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The Impact of Culture on Control in IS Offshoring Projects

Diploma Thesis

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Abstract

Purpose – The purpose of this study is to better understand how national culture influences the choice of control modes and mechanisms in captive offshoring and offshore outsourcing projects.

Design / methodology / approach – Control theory with prior literature on ISO and national culture formed the theoretical foundations. Six national culture dimensions (i.e., power distance, individualism vs. collectivism, uncertainty avoidance, activity vs. passivity, universalism vs. particularism, and monochronic vs. polychronic time perception) and four modes of control (i.e., outcome control, behavior control, clan control, and self-control) were consulted to examine the relationship between national culture and the choice of controls. The research approach was a survey-based field study using a client-supplier matched pair as the unit of analysis. This resulted in a sample size of 37 unique matched pairs.

Findings – This study contributes to the ISO and control literature by offering empirical evidence that both the client and supplier's national culture affect the client's choice of controls in IS offshoring projects. The researcher found that the supplier's power distance, uncertainty avoidance, and time perception affect the choice of controls. Further, it was found that the client's collectivism, uncertainty avoidance, activity, universalism, and time perception influence the choice of controls, too.

Practical implications – This study revealed the client and the supplier's cultural characteristics that play an important role in the selection of different control mechanisms. This knowledge enables clients and suppliers to more effectively apply control mechanisms to different cultural settings and, thus, create an environment conducive to project success.

Originality / value – This is the first quantitative study on the impact of culture on the choice of controls in an ISO context. By using the client-supplier dyad as the unit of analysis, the direct control relationship within a matched pair could be examined. Further, surveying both the client and supplier representatives on their cultural background resulted in a more comprehensive understanding of how culture influences the choice of controls. Finally, considering ISO in general rather than concentrating on one specific ISO variation provided interesting insight into different ISO projects and models.

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1 Introduction

Increased global competition (Hirschheim 2006; Sahay et al. 2003) coupled with advances in telecommunications technologies and infrastructures in developing countries (Gopal et al. 2002), as well as potential benefits, such as cost reduction, access to highly skilled professionals, and time-to-market reduction (e.g., Khan et al. 2003; Rao et al. 2006) prompted companies to use IS offshoring (ISO). ISO is defined as the relocation of IS services to a captive or third party organization in a foreign, mostly low-wage country (Rajkumar and Mani 2001; Rao et al. 2006), and can now be regarded as a global phenomenon (King 2005).

Despite the manifold benefits, companies' experiences with ISO have not been consistently positive (Adelakun and Jennex 2003; Jacobson and Lidman 2004). Prior research suggests that ISO project failures can often be traced back to the existing cultural differences between client and supplier (Gupta and Raval 1999; Nicholson and Sahay 2001; Rottman and Lacity 2004). This is not surprising as ISO projects involve actors from different countries (and cultures), working together in complex, intensive, and dynamic activities (e.g., IS development) that require close cooperation and coordination (Beath 1987; Kirsch 1997). 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 (Dibbern et al. 2008).

One powerful approach for managing client-supplier relationships in ISO projects is exercising control (Kirsch 1997, 2004). Control refers to any attempt to motivate individuals to behave in a manner consistent with organizational objectives (Das and Teng 1998; Jaworski 1988; Ouchi 1979). Because ISO "entails complex issues of geographical, cultural, and lingual differences […]" (p. 139), Rustagi et al. (2008) stresses 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 (Choudhury and Sabherwal 2003; Dibbern et al. 2004; Kern and Willcocks 2000). Controlling an offshore supplier is complicated by cultural differences which impact the coordination of the supplier employees as well as the cooperation and communication with them (Winkler et al. 2008). In a study on the dynamics of control, Kirsch (2004) confirms this assertion by finding that differences in culture, i.e., norms, values, and beliefs, affect control choices. It is thus purposive to examine how the client and supplier's national culture affect the client's choice of controls in ISO projects.

