were only available for a few countries). As not all Hofstedian dimensions were available for all countries, the same procedure was carried out using Schwartz's dimensions (1999, cf. also Steenkamp 2001) and both indices used as indicators of the construct "cultural distance". Note that the perceived cultural distance of managers in a company making the decision (psychic distance) can be different to the "objective" cultural distance. Following other investigations and in order to keep the questionnaire within a reasonable length, the "objective" cultural distance was taken as a proxy for the psychic distance, which is the variable on which the hypothesis is really based.

In addition, a company's *satisfaction* with its chosen control mode for its AS was captured (in one item) and whether a *change of mode* was *planned* for the near future.