

The Impact of National Culture on Control in IS Offshoring Projects

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ABSTRACT

To our best knowledge, this is the first quantitative study on the impact of the supplier's national culture on the client's choice of control modes in IS offshoring projects. A survey-based field study was conducted, using a client-supplier matched pair as the unit of analysis. This approach allowed for the examination of the direct control relationship within 46 unique matched pairs. The study results offer empirical evidence that the supplier's national culture (i.e., power distance and time perception) affects the client's choice of controls in IS offshoring projects. However, the supplier's cultural background seems to play a less important role than suggested by prior research. These results (1) adapt previous research to the IS offshoring context, (2) enhance prior findings by establishing a more detailed understanding about the cultural influence on the exercise of controls as well as by confirming the significance of project size—an influencing factor that has previously shown mixed results, and (3) incorporate new constructs and measures in developing an integrated model that should be broadly applicable to other IS project contexts.

Keywords

IS offshoring, control theory, managerial control, national culture, cultural dimensions, matched pair survey, partial least squares.

1. INTRODUCTION

IS offshoring (ISO), defined as the relocation of IS services to a captive or third party organization in a foreign, mostly low-wage country [42] continues to be an important global trend [25]. ISO promises many benefits, such as cost reduction, access to highly skilled professionals, and time-to-market reduction (e.g., [42]).

Despite the manifold benefits, companies' ISO experiences have not been consistently positive and often ISO projects fail [1]. These project failures can often be traced back to national cultural

differences between client and supplier [38; 44]. This is not surprising as ISO projects involve actors from different countries and cultures, working together in complex, intensive, and dynamic activities that require close cooperation and coordination [27]. In particular, many risks associated with ISO projects, such as blocked knowledge transfer, differences in the interpretation of processes, barriers between individuals, and lack of acceptance of foreign behaviors, they all may result from cultural distance [10].

One powerful approach for managing client-supplier relationships in ISO projects is exercising control [27; 28], which refers to any attempt to motivate individuals to behave in a manner consistent with organizational objectives [21]. Because ISO "entails complex issues of geographical, cultural, and lingual differences", Rustagi et al. ([45], p. 139) stress the need for research on control in ISO. Here, especially the client's control over the supplier is an important instrument to ensure project success [9]. However, the use of control is complicated by cultural differences which impact the coordination of the supplier employees as well as the cooperation with them [59]. In a recent study it was found that espoused cultural values, such as norms, values, and beliefs, affect control choices [28]. In another study, Beck et al. [3] found that formal project management and control mechanisms are mainly driven by the cultural intelligence of the client's ISO project manager. High cultural intelligence might lead to a better understanding of the controllee's cultural values and thus enables her/him to better select and execute suitable modes of control [3]. It is thus important to examine how the supplier's national culture affects the client's exercise of controls in ISO projects.

Previous literature has already acknowledged the important role of national culture in ISO in general (e.g., [38]). However, two gaps are still obvious: First, IS outsourcing and ISO research is still primarily based on anecdotal evidence using qualitative (interpretive) case studies as main research method [57]. Thus, there is still a need to validate and complement these important findings by quantitative analyses. Second, so far there has been no empirical study which has examined the influence of national culture on the choice of control modes. Although Narayanaswamy and Henry [37] proposed an initial set of propositions regarding the relationship between three of Hofstede's cultural dimensions and control modes used in offshore-outsourced IS development projects, they did not empirically test these propositions. This study seeks to fill these gaps by examining how the client's selection of controls relates to the supplier's national culture. We address this question by developing a research model which

integrates control theory with prior literature on ISO and national culture. To test our model, we perform a survey-based field study using a client-supplier matched pair as the unit of analysis.

2. LITERATURE REVIEW

2.1 Culture Theory

In this study, we adopt the value-based definition proposed by Hofstede [18]. He defines culture as “the collective programming of the mind that distinguishes the members of one group or category of people from another” (p. 11). This definition describes culture as a set of value patterns that are shared by individuals and influence how they behave (e.g., [18; 55]). Values refer to relationships among abstract categories that are characterized by strong affective components and imply a preference for a certain type of action [22]. They provide individuals with fundamental assumptions about how things are. Based on these assumptions, researchers attempt to generalize the patterns of different cultures into several dimensions. The defined cultural dimensions provide a framework to measure and compare the cultural differences from one country (or group) to another [43].

ISO is situated within a complex and multi-leveled socio-cultural context, which comprises not only the national (societal) level but also organizational, professional (functional), team, or individual levels [22]. Thus, national culture may not be the only type of culture which influences the choice of control. However, cultural differences on the national level are presumed to constitute a predominant factor influencing ISO project control [33]. Wilkins and Ouchi [58] argue, for instance, that “the learning of organizational ‘culture’ [is] neither as deep nor as immutable as the anthropological metaphor would suggest” (p. 479). We believe that this rationale also applies to the professional and team level of culture.

Even though culture is seen a collective phenomenon and, thus, irreducible to the individual level of analysis it can only manifest itself through the individual [50]. We therefore argue “that individuals espouse national cultural values to different degrees”, treating these values as an individual difference variable ([48], p. 680). This perspective allows us to analyze cultural differences on different levels without presuming an aggregated type of culture on the national level. By disaggregating the monolithic national culture construct into its espoused value dimensions it is possible to use it as individual difference construct in individual-level research such as control theory. As a result, it is possible to capture the nuances and distinct effects of the relationship between each cultural value and control, which otherwise treated as monolithic construct could have been shown as culturally invariant [48].

