The Impact of Incomplete Information on the Use of Marketing Research Intelligence in International Service Settings

An Experimental Study

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Unfamiliarity with foreign business environments and cultures will result in higher levels of uncertainty, especially for international service organizations. To effectively deal with international uncertainty, it seems crucial to have access to information that is as complete as possible. In practice, however, information is hardly ever complete. To date, little is known about the impact of incomplete information on the decision-making processes in international service firms. This article examines the effects of incomplete information on the evaluation and use of marketing research intelligence. The results of an experimental study suggest that decision makers in international service firms are unlikely to ignore missing information. Instead, they tend to adopt a strategy of inferential, assumption-based reasoning. Furthermore, the absence of information relevant to decision making in international services marketing has distinct evaluative consequences in terms of satisfaction, trust, and intention to use information.

During the past decade, the services sector has been subjected to considerable growth, both on national and international levels. It has been identified as the fastest growing area of international trade (Bradley 1995; Terpstra and Sarathy 1993). Globalization has become an effective competitive strategy for service firms due to a combination of structural, market, and technological changes (Segal-Horn 1994). Stagnant domestic markets and growth opportunities across geographical borders cause service firms to broaden their business horizons (Bradley 1999).

It is generally agreed on that services can be characterized by higher perceived purchase risk in comparison to goods (Bateson 1995). An important reason for this pertains to the fact that services are hard to standardize (Guselman 1981). Other reasons are limited information availability for consumers due to higher levels of experience and credence attributes of services (Parasuraman, Zeithaml, and Berry 1985) and involvement of customers in the production process of services (Bateson 1995). In comparison to national services, the associated purchase
risk is likely to be even higher for foreign services due to difficulties with standardizing services internationally and higher unfamiliarity with the service or its provider. In total, this will result in comparatively high levels of international uncertainty for service firms.

Furthermore, when engaging in international activities, service organizations are facing the challenges and barriers associated with internationalization strategies (Cowell 1993). They come into contact with new business environments as well as unfamiliar cultures. Because culture is an integral element of the service encounter (Bradley 1999), inevitably this will result in higher degrees of uncertainty. Cultural customs and practices are highly determinant for customers’ service expectations, perceptions, and ultimately evaluations. A service firm’s ability to effectively deal with culture-based differences in expectations, perceptions, and evaluations as well as in foreign customs and practices will determine its international success or failure.

In dealing with international uncertainty, service firms are continuously in need of marketing information. For the development of successful international marketing strategies, detailed market information is a prerequisite (Craig and Douglas 2000). Among the most common ways of obtaining such information is conducting international marketing research. According to Newman (1962), marketing research can supplement the intuition and assumptions of the marketing decision maker. However, “one of the un-failing realities of marketing problems is that information about the situation is often incomplete and of questionable accuracy” (Nylen 1990, p. 8). Consequently, in addition to uncertainty inherent to international environments, decision makers in service firms will be confronted with informational uncertainty as well.

The purpose of the present study is to gain more insight into the issue of incomplete information and its consequences for decision making in international service settings. We aim at investigating what the impact will be of incomplete marketing research information (a) on the way in which decision makers in international service organizations handle this lack in information, (b) how they will evaluate the intelligence that is available, and (c) whether they will use it for decision-making purposes. Insight in the consequences of incomplete information enables providers of marketing intelligence, such as marketing research agencies or internal research departments, to better understand the underlying processes and the effects of informational uncertainty. Information management policies can then be developed that ultimately help decision makers in service organizations to more effectively deal with uncertainty.

The article is structured as follows. First, we will provide a brief synthesis of the extant literature on decision-making uncertainty and missing information and more explicitly discuss their role in (services) marketing decision making. Next, we will address two distinct informational topics of decision-making relevance for international service settings: (a) information on the cross-national comparability of research data and (b) information on the financial accountability of international service investments. The first type of information aims at reducing environmental, culture-based uncertainty; the latter serves to decrease strategic uncertainty of international service activities. Subsequently, we will formulate our research hypotheses. After having reported on an experimental study designed to test our hypotheses, we conclude the article with a discussion of the results and present a number of theoretical and managerial implications.

**UNCERTAINTY, MISSING INFORMATION, AND MARKETING DECISION MAKING**

Uncertainty is a well-studied phenomenon in academic decision-making literature. This originates from the fact that it is quite influential on effective decision-making practices (Kahneman, Slovic, and Tversky 1982; McCaskey 1986; Orasanu and Connolly 1993; Thompson 1967). When reviewing the stream of literature on uncertainty, it soon becomes clear that there is no unambiguous definition of this concept available. Lipshitz and Strauss (1997) integrate existing definitions and provide a quite comprehensive conceptualization of uncertainty. These authors identify three types of uncertainty: (a) incomplete information, (b) inadequate understanding of information due to conflicting meanings, and (c) undifferentiated informational alternatives that are equally positive or negative.

Decision makers have been found to cope differently with these distinct types of uncertainty (Lipshitz and Strauss 1997). One of the most used ways of coping with incomplete information is so-called assumption-based reasoning, that is, filling gaps in knowledge by making assumptions through extrapolation on the basis of available information (Cohen 1989). Reducing uncertainty, for example by collecting additional information, is used mostly to deal with an inadequate understanding of information. Finally, undifferentiated alternatives are handled by weighing the pros and cons of each alternative. An additional way of dealing with uncertainty is by suppressing or denying it. This particular strategy was found to be used the least by decision makers.

In the present study, the focus is on the impact of uncertainty caused by having incomplete information in international service settings. Despite the importance of complete information for reducing international uncertainty, the consequences of information incompleteness represent an underdeveloped area in the international services marketing literature. To date, research on the effects of missing information on decision making has featured most prominently
in organizational behavior sciences, human decision processes, and applied psychology literature (e.g., Jagacinski 1991; Slovic and MacPhillamy 1974; Yamagishi and Hill 1981; Yates, Jagacinski, and Faber 1978).