Previous literature has already acknowledged the important role of cultural differences in ISO in general (e.g., Carmel and Agarwal 2001; Heeks et al. 2001; Krishna et al. 2004; Nicholson and Sahay 2001; Rao 2004). 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 (Dibbern et al. 2004; Wiener 2010). Thus, there is still a need for rigorous quantitative work. Second, so far there has been no empirical study which has examined the influence of national culture on the choice of different modes of control. Although Narayanaswamy and Henry (2005) proposed an initial set of propositions regarding the relationship between three of Hofstede's cultural dimensions and the 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 choice of controls relates to both the client and supplier's national culture. These questions are addressed by developing two research models which integrate control theory with prior literature on ISO and national culture. To test the models, a survey-based field study was performed using a client-supplier matched pair as the unit of analysis.

This study starts with a review of the relevant literature on culture and control. Thereafter, the research models and hypotheses are presented. The research methodology including the data collection and the development of the measurement instruments is described subsequently. The next section provides a description of the data analysis with partial least squares. Then, the data is analyzed and results are reported. The study ends by noting limitations, discussing the results and drawing conclusions.

2 Theoretical Background

2.1 Culture Theory

2.1.1 Definitions of Culture

The term culture was used with its modern meaning in the German word "Kultur" as early as 1843 (Kroeber 1949). Since then, many scholars from different academic areas have produced numerous definitions of culture. Basically, these definitions can be classified into three groups: definitions based on shared values, definitions based on problem solving, and general all-encompassing definitions (Straub et al. 2002).

2.1.1.1 Definitions Based on Shared Values

There are numerous culture definitions based on values, identifying and describing culture as a set of value patterns that are shared by individuals and within groups and influence how individuals behave

(e.g., Hofstede 1980; Kluckhohn and Strodtbeck 1961; Parsons 1949; Trompenaars 1993). Values refer to relationships among abstract categories that are characterized by strong affective components and imply a preference for a certain type of action (Karahanna et al. 2005). Values are acquired early in life. They provide individuals with fundamental assumptions about how things are. Once a value is learned, it becomes integrated into an organized system of values where each value has a relative priority. This value system is relatively stable in nature but can change over time reflecting changes in culture as well as personal experience. A frequently cited definition is that of Hofstede (2001). 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).

2.1.1.2 Definitions Based on Problem Solving

Another group of scholars (e.g., Schein 1999) concentrate on the outcomes of culture and what it can accomplish, rather than defining culture from the perspective of its composition. They focus on problem solving and how this defines a particular group of people. Moran and Stripp (1991), for instance, define culture as "a group problem-solving tool that enables individuals to survive in a particular environment" (p. 43).

2.1.1.3 General All-encompassing Definitions

Several scholars define culture generally (e.g., Groeschl and Doherty 2000; Hall 1976). Groeschl and Doherty (2000), for instance, split culture into two categories. They suggest that "[c]ulture consists of several elements of which some are implicit and others are explicit. Most often these elements are explained by terms such as behaviour, values, norms, and basic assumptions" (p. 14). Some researchers describe culture as tacit or implicit artifacts such as ideologies, coherent sets of beliefs, basic assumptions, shared sets of core values, important understandings, and the collective will (e.g., Jermier et al. 1991; Sackmann 1992). Other researchers propose culture as explicit observable cultural artifacts such as norms and practices (e.g., Jermier et al. 1991), symbols (Burchell et al. 1980), as well as language, ideology, rituals, myths, and ceremony (Pettigrew 1979; Karahanna et al. 2005).

2.1.2 Conceptualizations of Culture

Both the cultural research and the conceptualizations of culture are complex in nature. Two different concepts of culture are discussed in literature: the dimensional view and the emergent view. Both views are described in the following.

2.1.2.1 Dimensional View of Culture

The dimensional view usually takes an etic approach to explore culture (Pike 1967). It describes culture as shared values, attitudes, and norms by a group of individuals which are relatively stable and influence how individuals behave (Avison and Myers 1995). Based on the shared and predictive assumptions about culture, researchers attempt to generalize the patterns of different cultures into several dimensions, which frequently use a given nation as the boundary condition. The defined cultural dimensions provide a framework to measure and compare the cultural differences from one country (or group) to another (Roberts and Wasti 2002).