2.2 Control Theory

Our study adopts a behavioral view of control. This view implies that the controller takes some action in order to regulate or adjust the behavior of the controllee [26], and draws upon organization and agency theories consistent with prior studies in IS (e.g., [9; 26; 27; 28; 29]), organization design (e.g., [13]), and marketing (e.g., [21]).

A control situation typically involves an individual exercising control (the controller) and a target of control (the controllee) [28]. However, this distinction sometimes becomes fuzzy [9], in particular in an ISO context. For instance, the controller and the controllee may not be individuals but teams of individuals representing their organizational unit or organization respectively.

Furthermore, in an ISO project the supplier project manager may be controlled by the client and, in turn, may control the supplier project team members. However, for the specific focus of this study, the distinction between controller (in terms of an individual in the client organization) and controllee (in terms of an individual in the supplier organization) remains largely valid.

The behavioral view of control presumes that the controller uses certain mechanisms to exercise four modes of control, which may broadly be divided into formal and informal controls [27].

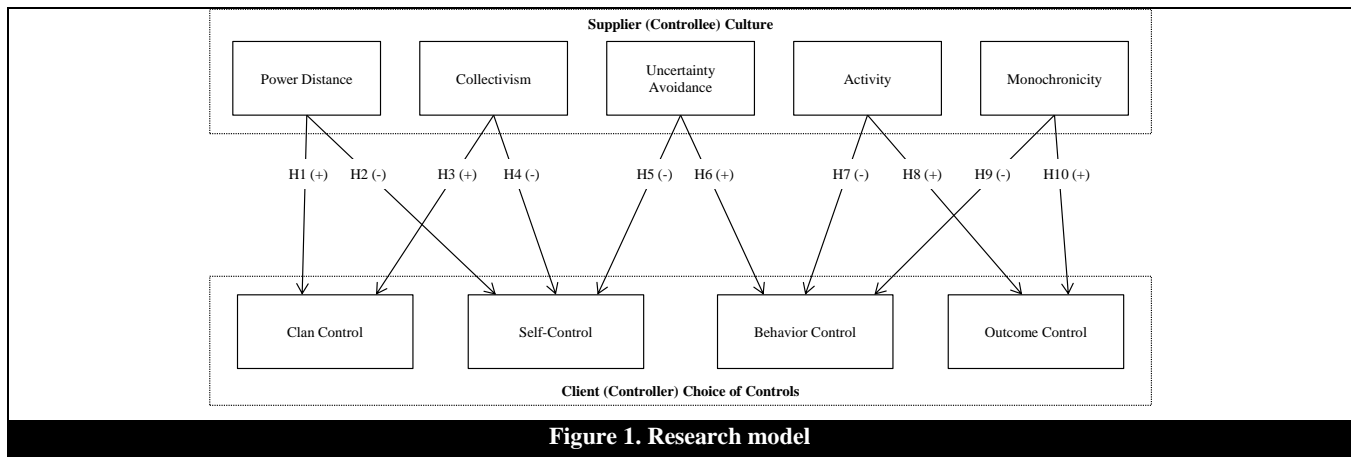
There are two modes of formal control: behavior and outcome control [13]. In behavior control, the controller seeks to influence the process to achieve the desired outputs by explicitly prescribing specific rules and procedures, monitoring their implementation, and rewarding the controllee based on the extent to which the implementation complies with these rules and procedures [26]. This is achieved through the use of mechanisms that either specify appropriate behaviors, or allow for the evaluation of the controllee’s behavior [27]. In outcome control, only the outputs (both interim and final) are measured and evaluated. Here, the controller explicitly defines specific goals and rewards the controllee for meeting these goals [13; 27]. Outcome control is exercised through mechanisms that specify or measure desired outcomes [9].

Informal control modes are clan and self-control. Clan control refers to mechanisms that minimize the differences between the controller and controllee’s objectives [13] by “promulgating common values, beliefs, and philosophy within a clan, which is defined as a group of individuals who are dependent on one another and who share a set of common goals” ([27], p. 217). According to this definition, it is questionable whether the clan control construct can be applied to ISO projects as the client-supplier relationship is assumed to be adversarial [32]. Thus, we adopt a different interpretation of clan control “refer[ring] to a situation in which the traditional relationship is replaced by a scenario where the two organizations perceive themselves as having a common, shared goal” ([9], p. 293). Unlike clan control, self-control is a function of intrinsic motivation [36] as well as individual standards and objectives [21]. Even though controllees control themselves by their own actions (e.g., setting their own goals) [26], the controller can use control mechanisms to assist and promote the exercise of self-control by the controllee.

Controllers often use the four control modes in combination, creating a portfolio of controls [21; 27]. Within a portfolio, each control mode can itself be implemented through multiple control mechanisms [27]. The choice of controls is influenced by different factors in the project, stakeholder, and global contexts [27; 28]. Factors related to the global context include priority differences among stakeholders from different countries, as well as geographic, time zone, and cultural differences. In this context, it is the cultural factors influencing the choice of controls that are still not well understood. These relationships are discussed in more detail in the following section.