In these areas, research mainly focuses on how decision makers form evaluative judgments about alternatives that vary in the amount of information by looking at how these decision makers combine and integrate existing information and how they deal with missing information. For instance, in the context of personnel decisions, Jagacinski (1991) demonstrated that decision makers did not ignore important missing information about job candidates but predicted the missing information from available information, then they make an evaluation about the candidate and penalize the candidates for whom this information was missing.

In marketing-related areas, the issue of missing information has been studied especially in relation to consumer behavior toward goods. Several studies investigated how consumers handle missing information when having to form evaluations about products and making purchase decisions. Most of these studies support the formal inference-processing model, finding its essence in the earlier mentioned principle of assumption-based reasoning (Ford and Smith 1987; Gardial and Biehal 1987; Johnson 1989; Johnson and Levin 1985). The model predicts that consumers make inferences on a product’s unstated attributes on the basis of stated attributes that serve as informative cues. The presented and inferred attributes are then integrated to form an overall evaluation, preference, or choice (Lim and Kim 1992).

With respect to this evaluation, Johnson and Levin (1985) conclude that the greater the amount of missing information, the less favorable a product’s evaluation. As compensation for the missing information, consumers might try to collect additional information. However, “the ability to form accurate inferences, even with considerable mental effort, can reduce the total effort associated with the choice process by eliminating or significantly reducing the search for the missing information” (Ross and Creyer 1992, p. 15). This illustrates that in many marketing decision-making situations, inference formation is an essential strategy in the process of forming evaluations and that it represents an interesting field for further academic investigation.

The question of whether findings from the various research domains, including the product literature, could be extended to the international services setting has been left unanswered. Incomplete information will function as an “uncertainty multiplier effect,” implying that it will increase the uncertainty that is inherent to international services. Before examining the effects of incomplete information in international service settings, however, the question should be raised of what matters are important for adequate decision making in international service management. In the next section, two such informational topics will be introduced, on the basis of which our research hypotheses will be formulated.

**INFORMATIONAL TOPICS FOR DECISION MAKING IN INTERNATIONAL SERVICE SETTINGS**

Different types of information tend to differ in degree of decision-making relevance across business settings. In this article, the focus will be on two informational topics that are likely to be of relevance for decision makers in an international service setting: information on cross-national comparability of research data and information on financial accountability of international service investments.

**Information on Cross-National Comparability of Research Data**

The impact of a country’s culture on the international marketing of services is quite substantial. For services, cultural differentiation will be one of the most important causes of international uncertainty. As Dahlinger (1991) states, “barriers to the international marketing of services are due largely to the close cultural relationships between a society and the services offered in that society” (p. 7). Due to the high levels of heterogeneity and subjectivity, services are hard to standardize (Rust, Zahorik, and Keiningham 1996). This holds for national services but even more for international service activities. A country’s culture is an integral element of many services (Bradley 1999), and cultural factors form a major obstacle to standardization (Buzzell 1968). Services are often strongly culture bound, and their demand is influenced by a country’s society (Bradley 1999). Therefore, variations in service quality performance perceptions can be partially culturally determined. Service issues important in one society, for example the way in which a service is provided, may be found to be less relevant in another society in which it might be the outcome of the service process that counts.

In addition, organizations crossing national borders will be confronted with “differences in economic wealth and levels of literacy, coupled with linguistic heterogeneity and cultural diversity in marketing environments throughout the world” (Douglas and Craig 1983, p. 11). Of the entire service delivery process, the service encounter is the stage in which a society’s culture is likely to be most influential. It is at this stage when the interaction between the international service organization and its foreign customers takes place and the organization is directly confronted with local customer preferences and practices.

Higher levels of unfamiliarity with foreign markets combined with the cultural diversity across countries cre-
ate a need for reliable marketing research information. However, due to the same cultural differentiation creating this need, difficulties will arise when comparing research data cross nationally. Information often might not be readily comparable across countries. Important service concepts may be understood differently across countries, or participants from whom the information is being obtained might react differently to measures used for data collection. Theoretically, these problems form serious threats to both construct and measure equivalence, respectively referring to cross-cultural equivalence in constructs to be studied and equivalence in the operational measures in cross-cultural settings (Craig and Douglas 2000). For international marketing research data to be comparable across countries, equivalence both in content as well as methodology is of crucial importance (Craig and Douglas 2000; Dawar and Parker 1994). Equivalent and standardized measures should be developed, although these may entail some loss of precision and accuracy in any given culture and country (Elder 1976; Przeworski and Teune 1970).

Information that is comparable across nationally reduces the environmental uncertainty and can be used validly and reliably for the purpose of decision making in international service settings. For establishing equivalence, marketing researchers must first carefully design appropriate research methods. Furthermore, analysis techniques must be applied to formally check the level of equivalence in multi-country data (e.g., Mullen 1995; Styles 1998). Decision makers are likely to feel more comfortable with their decisions when being convinced that thorough attention has been paid to the international validity of research information. Therefore, providers of international marketing research information should pay explicit attention to the level to which cross-national equivalence in the data has been established and checked when providing intelligence to decision makers in international service organizations.

Information on Financial Accountability of International Service Investments

The second informational topic relates to the financial accountability of international service investments. Investments in service activities and service quality are usually made with the objective of improving performance and customer satisfaction. Investing in customer satisfaction is important to business organizations because “customer satisfaction drives future profitability” (Anderson and Fornell 1994, p. 13). In the goods industry, the relationship between marketing investments and business performance has been studied extensively. One of the most well-known examples is the Profit Impact of Marketing Strategies (PIMS) program sponsored by the Strategic Planning Institute (cf. Buzzell and Gale 1987). Some of the most important conclusions were that market share is positively related to return on investment (ROI) and that product quality is an important determinant of market share. Other studies reported a direct positive association between product quality and ROI (Buzzell, Gale, and Sultan 1975; Schoeffler, Buzzell, and Heany 1974).