2.1.2.2 Emergent View of Culture

Some researchers criticize that many cross-cultural studies treat culture as a static concept by using the dimensional view of culture, which may not allow for an in-depth understanding of the complex phenomena (Myers and Tan 2002; Sahay et al. 2003; Straub et al. 2002; Walsham 2002; Weisinger and Trauth 2002). They advocate an emergent and dynamic view of culture without predefined cultural dimensions, applying qualitative (interpretive) research methods. This view depicts culture as historically situated, emergent and contested, which is negotiated and constantly interpreted and re-interpreted in social relations and interactions (Myers and Tan 2002). Researchers who adopt this view usually take an emic approach to explore culture (Pike 1967; Avison and Myers 1995).

However, the dimensional model allows for quantitative analyses of group differences, and has proved to be useful for theory development and testing in IS and cross-cultural research (Ford et al. 2003; Williamson 2002). Therefore, the researcher relies on the dimensional view of culture, regarding the emergent model as a complimentary research perspective, not necessarily a competing one.

2.1.3 Levels of Culture

The relative influences of culture may vary depending on the specific context (Huang and Trauth 2006; Karahanna et al. 2005). 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 (Dafoulas and Macaulay 2001; Karahanna et al. 2005). Culture at a national or societal level is the culture shared between people in a country or a society (Hofstede 1980). Culture that is shared between people working in an organization is called organizational culture. Culture that is shared between people with a similar profession is called professional culture. Individual culture is referred to as the subjective culture of an individual, which is related to how much an individual takes from the different cultures that she or he is part of (Karahanna et al. 2005).

Figure 1 (adapted from Karahanna et al. 2005) shows the interrelated levels of culture. In ISO, national culture may not be the only type of culture which influences the choice of controls. Some cultures may dominate depending on the situation. The cultures that enfold the individual interact and comprise the individual's unique culture that influences the individual's behavior and actions (Karahanna et al. 2005). However, cultural differences on the national level are presumed to constitute a predominant factor influencing ISO project control. Wilkins and Ouchi (1983) argue, for instance, that "the learning of organizational 'culture' typically occurs in adulthood and since members of contemporary organizations rarely live in 'total institutions' […] and are thus exposed to alternative orientations, we assume that the social understandings in organizations […] are neither as deep nor as immutable as the anthropological metaphor would suggest" (p. 479). The researcher believes that this rationale also applies to the professional and team level of culture. For example, Levina and Vaast (2008) found that differences in country contexts significantly impact the collaboration effectiveness in offshore software development projects, while organizational differences are largely negligible, thereby emphasizing the important role of national culture as key influencing factor.

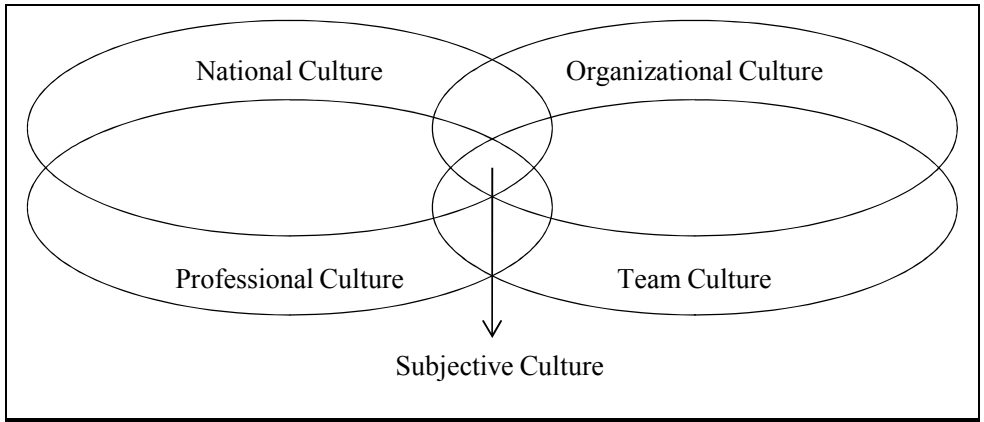

Figure 1. Interrelated Levels of Culture

2.1.4 National Culture Dimensions

A variety of cultural dimensional models, including those of Hall (1976), Hofstede (1980), and Trompenaars and Hampden-Turner (1998) have gained prominence in (IS) research. They are subsequently presented in detail. A list of the most commonly cited models of national culture is shown in Table 8 in the appendix.