3. RESEARCH MODEL AND HYPOTHESES

Our research model considers the relationship between the controller’s choice of controls and the controllee’s national culture. The model draws on five cultural dimensions which can be used to define national culture. Here, however, we do not focus on the cultural characteristics of specific nations. Instead, we attempt to understand how the characteristics of the underlying



espoused cultural values interact with ISO project control [14; 48]. Figure 1 shows the different constructs and hypotheses.

According to Carmel [6], cultural dimensions are useful in modeling culture-related issues in globally distributed projects. From the variety of dimensional models existing at the national level, the following five dimensions were selected: *power distance*, *individualism/collectivism*, *uncertainty avoidance* [18], *activity/passivity* [35; 52], and *mono-/polychronic time perception* [16]. The selected dimensions were evaluated in terms of their suitability to explain cultural characteristics that may affect the choice of different control modes in ISO projects. For example Hofstede's masculinity/femininity dimension was dropped as it seems to be highly correlated to age [14]. Some of these dimensions have already been applied to ISO-related research, including power distance [59], individualism/collectivism [59], uncertainty avoidance [49], and activity/passivity [59]. In addition, the model was enhanced by the dimension mono-/polychronicity because different views about timelines, deadlines, work rhythms, and/or punctuality may impose challenges to the coordination (and control) of globally distributed projects [46].

3.1 Power Distance

Power distance is defined as the extent to which the less powerful members of institutions and organizations within a society expect and accept that power is distributed unequally. In high power distance cultures superiors make decisions without consultation with subordinates. Employees are fearful of disagreeing with their superiors and expect to be told what to do. For example, it was found that in rather high power distance cultures like India, offshore team members have difficulty in saying no [38; 59]. In contrast, in cultures that are low in power distance, relationships between superiors and subordinates are more participative and egalitarian and subordinates are likely to contradict their superiors directly and do not expect to be told what to do [17]. They also participate more in decision making activities and prefer a consultative relationship with their superiors [17].

In particular, in high power distance cultures the controllee feels less comfortable in debating and contradicting. They tend to pay more attention to the opinions of others and thus tend to be more attuned to social norms [48], typically facilitated by clan control. Here, clan control mechanisms, such as rituals, ceremonies and socialization might mitigate the difference in objectives between controller and controllee [9], triggering compliance, identification

and internalization effects [23], although this might be difficult to achieve unless they are part of a long-term alliance [9].

H1: The higher the controllee's power distance the greater the exercise of clan control.

On the other hand, as individuals feel self-motivated and more productive when there is less intervention by the managers, self-control is also likely to be used. This calls for less formal control substituted by self-control, defined as controllee-driven noncontrolling [51]. This is reinforced by the issue that in offshore projects, control of behavior is more difficult and is often facilitated and supplemented indirectly by means of self-control [51]. In this situation the controller encourages the controllee to use self-control or even exerts informal social pressure to use clan control [26; 9]. The controllee, then in his role as controller is encouraged to use the more difficult formal controls, such as outcome or behavioral control on his (supplier) team [9].

H2: The lower the controllee's power distance the greater the exercise of self-control.

3.2 Individualism/Collectivism

Individualism is defined as the extent to which people prefer to act as individuals rather than as members of groups [18]. In individualistic cultures the ties between individuals are loose. They value personal time and personal accomplishments. In contrast, in collectivistic cultures group goals and interests are more important than individual desires, and people are integrated into strong, cohesive groups.

In a study on collectivistic and individualistic work groups, Earley [12] found that collectivistic individuals show higher performance when working in an in-group (i.e., a group they identify with), as compared to collectivistic individuals who work by themselves or as part of an out-group (i.e., a group they do not identify with). In collectivistic societies the focus seems to be more on how well subordinates follow prescribed processes instead of assessing merely the outcomes [54]. In particular, social norms, duties, and obligations guide team members' behavior, and group (clan) goals seem to have priority [54]. Another aspect is that collectivistic employees view their relationship with the employer in moral terms. They tend to have a strong sense of identity with and loyalty to their organization. Consequently, they will strive to achieve outcomes that are in the organization's best interest and will do so with little expectation of personal gain. The controllee team will assume joint responsibility and/or receive joint recognition for actions taken or decisions made [55]. They also

see self-development occurring through harmony and reciprocity in interpersonal relations and contributing to the welfare of other group members [56]. Hence, implementing control through a process of socialization and promoting interpersonal dynamics to create shared beliefs will harmonize the values and beliefs among the team members [37]. Often, collectivistic cultures prefer training and other learning opportunities [54], all indications that clan control would be an appropriate choice of control [39].

H3: The higher the controllee's collectivism the greater the exercise of clan control.

On the other side, it is expected that in highly collectivistic cultures individuals will keep individuals and organization's interests and goals in line because they expect personal reward and recognition for their decisions [55]. Thus, providing individuals with autonomy will help them to monitor their own progress towards achieving common goals. This would favor the use of self-control, defined as a function of individual objectives and standards and intrinsic motivation [26; 9]. As motivated in "Power Distance", the encouragement of self-control might indirectly help to implement more difficult formal control modes, such as behavior control on the supplier side.