Also in the services industry, the necessity of gaining insights into the financial consequences of investments has been acknowledged. According to Rust, Zahorik, and Keiningham (1995), “How to make profitable decisions about quality expenditures is the key managerial problem” (p. 59). Service quality improvement efforts need to be financially justified or accounted for. For this purpose, managers need a method that helps them to direct their limited resources to those areas from which they get the greatest response. The “Return on Quality” (ROQ) approach, developed by Rust, Zahorik, and Keiningham (1995), is such a method in which the change in the net present value caused by the quality improvement is related to the necessary extra expenditures. It allows managers to compare alternative quality improvements on the basis of their ROQ and has been proven useful in several service industries, such as hotel and banking services.

When conducting a marketing research project on the service quality of an international service firm and its customers’ satisfaction level, the outcome is likely to consist of conclusions and managerial recommendations aimed at improving service quality where necessary. Due to the ever-growing urge to account for financial investments, information on the financial implications of service expenditures will be highly appreciated by decision makers. The relevance of this particular type of information is illustrated by Lipe’s (1998) finding that some market measures, such as variance of returns, had an actual effect on investment decisions and risk assessment. Information on investment consequences provides an opportunity to reduce the operational uncertainty associated with international service investment decisions. Therefore, information on the accountability of international service investments represents a useful issue in a marketing research project. After having discussed two important informational topics, we now will continue with the formulation of our research hypotheses concerning information incompleteness with respect to these topics and its consequences for decision making in international service settings.

DEVELOPING HYPOTHESES ON INCOMPLETE INFORMATION IN INTERNATIONAL SERVICE SETTINGS

Service firms seeking information on the international markets they enter or are active in often hire marketing research agencies to conduct marketing research projects for
them. Deshpandé and Zaltman (1982) state that “reliance on external research agencies is a common if not the most common approach to conducting research” (p. 15). Mostly, these projects will result in research reports presenting concrete results and managerial recommendations for the international service organization. On the basis of the previous discussion, explicit attention could be paid in such research reports to the level of cross-national comparability of research data. This communicates to decision makers that techniques have been used to make the information comparable across countries and that it can be readily used for operational decision making. On the other hand, it is also possible that nothing is being mentioned on the comparability of the data, consequently leading to incomplete information on this issue.

Similarly, reports may differ in the level to which attention is being paid to the financial accountability of international investments in service quality. Our point of departure in this experimental study is that incomplete information on both topics will result in higher levels of decision-making uncertainty in international service settings. The first hypothesis we posit focuses on how decision makers in an international service firm will deal with incomplete information. Subsequently, several hypotheses focus on the effects of varying levels of information presence on satisfaction with, trust in, and finally intention to use the information available in an international research report. Figure 1 presents our conceptual framework with respect to the experimental factors and the dependent variables.

As mentioned before, decision makers can deal with uncertainty in several ways. In the case of uncertainty caused by missing information, it was found that missing information is unlikely to be ignored or denied by decision makers (Lipshitz and Strauss 1997). Potter and Beach (1994) concluded from an experimental study that specific missing information on attributes is regarded as an important violation when having to make decisions. This violation was found to strongly influence the screening process of alternatives between which a choice had to be made, resulting in favorable evaluations of more complete alternatives.

Other studies have shown that decision makers will tend toward assumption-based reasoning and extrapolate or predict the missing information from other available information (Ford and Smith 1987; Gardial and Biehal 1987; Jagacinski 1991; Lipshitz and Strauss 1997). The main advantage of using assumption-based reasoning is that it enables experienced decision makers to act quickly and efficiently on the basis of limited amounts of information (Lipshitz and Ben Shaul 1997). For decision making in international services, other available information might, for example, be the information present in the report, information obtained from other related studies, and knowledge based on a decision maker’s own experience. These informational sources can be used to make inferences about the missing information, which then are combined with the available information to evaluate the overall decision-making usefulness of the research report presented. Correspondingly, we hypothesize that

**Hypothesis 1:** Decision makers in international service settings having to make decisions on the basis of a marketing research report in which information is missing are more likely to make predictions about this missing information on the basis of other available information than to ignore it.

Hypothesis 1 relates to how decision makers objectively deal with incomplete international marketing research information. When studying the use or nonuse of such information, a focus on subjective evaluative judgments is useful as well. Because conducting a marketing research project can be considered a service provided by the research agency to a client, we adopt a perspective in which customer evaluative judgments are central (e.g., Parasuraman, Zeithaml, and Berry 1985, 1988). Several evaluative criteria in the context of services marketing have been developed in the literature, including customer satisfaction and trust between partners.

Satisfaction can be described as a customer’s cognitive and affective evaluation of a product or service being delivered to him or her by a specific provider (Oliver 1997). Satisfaction was found to be influenced by the level of perceived service quality (Cronin and Taylor 1992; Oliver 1993; Parasuraman, Zeithaml, and Berry 1994; Rust and Oliver 1994). In a study on relationships between providers and users of marketing research intelligence, Moor-
man, Zaltman, and Deshpandé (1992) define trust as “a willingness to rely on an exchange partner in whom one has confidence” (p. 315). We adapt this definition and define trust in research information as “a willingness to rely on marketing research information in which one has confidence.” Moorman, Deshpandé, and Zaltman (1993) found that among other factors, trust was positively influenced by a researcher’s willingness to reduce research uncertainty. This could be achieved by providing information that is as complete as possible.

Menon and Varadarajan (1992) suggest that a receiver’s perception of information quality influences the degree to which the information is acted on. Deshpandé and Zaltman (1982, 1984) found a positive relationship between quality of the contents of a research project and the extent of use of research information. In managerial decision-making situations, alternatives in which information was missing were found to be rejected more readily (Potter and Beach 1994). Also in marketing decision making, it can be concluded from several studies that alternatives with missing information tend to be devalued by consumers (Huber and McCann 1982; Johnson and Levin 1985). Integrating the above, we expect that complete marketing research information leads to more positive attitudinal (satisfaction and trust) and behavioral (intention to use) evaluative judgments compared to when information is missing in an international research report. Therefore, we formulate the following set of research hypotheses:

Hypothesis 2: Decision makers in international service settings having to make decisions on the basis of a marketing research report that contains complete information on both cross-national data equivalence and financial accountability of international service investments . . .