2.1.4.1 Hall's Cultural Dimensions

Hall (1976) distinguishes between three cultural dimensions.

(1) *High context versus low context communication:* Hall classifies cultures into high context cultures and low context cultures. In high context cultures, the information flow is typically not formalized and information usually carries some sort of symbolic or embedded meaning. In contrast, communication in low context cultures occurs very directly without implicit or hidden meaning and is usually relayed in a more formalized way.

(2) *Space:* Hall distinguishes between physical space and personal space. The former describes the territorial allocation (e.g., division into compartments, demarcation), whereas the latter illustrates the individual distance and emotional proximity to other individuals.

(3) *Monochronic versus polychronic time perception:* It has to be differentiated between monochronic and polychronic time perception. Individuals with monochronic time perception take time and deadlines seriously. For them, time is structured, linear, and sequential. In contrast, individuals with polychronic time perception tend to do many things at once, view time commitment only as an objective to achieve when possible, and make changes to plans when needed.

2.1.4.2 Hofstede's Cultural Dimensions

Hofstede's work (1980) has widely been used in IS and cross-cultural research. He proposes five key dimensions for comparing cultures.

(1) *Individualism versus collectivism:* Individualism is "the degree to which people in a country prefer to act as individuals rather than as members of groups" (Hofstede 1993, p. 89). In individualist cultures the ties between individuals are loose. On the other hand, a collectivist society finds people integrated into strong, cohesive groups. Cultures high in individualism value personal time and personal accomplishments. In high collectivistic cultures group goals and interests are more important than individual desires.

(2) *Power distance:* Power distance is defined as the extent to which the less powerful members of institutions and organization 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. In cultures that are low in power distance, relationships between superiors and subordinates are more participative and egalitarian.

(3) *Uncertainty avoidance:* This dimension describes the extent to which the members of a culture feel threatened by uncertain or unknown situations. A culture high in uncertainty avoidance would exhibit a rule orientation, prefer employment stability and exhibit stress when trying to explain, mitigate and minimize the uncertainty that is inherent to life.

(4) *Masculinity versus femininity:* Masculine and feminine culture can be differentiated in terms of emphasis of competitiveness and material success versus nurturance and quality of life, rather than in terms of gender roles for the sexes.

(5) *Long-term orientation (Confucian dynamism):* This dimension was added later by Hofstede and Bond (1988) and has two contrasting poles: long-term versus short-term orientation. Long-term orientation refers to a positive, dynamic and future-oriented culture linked with four "positive" Confucian values, in particular persistence, thrift, having a sense of shame, and ordering relationships by status and observing this order. Short-term orientation stands for a negative, traditional, and past-oriented culture associated with four "negative" Confucian values, in particular, respect for tradition, preservation of face, personal steadiness and stability, and reciprocation of greetings, favors, and gifts.

2.1.4.3 Trompenaars and Hampden-Turner's Cultural Dimensions

Trompenaars and Hampden-Turner (1998) developed seven cultural dimensions, which are based on the results of surveys conducted in 47 countries with more than 15.000 participants.

(1) *Universalism versus particularism:* In universalistic cultures, rules apply irrespective of persons and situations and are strictly adhered to. In particularistic cultures, compliance with a rule depends on the context. Here, personal bonds are more important than equal treatment.

(2) *Individualism versus collectivism:* This dimension is similar to Hofstede's dimension Individualism versus collectivism.

(3) *Neutral versus emotional:* In neutral cultures emotions are seldom shown. Broadly showing emotions is interpreted as lack of self-control. In emotional cultures, in contrast, showing emotions is widely accepted.

(4) *Specific versus diffuse:* Specific cultures clearly separate professional from private life. The status an employee has in his work is not transferred to private life. Professional matters are regarded as functional, not personal. In diffuse cultures professional and private life intermingle.

(5) *Achievement versus ascription:* In achievement-oriented cultures individuals are assessed on the basis of their performance, and skills. Executives are acknowledged because of their expertise and

know-how. In contrast, ascription-oriented cultures attach great importance to titles, age, or social background.