H4: The lower the controllee's collectivism the greater the exercise of self-control.

3.3 Uncertainty Avoidance

This dimension describes the extent to which the members of a culture feel threatened by uncertain or unknown situations. Individuals with low uncertainty avoidance believe that problems can be solved without formal rules [37]. They do not seem to be dependent on experts and prefer a less structured and rule-oriented environment [17]. They prefer rules only in situations of absolute necessity. Thus, providing a high degree of autonomy by means of self-control will increase project performance [37].

H5: The lower the controllee's uncertainty avoidance the greater the exercise of self-control.

On the other hand, a culture high in uncertainty avoidance would exhibit rule orientation, prefer employment stability, and exhibit stress when trying to explain, mitigate and minimize the uncertainty that is inherent to life [48]. Often, controllees with high uncertainty avoidance are dependent on experts and superiors for answers and feel secure with defined behaviors [37], thus feeling more comfortable with tight behavior controls. In addition, high uncertainty avoidance is associated with close communication, posing questions, feedback and reassurance, increasing the controller's understanding of appropriate behaviors as controllees might be more willing to reveal their actual work behaviors. The understanding of behavior is in turn crucial for introducing behavioral controls [37] as it is associated with higher behavior measurability. It has been found that, in particular high behavior observability facilitates behavior control [26; 27]. This finding was recently refined by Kirsch et al. [29] who concluded that high behavior observability is associated with the use of either behavior control (if the controller is knowledgeable) or clan control (if the controller has low knowledge). In particular, as the controller's technical knowledge is likely to be higher in outsourced/offshored projects there is a tendency for the controller to use more behavior control [51].

H6: The higher the controllee's uncertainty avoidance the greater the exercise of behavior control.

3.4 Activity/Passivity

The activity-passivity dimension is defined as the "extent to which individuals in a culture see themselves as doers (active shapers of the world) or beers (passive reactors to the world)" ([35], p. 178). In passive cultures people change themselves to fit into the environment. They are more cooperative, emphasize the experience of living, and are especially concerned with getting along with others [53]. In a recent study it was found that offshore teams from low activity cultures, such as India, prefer to have precisely described software specification and were described as "rather passive reactors to pre-specified tasks and methodologies" ([59], p. 249). Moreover, the Indian developers didn't appreciate open team meetings in which they were urged to actively participate in discussions related to wider project-relevant topics [59]. This would rather exclude clan and self-control as viable control options and instead suggest more directive forms of management, i.e., guiding the controllee through the process [52].

H7: The lower the controllee's activity the greater the exercise of behavior control.

In contrast, in active cultures individuals try to change the environment to fit them; active cultures are more competitive, action-oriented, and emphasize self-fulfillment. Furthermore, in more active cultures autonomy to complete requested tasks is emphasized as well as fitting to goal-oriented work environments, suggesting the use of outcome control and more liberal methods of management to be effective [52].

H8: The higher the controllee's activity the greater the exercise of outcome control.

3.5 Mono-/Polychronicity

Individuals with polychronic time perception are involved in many different activities with different people at the same time [24]. They view time commitment only as an objective to achieve when possible and make changes to plans when needed [16]. They feel that getting to know their counterparts and building a relationship is more important than adhering to a preset schedule. Here, monitoring the process may be required to assure compliance with project schedules [9].

H9: The less monochronic the controllee's time perception the greater the exercise of behavior control.

In contrast, individuals with monochronic time perception do only one thing at a time, take time and deadlines seriously, and adhere to preset schedules. For them, time is structured, linear, and sequential [16]. They set agendas for meetings and adhere to preset schedules. They schedule negotiations in ways that create psychological pressure in having to arrive at a decision by a certain date [16].

H10: The more monochronic the controllee's time perception the greater the exercise of outcome control.

4. RESEARCH METHODOLOGY

To test the hypothesized relationships in our research model, we developed matched-pair survey instruments. Most prior research in IS outsourcing/offshoring has collected data from either clients or vendors [45]. However, Koh et al. [31] found that stakeholder perspectives differ in such arrangements. Consequently, we collected data from both clients and suppliers. Clients were surveyed on their use of different control modes within the examined project and general project characteristics. Suppliers responded to items about their national culture. In addition, clients

and suppliers provided information about their position and professional experience. The use of two questionnaires significantly reduces the risks of common source bias [30].

4.1 Data Collection

To ensure the quality of the survey data, projects and respondents had to satisfy three criteria for inclusion in the sample. First, ISO projects either had to be completed for not more than twelve months, or had to be underway for at least three months and already reached one milestone. This ensured that included projects had progressed to a reasonable maturity [45] and that significant activities had recently occurred [30], increasing the reliability of the participants' perceptions and answers. Second, projects had to allow access to both a client representative and her/his supplier counterpart. For each selected project, completed survey instruments from one matching pair were required. Third, the client and supplier members of a dyad must have had operated in their roles for at least two months. Establishing this criterion ensured that the dyads have had adequate time to work with each other and to develop a relationship [45]. Furthermore, all survey participants held key positions in their respective organizations being responsible for managing the client-supplier relationship—a major influence on ISO success [59].