Hypothesis 2a: are more satisfied with,
Hypothesis 2b: have higher levels of trust in,
Hypothesis 2c: and have a higher intention to use the available information in the report . . . than decision makers having to make decisions on the basis of a report that is missing information on both topics.

In practice, decision makers are likely to value various types of information differentially. Information on the financial consequences of planned investments could be perceived as more meaningful and involving than research-methodological information on whether data have been corrected for cross-national differences. This is driven by the earlier mentioned managerial need of knowing the financial consequences of (service) investments: “In an era of cost cutting, quality expenditures must be made financially accountable” (Rust, Zahorik, and Keiningham 1995, p. 59).

From the attribution literature (Gilbert, Pelhan, and Krull 1988; Newman and Uleman 1989), it is known that if information creates more cognitive unrest, individuals will process this information more deeply and will develop attributions. Furthermore, accountable subjects, having to justify their judgments and decisions to others, will display more search efforts and examine more information (Lee et al. 1999), whereas lower issue involvement decreases information-processing efforts (Maheswaran and Meyers-Levy 1990). In contrast to equivalence information, information on service investment accountability is highly relevant for a manager’s perception of the environment. It will create higher levels of involvement, mainly because it directly confronts decision makers with the financial consequences of their decisions and thus is likely to be processed more elaborately. Literature on distinctiveness supports this notion and indicates that relevant and distinct stimuli are more deeply processed (Sanbonmasti, Shavitt, and Sherman 1991) and more easily remembered (McDaniel et al. 1995). We postulate that information on cross-national equivalence of research data is likely to be of lesser practical relevance for decision makers in international service settings and, therefore, less influential on attitudinal and behavioral evaluative judgments in comparison to information on financial accountability of international service investments. Consequently, we hypothesize that

Hypothesis 3: Decision makers in international service settings having to make decisions on the basis of a marketing research report that contains no information on cross-national data equivalence and complete information on financial accountability of international service investments . . .

Hypothesis 3a: are more satisfied with,
Hypothesis 3b: have higher levels of trust in,
Hypothesis 3c: and have a higher intention to use the available information in the report . . . than decision makers having to make decisions on the basis of a report that contains complete information on equivalence and no information on accountability of investments.

The previous set of research hypotheses differentiates between the effects of incomplete information on the two informational topics, based on the notion that decision makers are likely to make a cognitive distinction between relevant and less relevant information. However, it can also be expected that both types of information interact with each other. The magnitude of the presence effect of relevant accountability information might very well depend on the level of information available in the international research report on cross-national data equivalence. This originates from the thought that decision makers will additionally value apparently less relevant information as soon as they feel they are at least being provided with information of higher perceived relevance. This corresponds with the so-called adding model, which focuses on how
decision makers combine information when making evaluations about alternatives (Jagacinski 1991). Adding models state that more information (e.g., on cross-national data equivalence) increases the total value of an alternative as long as this information is not negatively valued by the decision maker. Therefore, with respect to the interaction between both types of information, we hypothesize that

Hypothesis 4: The effect of complete information on financial accountability of international service investments will be more positive in terms of...

Hypothesis 4a: satisfaction with,
Hypothesis 4b: trust in, and
Hypothesis 4c: intention to use the available information in the report

. . . for decision makers in international service settings having to make decisions on the basis of a marketing research report that also contains complete information on cross-national data equivalence than for decision makers having to make decisions on the basis of a report with no information on equivalence.

In the next section, we will report on the results of an experimental study designed to test our hypotheses.

AN EXPERIMENTAL STUDY

Experimental Design

To test our hypotheses, we used a between-subjects, fixed-effects factorial design consisting of two factors. Information on cross-national data equivalence (EI) was manipulated on two levels: (a) providing complete information on data equivalence and (b) providing no information on data equivalence. Information on financial accountability of international service investments (AI) was also manipulated on two levels: (a) providing complete information on financial accountability and (b) providing no information on financial accountability. Consequently, we arrived at a full 2^2 factorial design, allowing us to explicitly take interaction effects into account (Keppel 1991; Kirk 1982).

Stimulus Materials

As stimuli for evoking responses, we developed distinct scenarios to be shown to decision makers working in an international service setting and who use international marketing research information on a regular basis. The purpose of these scenarios was to help decision makers put themselves into the situation to test our hypotheses. Each scenario contained a description of a hypothetical international marketing decision-making situation. The scenarios were developed after in-depth interviews both with marketing researchers and decision makers. This was done to ensure that scenarios depicted a realistic situation and were worded realistically.

Each scenario started with an introduction to clarify the setting of the decision-making situation. In this introduction, it was explicitly mentioned that respondents should picture themselves in a situation in which they were confronted with an imaginary international marketing research report provided by an external marketing research agency. Respondents had to be real-life decision makers. They were selected from a list of employees working at the international headquarters of a large, Dutch office equipment manufacturing company. It was stated that on the basis of the report, they would have to make decisions regarding (the improvement of) the manufacturer’s international service quality policy or assist in the decision-making process regarding this policy.

The report was said to contain information about a (fictional) study on international customer satisfaction with various service aspects relevant for this particular type of industry. This study had been conducted internationally among customers of operating companies located in several countries. In each scenario, it was mentioned that the report contained all the standard marketing research information, such as information on research design, data collection methods, sampling techniques, sample composition, and results and recommendations regarding international customer satisfaction with the manufacturer’s service. The manipulation occurred with respect to the amount of information on cross-national data equivalence and financial accountability of international service investments said to be present in the research report.