(6) *Time orientation:* This dimension holds three aspects. Firstly, Trompenaars and Hampden-Turner distinguish between monochronic and polychronic time perception as described by Hall (1976). Secondly, they distinguish between cultures with regard to the importance with which cultures evaluate the past, present, and future. Thirdly, similar to Hofstede, they differentiate between short-term and long-term orientation.

(7) *Internal versus external control:* Internally controlled cultures believe that they can and should control nature by imposing their will upon it. Members of this culture view most events that affect them as caused by themselves. Externally controlled cultures accept authority from outside and believe that man is part of nature and must go along with its laws. Members of this culture feel that most events are caused by influences that are external to them and, thus, essentially uncontrolled.

2.1.5 Critique on the Concept of National Culture

The concept of national culture is by no means free of controversy. Some researchers argue that the concept of national culture is theoretically weak and ignores some of the facts of history (e.g., Myers and Tan 2002; Sahay et al. 2003; Walsham 2002). This study focuses on the critique on Hofstede's model of national culture, because his work has had the most significant influence on IS and cross-cultural research. However, many of the criticisms on Hofstede's model apply equally well to most of the other models of national culture. The central critique can be classified into three groups: sample bias, methodological problems, and conceptual limitations.

2.1.5.1 Sample Bias

(1) *One company approach:* Some researchers (e.g., McSweeney 2002; Søndergaard 1994) criticize that a study fixated on only one company cannot provide information on the entire cultural system of a country. Hofstede, however, argues that his style of cross-sectional analysis was appropriate since he was not making an absolute measure but merely gauging differences between cultures (Hofstede 1998). In addition, he stresses that the use of a single multinational employer eliminates the effect of the corporate policy and management practices from different companies influencing behavior differently, leaving only national culture to explain cultural difference (Hofstede 1980).

(2) *Political influences:* The outcomes, particularly those pertaining to masculinity versus femininity (Søndergaard 1994) and uncertainty avoidance (Newman 1996), may have been sensitive to the timing

of the survey. Europe was in the midst of the cold war and memories of World War II were still vivid. Similarly, there was the communist insurgence in Asia, Africa and Europe.

2.1.5.2 Methodological Problems

(1) *Instrument utility:* Some researchers argue that a survey is not an appropriate instrument for accurately determining and measuring cultural differences. This is especially apparent when the variable being measured is a value that is culturally sensitive and subjective (McSweeney 2002; Schwartz 1999). Hofstede counters, saying that surveys are one method but not the only method that was used (Hofstede 1998).

(2) *Statistical integrity:* Dorfman and Howell (1988) criticize that in his analysis, Hofstede has used the same questionnaire item on more than one scale, and several have significant cross-loadings. They further point out that Hofstede's analysis is based on too few cases and, thus, takes great advantage of chance and increases the likelihood of sample error. Moreover, the selection of the items that comprise the scales used to measure the four original dimensions is somewhat arbitrary, because for each of the scales Hofstede chose a small number of items from larger surveys, which were not specifically designed for the purpose (Smith 2002).

2.1.5.3 Conceptual Limitations

(1) *Cultural homogeneity:* Hofstede assumes that the population of a nation is homogenous. Subcultures are often assumed not to exist in the use of Hofstede's taxonomy (McSweeney 2002). However, most nations are groups of ethnic units (McSweeney 2002; Myers and Tan 2002). Canada provides a good illustration of this with its French and English speaking cultures (Straub et al. 2002). Therefore, the outcomes may be arbitrary. Further, the analysis may be constrained by the character of the individual being assessed. On the other hand, Hofstede tends to ignore the importance of community, and the variations of the community influences (Dorfman and Howell 1988; Smith 1998).

(2) *National boundary:* Some scholars point out that cultures are not necessarily bounded by borders (McSweeney 2002). Myers and Tan (2002), for instance, found that culture can be fragmented across group and national lines. An example is the cross-border influence of many Arabic cultures (Straub et al. 2002).