A website (<http://survey.international-outsourcing.de>) was launched to host the survey instruments, accelerate communications to respondents, and improve accuracy and efficiency in data collection and analysis. Next to the online questionnaire, we also prepared a paper version of our questionnaire to eliminate coverage error [47].

We used a convenience sample to collect the survey data. To identify appropriate ISO projects and respondents, we contacted management executives of client and offshore supplier firms by e-mail followed by a personal phone call. The executives were professional acquaintances of one of the authors. This was a key criterion for selecting these sites because it enhanced our ability to ensure the appropriateness of the ultimate respondents [45]. If an executive agreed to participate, she/he was asked to nominate suitable projects and respondents and solicit the participation of the executive of the counterpart organization. The use of this "known sponsor approach" [40] often resulted in immediate legitimacy and credibility of the research team and study. The client and/or vendor executive then forwarded a personalized e-mail with the study invitation to each potential respondent within the nominated project(s). This e-mail contained the URL address and a link to the website where the survey was available, the name of the questionnaire to be filled in, and the unique matched pair ID which was used to join the data records of the paired client and supplier representatives during data analysis. The e-mail also guaranteed the anonymity and confidentiality of the respondents, and clearly specified the goals of the study, the potential benefits to the participants, and the required level of participation. As an a priori strategy to minimize non-response error and its impact on the validity of inferences, we used Dillman's [11] Tailored Design Method.

Of the 18 executives who were initially requested to participate in the study, 14 agreed, for a response rate of 78 percent. Follow-up communications with the four non-participating executives did not reveal any trends or reasons that would point toward a non-response bias. A total of 96 client and supplier project team members were asked to participate in our study. In all, 94 respondents (46 client and 48 supplier representatives) filled in

the questionnaire, resulting in a response rate of 98 percent. In order to form one data record for each matched pair, the matching client and supplier data records were joined based on the included ID. Two non-paired data records were dropped from the analysis, resulting in a sample size of 46 unique matched pairs. A comparison of the data of early returned questionnaires with that of later returned ones showed no indication of non-response error. Furthermore, the wide range of responses to our survey items indicates a lower risk of non-response bias [45].

4.2 Instrument Development

Two survey instruments were developed for this study, one for collecting data about the dependent variables (choice of controls) from the clients, and one for collecting data about the independent variables (national culture) from the suppliers. Generally accepted guidelines were followed in developing these instruments. All latent variables were measured with multiple items. Scale items were derived from prior research: To measure the four modes of control, we adopted Kirsch et al.'s [29] items for behavior, outcome and clan control, and adapted Brief and Aldag [5], Choudhury and Sabherwal [9], and Kirsch et al.'s [29] items for self-control. Measures for the cultural dimensions power distance, individualism/collectivism, and uncertainty avoidance were adopted from Hofstede's "Values Survey Module" [19]. However, scale items for the constructs activity and monochronicity were newly developed since we were not able to identify suitable measuring instruments. Although some scholars have conceptualized the cultural dimensions associated with these constructs, relatively few have attempted to measure them directly. The new items used in this study reflect and measure key concepts of activity and monochronicity, and are grounded in the work of Lytle et al. [35] and Triandis [52], and Hall and Hall [16], respectively. The three activity items assessed the controllee's individual initiative to complete tasks and find solutions to recurring issues, and her/his willingness to accept challenging tasks. The two monochronicity items involved the adherence to preset plans and time targets. All constructs were measured reflectively. Except for the demographic items, all items were rated on five-point Likert scales.

Prior research noted the effect of project size [27] and controllee's domain-specific knowledge [9; 26] on control choices. Hence, we included project size and supplier ISO knowledge as control variables in our analysis. Project size was measured by requesting client managers to indicate the amount of person months needed to execute the ISO project. ISO knowledge was estimated by asking (supplier) respondents to indicate their number of years of experience in the ISO field on a three-point Likert scale. The project volume and the ISO experience were used as proxies for project size and supplier ISO knowledge, respectively.

In March 2010, we conducted a pretest with five IS practitioners and four academics with expertise in ISO and survey methods. Furthermore, two experienced IS faculty members reviewed the client and supplier questionnaire and provided comments for improvement. Following the pretest, we selected a large-scale ISO arrangement as the site for the pilot study. This arrangement involved a multinational client organization with annual revenues of more than ten billion US dollars that has offshored IS services to an Indian vendor. A total of eleven respondents participated in the pilot study, eight client and three supplier representatives. The pilot resulted in clarification of the unit of analysis: The client-supplier pair rather than the ISO project. In addition, a power distance measure was added, the wording of some measures was

slightly changed, and the degree of data anonymity and confidentiality was further emphasized. Respondents in the pilot study were not in the main sample.

5. DATA ANALYSIS AND RESULTS

Before testing the research model, we provide descriptive statistics for our sample. Over a five-month period, we collected data from a total of 36 projects from 16 client organizations. All of these organizations operate from German-speaking countries (12, 3, and 1 from Germany, Switzerland, and Austria, respectively). 14 of them are large for-profit firms and two small or medium-sized enterprises (SMEs).