The two levels for equivalence information were incorporated in a scenario by stating that decision makers should imagine themselves in a situation in which they would like to compare customer satisfaction scores between the different international operating companies of the manufacturer. They were then notified of the problem that arises when comparing satisfaction scores across countries. This was done by pointing respondents to the fact that differences in familiarity with measures and scaling procedures may lead to incomparable scoring across populations. Furthermore, due to differences in culture, a score obtained in one country may not have the same meaning or conceptual interpretation in another country. Therefore, different procedures and conceptualizations of the issue under study may be effective in different cultures and countries.

In the experimental design, one group of decision makers (with complete information on cross-national data equivalence) responded to a scenario in which it was explicitly stated that the marketing research agency did everything possible to establish cross-national equivalence in the customer satisfaction data and that valid national comparisons could be made. Another group was confronted
with a scenario in which it was explicitly stated that no information on the establishment of data equivalence was present in the research report and, therefore, that a valid comparison could not be guaranteed.

With respect to information on financial accountability of international service investments, decision makers were explicitly notified of the importance of knowing what additional costs will be incurred by international service quality improvement efforts and what the actual benefits and payoff will be. One group of decision makers was told that the imaginary research report included an appendix presenting the results of various cost/benefit analyses. These analyses clarified what the estimated costs and benefits would be of service quality improvement efforts on the basis of recommendations given in the report. Another group would read a scenario, stating that no such information was present in the report. In total, four scenarios were composed based on the combination of manipulated amounts of information on both topics. For the purpose of illustration, a final sample scenario is included in the appendix.

**Pretest**

Using simple random sampling, 15 actual decision makers were selected for the pretest. The pretest had two functions: (a) to assess whether the desired state was induced by the manipulations of the independent experimental factors and (b) to assess the reliability of the dependent measures. The subjects participating in the pretest were interviewed immediately after exposure to the manipulation (Perdue and Summers 1986). The interviews revealed that the manipulations were successful in inducing the desired state of mind. Only minor adaptations to the four decision-making scenarios were necessary. Moreover, it became clear from preliminary analyses that the dependent measures showed sufficient reliability in terms of coefficient alpha.

**Procedure**

As mentioned, participants in the experiment had to be real-life decision makers. All the participating decision makers were located at the international headquarters of the manufacturing organization. These headquarters consist of staff departments that, by formulating company policies, centrally guide the operating companies in a great number of countries. To reach an acceptable level of external validity, an essential criterion was that respondents to be included in the final sample were regular users of international marketing research information who had experience in interpreting it. Potential respondents were randomly assigned to the four treatments.

Initially, 126 respondents participated in our study. However, by evaluating control questions assessing a respondent’s job title (used for determining whether respondents actually were in the position to use information) and usage rate of international marketing research information (considered a proxy for interpretation experience), 6 respondents were excluded from our sample, because they were not likely to have the intended usage and experience level. Consequently, the final sample consisted of 120 usable decision makers equivalently distributed across the four random experimental groups.

Because we expected relatively large effects (Cohen 1992; Sawyer and Ball 1981; Stevens 1986) for all treatments and anticipated the dependent variables to be highly intercorrelated (Stevens 1986), a sample size of approximately 25 per cell would suffice to achieve a power (1 – β) of 0.80 at an α = .05 level (Cohen 1992; Sawyer and Ball 1981). Each respondent received a booklet that, in addition to the control questions, included instructions, a description of the scenario, and the satisfaction, trust, and intention-to-use measures. In addition, measures were included for assessing a decision maker’s strategy of dealing with missing information. Furthermore, manipulation checks were added to assess whether the state intended by the two independent variables was induced (Perdue and Summers 1986).

**RESULTS**

**Manipulation Checks**

The results of the manipulation checks suggested that there were significant differences between complete and no information on cross-national data equivalence, $F(1, 115) = 9.08, p = .0032$, and complete and no information on financial accountability of international service investments, $F(1, 115) = 6.74, p = .0107$, as intended by the design. Furthermore, Sternthal, Tybout, and Calder (1987) argue that ultimately, the effectiveness of the manipulations is reflected in the pattern of the resulting data.

**Validity and Reliability of Dependent Measures**

We carried out principal component analyses to assess whether the items for the dependent variables would load on separate components. These analyses showed that each item loaded (>0.5) on only one component and that items grouped together as intended. This indicates discriminant validity and that the three measures are tapping different concepts. Satisfaction with the information in the imaginative research report was operationalized by four items
on a 7-point Likert-type scale (e.g., “I would be satisfied with the contents of this research report”). These items were based on a measurement instrument developed by Oliver (1980). A composite measure for satisfaction, as well as for trust and intention to use the available information, was calculated by averaging the items. The coefficient alpha for satisfaction was .83.

Trust in the information was operationalized by three items on a 7-point Likert-type scale that were adapted from a scale developed by Moorman, Zaltman, and Deshpandé (1992) (e.g., “I would trust the contents of this research report”) (coefficient alpha = .81). The items for measuring a decision maker’s intention to use the information originated from a scale by Maltz and Kohli (1996). We conceptualize information use as the extent to which the decision maker intends to use the information to understand his or her work environment and to make and implement service quality decisions, thereby respectively covering both conceptual and instrumental use of research information (Menon and Varadarajan 1992). The instrument consisted of eight items measured on a 7-point Likert-type scale (e.g., “It is very likely that I would use the information of this study for improving our service quality policies”) (coefficient alpha = .91).

Finally, the way in which decision makers would deal with missing information (predicting versus ignoring) was operationalized by three items on a Likert-type scale for each strategy. These items were developed specifically for the purpose of this study (predicting, e.g., “On the basis of the information that is available in the research report I would make inferences about the missing information and use these inferences together with the available information to form a judgment about the report”; and ignoring, e.g., “I would not be bothered by the fact that certain information is missing in the report and base my judgment solely on the information that is available in the report”). The instrument for “predicting” had a coefficient alpha of .73; for “ignoring” this was .81. Overall, therefore, all reliability scores well exceed the threshold value of .70 as proposed by Nunnally and Bernstein (1994).