(3) *Out-dated:* Some researchers (e.g., McSweeney 2002) claim that the dimensions are no longer valid because culture shifts over time. This is due to today's rapidly changing global environments, internationalization and convergence. Hofstede addresses this criticism, saying that recent replications have supported the fact that culture does not change overnight (Hofstede 1998). Moreover, several

studies were developed to test the relevancy of Hofstede's questions. These studies have confirmed the accuracy of Hofstede's four traditional dimensions (Søndergaard 1994).

2.2 Control Theory

This study adopts a behavioral view of control. This view implies that when a controller exercises control over a controllee, the controller is taking some action in order to regulate or adjust the behavior of the controllee (Kirsch 1996). The behavioral view draws upon organization and agency theories consistent with prior studies in IS (e.g., Choudhury and Sabherwal 2003; Henderson and Lee 1992; Kirsch 1996, 1997; Kirsch et al. 2002; Kirsch 2004), organization design (e.g., Eisenhardt 1985), and marketing (Jaworski 1988; Jaworski and Maclnnis 1989).

According to Kirsch (2004), a control situation typically involves an individual exercising control (the controller) and a target of control (the controllee). However, this distinction sometimes becomes fuzzy (Choudhury and Sabherwal 2003). For instance, the controller and the controllee may not be single 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.

2.2.1 Control Modes and Mechanisms

The behavioral view of control presumes that the controller uses certain control mechanisms to exercise four modes of control, which may broadly be divided into formal and informal controls (Kirsch 1997).

Two modes of formal control exist: behavior and outcome control (Eisenhardt 1985; Ouchi 1979). 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 (Jaworski and Maclnnis 1989; Kirsch 1996). This is achieved through the use of mechanisms that either specify appropriate behaviors, or allow for evaluation of the controllee's behavior (Kirsch 1997) by personal or IS-based observation (Eisenhardt 1985). 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 (Eisenhardt 1985; Kirsch

1997). Outcome control is exercised through mechanisms that specify or measure desired outcomes (Choudhury and Sabherwal 2003).

Informal control modes are clan and self-control. Clan control refers to mechanisms that minimize the differences between the controller's and the controllee's objectives (Eisenhardt 1985) 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" (Kirsch 1997, p. 217). According to this definition, it is questionable whether the clan control construct can be applied to (offshore) outsourced IS projects as the client-supplier relationship is assumed to be adversarial (Lacity 2002; Lacity and Hirschheim 1993; Williamson 1985). Thus, Choudhury and Sabherwal's (2003) interpretation of clan control is adopted "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" (p. 293). Unlike clan control, self-control is a function of intrinsic motivation (Manz et al. 1987) as well as individual standards and objectives (Jaworski 1988). The controllees control themselves by their own actions which include monitoring their work progress, setting their own goals, and rewarding or sanctioning themselves accordingly (Kirsch 1996). Mechanisms to exercise self-control are typically implemented by the controllee itself (Choudhury and Sabherwal 2003). Thus, in this study the focus lies on mechanisms the controller uses to assist and promote the exercise of self-control by the controllee. Table 1 gives a brief description of the four control modes.

Table 1. Control Modes

Construct		Description	Reference
Formal control	Outcome control	Measurement of employee's output	Ouchi (1979)
	Behavior control	Personal surveillance of employees	Ouchi (1979)
Informal control	Self-control	Relying on individuals to monitor and control themselves	Kirsch (1996)
	Clan control	Relying on the group (clan) to monitor and control itself	Kirsch (1996)

2.2.2 Portfolios of Controls

Controllers often use the four control modes in combination, creating a portfolio of controls (Jaworski 1988; Kirsch 1997). Within a portfolio of controls, each control mode can itself be implemented through multiple control mechanisms such as project plans, meetings, peer pressure, financial incentives, and formalized job descriptions (Kirsch 1997). As Choudhury and Sabherwal (2003) point out, the same general mechanism can support more than one control mode. For instance, as shown in Figure 2 (adapted from Choudhury and Sabherwal 2003), the control mechanisms B and F support two different control modes.