26 projects dealt with “applications development/testing”; five projects were characterized as “applications management”; and two as “IT infrastructure management (managed services)”. The project volume ranged from very small (less than 24 person months) to very large (600 or more person months), with a slight preponderance of larger projects. 33 projects involved large-scale supplier organizations, while three projects involved SME suppliers. 20 projects were executed with independent supplier firms (third party vendors and global IT service providers), 15 with a subsidiary of the client firm, and one with a joint venture. One project involved a nearshore supplier (Slovakia). In contrast, more than 90 percent of the projects were offshored to India.

63 percent of the client representatives stated that they had more than five years of experience in the IS field, while 96 percent declared having more than one year of experience in the ISO field. Almost 70 percent of the supplier representatives indicated having more than five years of experience in both the IS and ISO field.

To test the research model, we transformed it into a structural equation model, using the software *SmartPLS*. Partial least squares (PLS) has the ability to handle relatively small sample sizes [30], making it an appropriate choice. Basically, our data analysis followed a two-stage process as suggested by Chin [7] and Hulland [20]: First, we assessed the reliability and validity of the measurement model. Second, we tested the structural model and its hypotheses, and analyzed the effect of control variables.

5.1 Assessment of the Measurement Model

Five criteria need to be examined to determine the adequacy of the measurement model. These criteria are discussed below.

(1) *Content validity*: Content validity indicates to what extent the

variables of a measurement model belong to the domain of the construct [4]. This was assured by selecting well established measures from prior research (wherever feasible), consulting experts in a pretest, and conducting a pilot study.

(2) *Item reliability*: Item reliability specifies which part of an item’s variance can be explained by the underlying construct. If item loadings within the PLS model are lower than 0.40 they should be eliminated [20]. Loadings were analyzed using the PLS path weighting scheme. A number of items were below the 0.40 threshold. On the part of the independent variables, similar to Srite and Karahanna [48] we encountered difficulties in some of the original culture items adopted from Hofstede’s “Values Survey Module” [19]. The analysis indicated problems with three power distance items, two collectivism items, two uncertainty avoidance items, and one activity item. On the part of the dependent variables, the generated item loadings showed problems with three outcome control items, one clan control item, and one self-control item. These items were removed from the model. PLS analysis was then run again reporting high loadings for all culture-related and control-related items (above 0.60 and 0.71, respectively), except for one behavior control item (0.53). A generally accepted rule of thumb is that item loadings should be greater than 0.70 [2]. However, in exploratory work loadings of 0.50 are still acceptable [8]. Thus, all items can be considered significant.

(3) *Construct reliability*: Construct reliability (or internal consistency) indicates how well a construct is measured by its items. It can be assessed with the composite reliability measure [15]. As seen in the “Fornell” column in Table 1, all constructs exceed the recommended cut-off of 0.6 [15], and are thus reliable.

(4) *Convergent validity*: Table 1 displays the correlations analysis of the independent variables, the dependent variables, and the two control variables. The boldface diagonal cells are the square root of the average variance extracted (AVE), which is a measure of the variance shared between a construct and its items. Each variable has an AVE of at least 0.5, establishing convergent validity for all scales [15].

(5) *Discriminant validity*: A necessary condition for discriminant validity is that a latent variable shares more variance with its assigned items than with any other latent variable [15]. The off-diagonal cells in Table 1 show the correlations between the

Table 1. Correlations between constructs

Construct	Fornell	PD	CO	UA	AC	MO	BC	OC	CC	SC	PS	IK
Power Distance (PD)	0.77	0.80										
Collectivism (CO)	0.76	-0.18	0.79									
Uncertainty Avoidance (UA)	0.75	0.40	-0.05	0.78								
Activity (AC)	0.78	-0.04	-0.23	0.05	0.81							
Monochronicity (MO)	0.67	0.23	-0.04	0.38	0.30	0.71						
Behavior Control (BC)	0.65	0.26	-0.06	0.06	0.16	0.41	0.71					
Outcome Control (OC)	0.83	-0.29	-0.29	-0.13	0.37	0.14	0.13	0.84				
Clan Control (CC)	0.80	0.39	0.12	-0.01	0.13	-0.02	0.38	-0.05	0.76			
Self-Control (SC)	0.83	-0.29	-0.16	-0.24	0.14	0.00	0.05	0.22	0.04	0.79		
Project Size (PS)	1.00	-0.09	-0.01	-0.05	0.02	-0.33	-0.42	-0.07	0.02	0.03	1.00	
ISO Knowledge (IK)	1.00	-0.11	-0.10	-0.13	0.09	-0.08	-0.13	0.06	-0.38	-0.14	0.10	1.00

constructs. The diagonal values are significantly greater than the off-diagonal values in the corresponding rows and columns, indicating discriminant validity for all scales [20]. Additionally, each within-construct item loads highly on the construct it is supposed to measure, and cross-loadings are lower than the within-construct item loadings.

5.2 Assessment of the Structural Model

The assessment of the inner model involves estimating the path coefficients and the R^2 -values. Path coefficients specify the strengths of the relationships between the independent and dependent variables, while the R^2 -value is a measure of the predictive power of a model for the dependent variables [30]. A bootstrap resampling method (1.000 re-samples) was used to determine the significance of the paths within the structural model. The sample size of 46 matched pairs exceeded the recommended minimum of 30 data records, which is ten times the largest number of independent variables influencing dependent variables in the structural model [2].