Testing Assumptions of MANOVA and Dependent Variables

Given the relatively large sample size and the robustness of MANOVA to departure from multivariate normality (Stevens 1986; Tabachnik and Fidell 1996), violations of multivariate normality are not expected to be severe. In addition, inspection of the histograms, normal-probability plots, skewness, and kurtosis for each dependent measure for each cell showed only slight departures from normality. Another assumption underlying MANOVA is equality of variance-covariance matrices. This assumption can be tested using Box’s $M$ test for homogeneity of dispersion matrices. However, this test is usually not very useful, as it is extremely sensitive to multivariate nonnormality (Stevens 1986; Tabachnik and Fidell 1996).

Finally, power analysis revealed that the power level was well above 0.8 for the significant effects ($\alpha = .05$). If the dependent variables are uncorrelated, MANOVA is superfluous. In such a case, one might be able to rely on univariate ANOVAs (one for each dependent variable). The pooled within-groups correlation matrix revealed relatively high correlations between the dependent variables, thereby supporting the applicability of MANOVA.

Results of MANOVA

Before testing our hypotheses, we provide the results of MANOVA, conducted to assess whether significant main and interaction effects of the independent factors on the dependent variables exist. Research into the robustness of the statistics available for MANOVA suggested that the Pillai-Bartlett trace criterion ($V$) might be the most robust statistic for general protection against departures from multivariate normality and homogeneity of variance-covariance matrices (Stevens 1986; Tabachnik and Fidell 1996). Therefore, we will only report the Pillai-Bartlett trace criterion and its $F$ approximation. However, it must be noted that all four rival tests (Wilks’s likelihood ratio criterion [$W$], Hotelling-Lawley trace criterion [$T^2$], Roy’s largest root criterion [$R$], and Pillai-Barlett criterion [$V$]) are asymptotically equivalent in large samples. The results of MANOVA are summarized in Table 1.

As can be concluded from Table 1, we found that the presence of information on financial accountability of international service investments has a significant main effect (on all three dependent variables), indicating that the means on the dependent variables are unequal for the two levels in which accountability information is present in the international research report; that is, for accountability information, $V = 0.13; F(3, 113) = 5.68, p = .001; \eta^2 = 0.13$. For the presence of information on cross-national data equivalence, no significant main effect was found; that is, for equivalence information, $V = 0.04; F(3, 113) = 1.50, p = .219; \eta^2 = 0.04$.

In addition, we found that the two-way interaction between both types of information showed a significant effect: $V = 0.13; F(3, 113) = 5.71, p = .001; \eta^2 = 0.13$. As a consequence, the main effects in isolation will not yield a faithful picture of the results of the experiment (Keppel 1991; Kirk 1982). The cell means for the interaction between equivalence information and accountability information are presented in Figure 2 for all three dependent measures.

The interaction effect turned out to be significant for both satisfaction with and trust in the available information in the international research report; that is, for satis-
effect, $F(1, 115) = 6.00, p = .016$; for trust, $F(1, 115) = 5.43, p = .022$. For intention to use the information, the interaction effect was not significant; that is, for intention to use, $F(1, 115) = 0.20, p = .656$. This is depicted graphically in Figure 2. For intention to use the available information, the lines run practically parallel to each other; for satisfaction and trust, the slopes of the lines are distinct.

**Hypotheses Testing**

Hypothesis 1 was tested by performing a paired sample $t$ test to assess whether decision makers are more likely to make predictions about missing information on the basis of other available information than to ignore it. On the basis of this test, we fail to reject Hypothesis 1: The prediction strategy of dealing with missing information is used significantly more often than the ignoring strategy: $t(116) = 16.32, p < .001$.

We used univariate contrast analyses to further explore the relationships uncovered by the omnibus test (Neter, Wasserman, and Kutner 1990) and to test Hypotheses 2 and 3. From conducting ANOVAs, it became clear that the four cells in our factorial design differed significantly on the three dependent variables: for satisfaction, $F(3, 115) = 6.34, p = .001$; for trust, $F(3, 115) = 5.14, p = .002$; for intention to use, $F(3, 114) = 4.36, p = .006$. With respect to Hypothesis 2, we find that decision makers who have to make decisions on the basis of an international marketing research report that contains complete information on both cross-national data equivalence and financial accountability of international service investments are significantly more satisfied with, have higher levels of trust in, and have a higher intention to use the available information in the report than decision makers who have to make decisions on the basis of a report that is missing information on both topics. That is, for satisfaction, $t(115) = 3.53, p < .001$; for trust, $t(113) = 3.13, p = .001$; for intention to use, $t(114) = 3.45, p < .001$. Therefore, we fail to reject Hypotheses 2a, 2b, and 2c.

With regard to Hypothesis 3, we find that decision makers having to make decisions on the basis of an international marketing research report that contains no information on cross-national data equivalence and complete information on financial accountability of international service investments are significantly more satisfied with and have more trust in the available information in the report than decision makers having to make decisions on the basis of a report that has complete information on equivalence and no information on accountability of investments. That is, for satisfaction, $t(115) = 2.07, p = .021$; for trust, $t(113) = 2.06, p = .021$. No significant difference was found with respect to the intention to use the available information in the report: $t(114) = 1.03, p = .154$. Therefore, we fail to reject Hypotheses 3a and 3b but reject Hypothesis 3c.

Finally, as was already mentioned in the preceding section, we found a significant two-way interaction effect between both informational topics. Although Umesh et al. (1996) caution researchers for using the omnibus $F$ test for interactions to test for differences between cell means, they also indicate that the $2 \times 2$ ANOVA constitutes a special case in that respect (cf. Keppel 1991). The interaction effect was significant for both satisfaction with and trust in the available information but not for the intention to actually use it when making decisions; for satisfaction, $F(1, 115) = 6.00, p = .016$; for trust, $F(1, 115) = 5.43, p = .022$; for intention to use, $F(1, 115) = 0.20, p = .656$. Hence, we fail to reject Hypotheses 4a and 4b but reject Hypothesis 4c. In other words, the effect of complete information on financial accountability of international service investments is significantly more positive in terms of satisfaction with and trust in the available information for decision makers who have to make decisions on the basis of an international marketing research report that also has complete information on cross-national data equivalence than for decision makers having to make decisions on a report with no information on equivalence. For the intention to use the available information, no such effect was found.

**CONCLUSION**

**Discussion**

In international settings, companies often will be facing the uncertainty associated with engaging in international business activities. Especially in the services industry, international uncertainty is likely to be substantial. Unfamiliarity with foreign cultures, customers, and their service practices combined with the higher perceived purchase risk for foreign services will result in a considerable amount of environmental uncertainty for international service providers.
FIGURE 2
Graphical Representation of Means for Two-Way Interaction Between Presence of Equivalence and Accountability Information

Satisfaction

Information on Equivalence Present
5.24
4.78
Information on Equivalence Not Present
4.24
4.32

Not Present
Present
Information on Accountability

Trust

Information on Equivalence Present
5.13
4.74
Information on Equivalence Not Present
4.39
4.20

Not Present
Present
Information on Accountability

Intention to Use

Information on Equivalence Present
5.16
4.89
Information on Equivalence Not Present
4.51

Not Present
Present
Information on Accountability
To deal effectively with this uncertainty, service firms depend on the availability of marketing information. In practice, however, it seems that information hardly ever is complete. In this article, we focused on studying the effects of incomplete information on the use of marketing research intelligence in international service settings. More specifically, how decision makers in international service organizations deal with incomplete information was studied. Furthermore, we looked at the impact of incomplete information on decision makers’ evaluative judgments in terms of satisfaction with, trust in information, and their likelihood of using it for decision-making purposes. For conducting the experiment, we focused on two informational topics of importance for the international marketing of services: information on the level to which cross-national equivalence in research data has been established/checked and information on the financial accountability of international service investments.

Consistent with earlier research on human decision-making processes (e.g., Lipshitz and Strauss 1997), the results of our experimental study show that also in an international service setting, incomplete information will not be ignored by decision makers. On the basis of other available information and knowledge, they will apply a strategy of inferential, assumption-based reasoning. Decision makers will use other sources of information, such as information that is available in the report, other related studies they are familiar with, and own experiential knowledge to make predictions about the missing information and then combine these inferences with the available information to evaluate the overall decision-making usefulness of a report. In this way, the informational uncertainty caused by incomplete information is effectively dealt with.

With regard to the consequences of incomplete information, several interesting results could be deduced from the study. First of all, when distinguishing between complete information on cross-national data equivalence as well as financial accountability of international service investments and no information about these issues at all, this resulted in significant effects. In comparison to a situation of incomplete information, complete information on data equivalence and financial accountability of investments led to a significant increase in a decision maker’s satisfaction with the information available in the international research report. Because marketing research is a service provided by a research agency to a client, it is consistent with earlier findings in services marketing research in which positive relationships were found between service quality and customer satisfaction (e.g., Parasuraman, Zeithaml, and Berry 1994; Rust and Oliver 1994).

Furthermore, complete information also resulted in higher levels of trust of the decision maker in the available information and a higher intention to use it when having to make decisions about the international services strategy. This also supports previous findings, indicating positive relationships between uncertainty reduction and information quality/completeness on one hand and trust and intelligence use/evaluations on the other hand (Deshpandé and Zaltman 1982, 1984; Moorman, Deshpandé, and Zaltman 1993; Potter and Beach 1994).

Information differs in perceived decision-making relevance. It was expected that information on the financial accountability of international service investments would be of higher managerial relevance to decision makers than information on whether research data are internationally equivalent. It was found that presence of accountability information and a lack of equivalence information results in higher satisfaction with and more trust in available information compared to a situation of lacking accountability information and presence of equivalence information. This indicates that decision makers indeed subjectively tend to differentiate between information relevancy levels. However, no significant effect was found for the intention to use available information. In other words, focusing on relevant information improves decision makers’ evaluative judgments of the information provided but does not automatically imply that it is going to be used for future decision making. This suggests that a distinction can be made between attitudinal and behavioral consequences of information presence.

The previous findings suggest that equivalence information is of lower value to decision makers in international service firms than financial accountability information. Indeed, the presence of accountability information positively influences satisfaction with, trust in, and intention to use the information, as can be concluded from the significant main effects that were found for accountability information. In contrast, no significant main effect was found for equivalence information. However, from testing our last set of hypotheses, it could be concluded that equivalence information is playing a role in combination with accountability information. The positive effect of accountability information on satisfaction and trust turned out to be significantly higher when information on cross-national data equivalence was present in the report compared to when it was missing. With respect to intention to use the information, no significant interaction effect was found, providing additional evidence of an attitudinal and behavioral differentiation in evaluative consequences of incomplete information.

Theoretical Implications

Part of the strength of a study lies in the recognition of its limitations. This may suggest issues that merit future research. In the first place, the experimental design pertained to an experiment in the field (in one specific service firm with real decision makers) under laboratory condi-
tions (artificially constructing the desired conditions by referring to an imaginary research report and decision-making situation). As a consequence, the generalizability of the findings would be limited with regard to real-life marketing decision-making situations. Due to differences in the purpose of the information, decision makers involved, stage in the internationalization process implying varying degrees of experience, and different service firms in terms of line of business, size, market type, and so forth, inferences about generalizability should be treated cautiously and explored on the basis of future research in more real-life and other service situations.