H1 and H2 pertain to power distance. As expected, power distance is significantly related with the exercise of clan control ($b = 0.387$; $t = 2.426$; $p < 0.05$) and self-control ($b = -0.287$; $t = 1.743$; $p < 0.10$). Both paths have effects in the predicted directions, supporting H1 and H2. Collectivism does not significantly affect the choice of informal controls (clan and self-control). Thus, H3 and H4 are not supported. H5 suggests a negative relationship between uncertainty avoidance and the use of self-control. H6 proposes a positive effect of uncertainty avoidance on the exercise of behavior control. However, both hypotheses are not significant. H7, which hypothesizes a negative relationship between activity and behavior control, as well as H8, which assumes a positive effect between activity and outcome control, are not significant, either. The latter path almost reached the critical t -value of 1.66 ($b = 0.368$, $t = 1.484$), and might therefore be worthwhile for further investigation in future research. Contrary to expectations, monochronicity has a significant and positive relationship with behavior control ($b = 0.310$; $t = 1.751$; $p < 0.10$). This finding is in the opposite direction of the relationship hypothesized (H9) and suggests that if the controllee's monochronic time perception is high, the controller's exercise of behavior control is also high, and vice versa. Finally, monochronicity is not significantly associated with the use of outcome control. Thus, H10 is not supported.

Table 2 gives a detailed overview of the hypotheses test results.

Approximately 30 percent ($R^2 = 0.298$) of the variance in clan control, 19 percent ($R^2 = 0.192$) of the variance in self-control, 28 percent ($R^2 = 0.278$) of the variance in behavior control, and 15 percent ($R^2 = 0.145$) of the variance in outcome control are explained by the model. Ranging from 0.287 to 0.387, all path coefficients of the supported hypotheses clearly exceeded the suggested minimum value of significance at 0.20 [7]. Therefore, the fit of the overall model is deemed to be good [30].

The controllee's ISO knowledge and project size were included in the model as control variables. For both variables, one relationship with a dependent construct was found to be significant: ISO knowledge lowers the exercise of clan control ($b = -0.333$; $t = 2.463$; $p < 0.05$); project size is negatively associated with the use of behavior control ($b = -0.310$; $t = 1.756$; $p < 0.10$).

6. DISCUSSION

Before discussing the study results and their implications, some of the key limitations have to be mentioned. First, only a moderate sample size of 46 matched pairs was achieved. This sample size could potentially limit the power of the statistical techniques. Second, the findings of this study may be specific to ISO arrangements between Germany and India as the majority of the participating controllees were Indian, while most controllers were German. Third, the extent or amount to which the four control modes were exercised was not examined. Forth, this study only provides insight into the client's choice of controls. Hence, it does not examine the mechanisms used internally by the supplier. Finally, there are also limitations specific to measuring cultural values on the individual level that apply to all culture studies. As such, there is a concern that some of these cultural values are subtle and implicit and as such cannot easily be reported [48].

Before discussing the cultural value dimensions showing positive effects on control modes, we provide a brief discussion of the non significant relationships.

Collectivism, uncertainty avoidance and activity don't show significant relationships to any of the four control modes. Please note that the path from activity to outcome control is just below the significance threshold of 1.66. Obviously, ISO project managers don't pay particular attention to these three dimensions

Table 2. Hypotheses test results

		Hypothesis	Standardized Path Coefficient (b)	t-Value for Path	p-Value (two-tailed)
✓	H1	Power Distance → Clan Control (+)	0.387	2.426	0.05
✓	H2	Power Distance → Self-Control (-)	-0.287	1.743	0.10
X	H3	Collectivism → Clan Control (+)	0.162	1.036	
X	H4	Collectivism → Self-Control (-)	-0.239	1.014	
X	H5	Uncertainty Avoidance → Self-Control (-)	-0.169	0.947	
X	H6	Uncertainty Avoidance → Behavior Control (+)	-0.086	0.524	
X	H7	Activity → Behavior Control (-)	0.088	0.365	
X	H8	Activity → Outcome Control (+)	0.368	1.484	
✓	H9	Monochronicity → Behavior Control (-)	0.310	1.751	0.10
X	H10	Monochronicity → Outcome Control (+)	0.004	0.025	
"✓" indicates significant relationship; "x" indicates not significant relationship					

when selecting their portfolio of control. Several explanations might account for this finding. First, it is possible that controllers do not care about the cultural values associated with these dimensions. Second, it might be particularly difficult to identify and observe these three cultural dimensions at the supplier's side. It might well be that these values are hidden as they are more tacit and deeply engrained [48]. Hence, the controller cannot take into account these cultural values when selecting appropriate controls. Finally, there could also be mediation effects between these cultural values and control choices responsible for these non-significant results. For example, behavior measurability could be mediating the relationship between uncertainty avoidance and control. Here, individuals with high uncertainty cultural values are more willing to reveal their actual behavior, a prerequisite for high behavior measurability, which in turn is associated with the use of either behavior control (if the controller is knowledgeable) or clan control (if the controller has low knowledge) [29].

6.1 Power Distance

Power distance was found to have a significant impact on informal control modes. This finding supports our hypotheses such that the higher the controllee's power distance the greater the exercise of clan control and the lower the controllee's power distance the greater the exercise of self-control.