More specifically, the use of an experimental design is subject to inherent limitations pertaining to a possible lack of realism. For instance, our study involved a single sample of each subject group responding to one hypothetical, written case on the basis of limited information. Even though the results of the manipulation checks show successful manipulation of information on cross-national data equivalence and financial accountability of international service investments, differences may arise between simulation and reality, affecting the way in which respondents react. One way of dealing with this may be to provide more real-life scenarios by using physical research reports instead of describing them verbally. In this way, the manipulated conditions are closer to holistic experience (“gestalt”) of an actual marketing decision-making situation.

Furthermore, evaluative judgments in terms of satisfaction, trust, and intention to use have been restricted to a single decision-making episode, thus essentially studied from a static perspective. Future experiments might investigate how these judgments develop over time to examine the impact of missing versus complete information more profoundly and in line with real-life dynamic situations.

In addition, because conducting a marketing research project is a service, it can be argued on the basis of advances in attribution theory (e.g., Folkes 1994) that decision-maker perceptions of satisfaction with and trust in marketing research information may be influenced by more than just the presence or absence of information in a research report. Factors relating to the interactive process of conducting an international marketing research project may considerably moderate quality, satisfaction, and trust evaluations by decision makers. This corresponds to findings of Moorman, Deshpandé, and Zaltman (1993), which indicate that trust between users and providers of marketing research information is influenced by interpersonal characteristics, such as expertise, integrity, confidentiality, timeliness, and sincerity of providers. Future research should take the impact of such attributions into account. Finally, additional research is needed to address how missing information has an impact on actual behavior rather than a decision maker’s intention to use available information.

Managerial Implications

Our results have several managerial implications for providers of international services marketing intelligence. They may enable marketing researchers, when providing their service to clients, to create conditions conducive to effective use of marketing intelligence. First, based on the conclusion that incomplete information is unlikely to be ignored by decision makers, but will be compensated for by making inferences on the basis of other information, marketing researchers should acknowledge gaps in the information they provide. They can anticipate this by providing additional sources of information that decision makers can consult in case of incomplete information, such as managerial or research literature and information on the Internet.

Next, the results imply that when conducting research for companies active in international service settings, substantial attention should be given to both the implications of conducting cross-national service research and to consequences for ROIs. Specifically, marketing managers need to be reassured that reliable comparisons between countries can be made and that attention has been directed at making information internationally equivalent. In addition, they seem to value information about the financial consequences of proposed investments in the international service strategy that follow from the research conducted.

Despite the importance of providing complete information for the evaluation and use of intelligence, in practice this might be hard to accomplish. Especially in situations in which a tradeoff between what information to provide has to be made, for example due to budgetary restrictions, intelligence providers could differentiate between relevant and less relevant information. A focus on financial accountability information resulted in higher decision-maker satisfaction with and trust in available information than a focus on cross-national equivalence information. Indeed, it seems that decision makers tend to value more highly such more strategic information.

However, the significant interaction effect that we found between presence of equivalence and accountability information also suggests that additional information, which might be perceived as less relevant, can add value for decision makers as well. Information on the international equivalence of the information in the international research report has an additional effect on evaluative judgments in terms of satisfaction with and trust in available information if it is presented in combination with financial accountability information. The intention-to-use information was not significantly influenced by variations in information relevancy. The level to which information is going to be acted on may depend on other factors, as suggested by Deshpandé and Zaltman (1982, 1984). These may in-
include content quality (relating to additional issues such as applied scientific research techniques, data collection methods, sampling procedures), form quality of the research report or its verbal presentation, and providing acceptable information that can be acted on.

Furthermore, situational factors such as line of service business, firm characteristics, company objectives, level of business experience with foreign countries, and so forth also will determine information content and use. For example, service firms wanting to export a new service to foreign markets with which they have little experience and that are quite distinct from the home market will need more and other information than companies planning to provide an existing service to a neighbor country with similar characteristics. The former situation would demand more country-specific information on tariff and nontariff measures, government trade policies, local laws and regulations, competitive activity, market characteristics, cultural background, local standards, specifications, expectations, and distribution systems (Czinkota and Ronkainen 1995). In the latter case, country-specific information may be of lesser importance compared to more company-strategic information, for example, on the consequences of service investments.

APPENDIX
Sample Scenario

(A sample scenario referring to complete information on both cross-national data equivalence and financial accountability of international service investments)

Imagine yourself in the following decision-making situation:

A marketing research agency has conducted an international study among customers of several local operating companies to assess the perceived quality of various important service aspects and satisfaction with that service quality. You are being provided with an international research report in which the results of the study are presented. On the basis of this report, you are expected to make decisions on (improving) your company’s international service quality policy or assist in decision making on this matter. When reading the report, you find all the basic elements that you would normally expect to be present in a research report. These include issues such as information on research design, data collection methods, sampling techniques, sample composition, and results and recommendations regarding international customer service quality perceptions and satisfaction.

After browsing through the report, you are interested in more detailed information. Given the international character of the study, you would like to compare the various local operating companies to see which country scores the highest on customer satisfaction with the company’s service quality. For this purpose, a table is included in the report that presents the overall customer satisfaction scores for every operating company. However, you wonder whether you can readily compare these scores. Due to differences in familiarity with research techniques and cultural differences regarding the service aspects that are considered to be important in the various countries, problems may arise when trying to compare the satisfaction scores. Different research procedures and conceptualizations of the service aspects under study may be effective in different cultures and countries. In the text accompanying the table, you read that several techniques have been applied by the research agency to establish equivalence in the data and that the satisfaction scores have been checked on this equivalence. This enables you to make quite reliable comparisons between the service performance of the various operating companies.

In addition, you would like to know what the financial implications will be of decisions aimed at improving your company’s international service quality level. In other words, you want to be convinced that investing in service aspects actually pays off financially in the end. For this purpose, an appendix is included in the report that explicitly addresses this issue. On the basis of the recommendations given in the report, several cost-benefit scenarios are presented in the appendix. These provide you with useful insights on what financial costs international service quality improvement efforts will incur and what the financial benefits will be.

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