Obviously, in high power distance cultures controllers take into account the controllees' predispositions such as that employees are fearful of disagreeing with their superiors and expect to be told what to do. They thus select clan control mechanisms, such as rituals, ceremonies and socialization to mitigate the difference in objectives between them and the controllees [9]. As controllees are more attuned by social norms [48] it is likely that they are more reachable by clan control.

On the other hand, our finding also confirms that self-control is a feasible option for low power distance cultures and a less favorable option for high power distance cultures. Typically, in high power distance cultures controllees ask for guidance. As a result, controllers are less likely to use control mechanisms that require high levels of autonomy and self-management. This finding is important because it further supports findings from prior literature that already proclaimed the important role of power distance in the context of ISO (e.g., [41; 59]).

In general, our findings emphasize the importance of informal controls with regard to the power distance value, may it be as complementary to formal control, or as dominant control mode.

6.2 Monochronicity

Our results confirmed a significant relationship between monochronicity and behavior control but in the opposite direction as hypothesized, such that the more monochronic the controllee's time perception the greater the exercise of behavior control. This result is counterintuitive. Several explanations are possible. First, the rationale for our hypothesis rested on Choudhury and Sabherwal's [9] finding that in an outsourcing context, tight behavioral controls are preferable in order to meet project schedules. This finding is based on anecdotal evidence from five cases, and thus might be specific to the particular context in these cases. Second, there is also evidence that control that counteract behavior may lead to typical resistance behavior, causing so called "ripple and knock-on effects" [34]. Ripple effects are primary side effects of well-intentioned control efforts, whereas knock-on effects show "secondary impacts of project control efforts, i.e., the impacts of ripple effects, often caused by processes that produce

excessive or detrimental concurrence or human factors that amplify the negative effects via channels such as morale. Here, the use of less tight controls (e.g., outcome controls) might make monochronic controllees feel insecure (ripple effect), decreasing their productivity (knock-on effect). Controllers anticipating these (negative) side effects might thus try to exercise more behavior control for monochronic controllees and, in turn, less behavior control for more polychronic controllees.

6.3 Project Size

Our results show that project size has a significant negative relationship with behavior control, such that the lower the project size the greater the exercise of behavior control. There is a plausible possibility for this. Smaller projects are better controllable by means of behavior control as behavior observability is higher compared to larger, more complex projects, thus increasing the option to use behavior control. This extends the findings of Choudhury and Sabherwal [9], who didn't find a significant impact of project size on the choice of controls in outsourcing projects, and it may well be that their anecdotal evidence from five cases didn't allow generalization to a larger population of ISO projects. Our findings also contradict the findings of Jaworski [21], who found that larger projects prefer more formal control. However Jaworski didn't specify the mode of formal control so it is not clear whether this also included behavior control.

6.4 Supplier ISO Knowledge

The path between supplier ISO knowledge and clan control shows a significant negative relationship between these two, such that the lower the supplier's ISO knowledge the greater the use of clan control. This significant effect has not yet been articulated in past research. In general, there is agreement that the choice of controls further depends on the knowledge of the stakeholders [28]. In particular, a knowledgeable controllee makes the controller feel more confident in using self- or outcome control [26]. Even though we used ISO experience (number of years) as proxy for ISO knowledge, our results shed more light into the role of supplier experience (and thus knowledge) for using clan control.

Apparently, for less experienced controllees, controllers tend to rely on clan control, although in distant offshore relationships implementing clan control can be very costly. Exercising clan control by participating in project team meetings requires considerable time and commitment. However, it might well be that clan control is still the only feasible option or supplements well other more formal control mechanisms. On the other hand, if controllees are highly experienced, often these costly clan controls may not be necessary to this extent.

7. CONCLUSIONS AND IMPLICATIONS

Our research aims to contribute to the ISO and control literature in several ways. First, our results enhance prior findings by establishing a more detailed understanding about the influence of the supplier's cultural values on the exercise of control. Second, we were able to confirm the significance of two control variables, such as project size and the supplier's ISO knowledge. In particular project size has so far shown mixed results [27; 9]. Third, we incorporated and successfully applied new measures for self-control and developed new items for the constructs activity and monochronicity.

Our results also have important implications for practice. In general, our results suggest that informal controls are a powerful managerial tool for steering ISO projects. In particular, our view

of self-control (i.e., mechanisms the controller uses to assist and promote the exercise of self-control by the controllee) has interesting implications: Self-control could be used as a means to implement more difficult formal controls for less motivated, difficult to control and dependent controllees. For instance, control of the supplier team members' behavior can be indirectly achieved by means of self-control through the supplier's project manager who acts as controller for her/his supplier team [51]. Furthermore, our results suggest that when ISO client managers select their portfolio of control they should consider the cultural values of their supplier counterparts, may they be "easy to observe" (power distance) or more "hidden" (collectivism, uncertainty avoidance, and activity). Finally, our research sheds new light on the importance of cultural trainings [59]. Trainings focusing on cultural values could effectively improve cultural intelligence, thereby enabling client project managers to better determine culture-specific elements of behavior [3], which in turn is a prerequisite to select appropriate controls and to fine-tune them.

8. REFERENCES

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