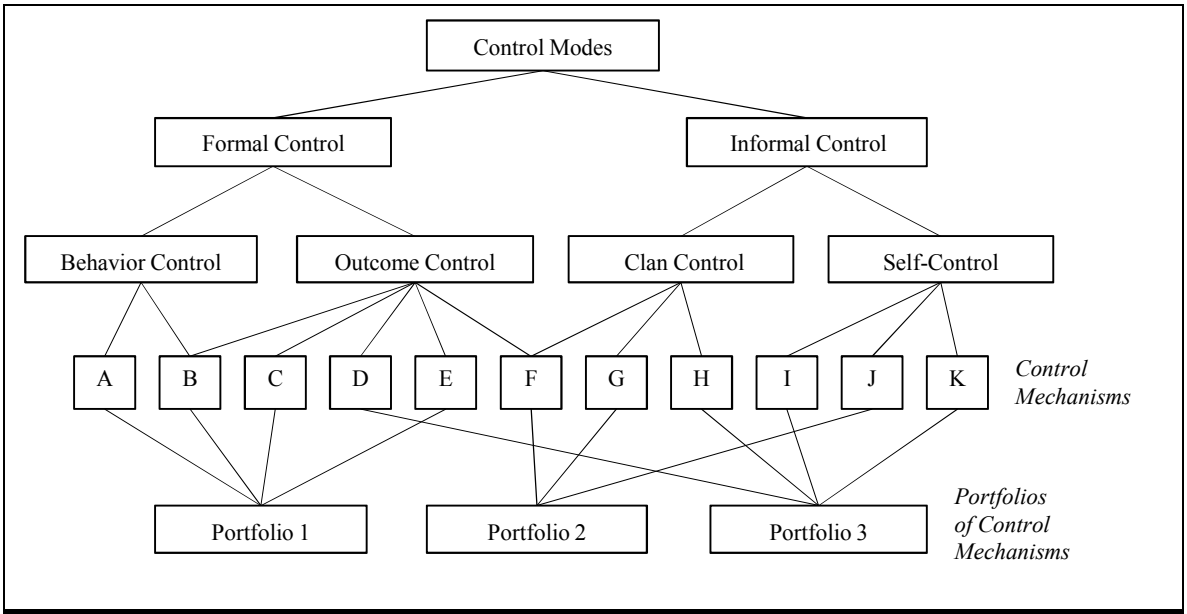

Figure 2. Portfolios of Control Modes and Mechanisms

For example, a project plan can detail the nature of tasks to be performed by the controllee by describing a specific development methodology, thereby supporting behavior control. The same project plan might also be a mechanism of outcome control by defining final or interim targets for the project. Thus, a single project plan can support both behavior and outcome control (Kirsch 1997). Conference calls can be a mechanism of both clan and behavior control. The interpersonal interaction that takes place in conference calls may lead to the evolution of shared values and beliefs (clan control), or these conference calls may be a mechanism of behavior control as they may allow the controller to assess tasks that the controllee has been performing (Choudhury and Sabherwal 2003; Kirsch 1997). A contract can facilitate outcome control by specifying outcomes and associated

rewards, but it can also foster clan control if it is structured to enhance shared goals between the controller and the controllee (Das and Teng 1998).

2.2.3 Antecedents of Control

In the beginning of the project, the controller chooses different control mechanisms which constitute an initial portfolio of controls. The choice of these control mechanisms is influenced by several factors. Prior research on the factors affecting control has primarily focused on retail salespeople (Eisenhardt 1985), marketing executives (Jaworski and Maclnnis 1989), internal IS projects (Beath 1987; Kirsch 1996, 1997; Kirsch et al. 2002) and outsourced IS projects (Choudhury and Sabherwal 2003). As suggested by Kirsch (1997), the influencing factors identified in these studies can be classified into three broad categories, as shown in the following.

2.2.3.1 Task Characteristics

Task characteristics include outcome measurability (i.e., ability to specify and track desired outcomes), behavior observability (i.e., ability to gather information about controllee behavior), and project size. Outcome measurability has been found to facilitate outcome control (Jaworski and Maclnnis 1989; Kirsch 1996, 1997; Kirsch et al. 2002), but the findings are mixed with respect to whether it facilitates (Jaworski and Maclnnis 1989; Kirsch et al. 2002) or inhibits (Kirsch 1996) self-control. Informal control modes are often applied when outcome measurability and behavior observability are both low (Aubert et al. 1996; Kirsch 1996). Kirsch et al. (2002) found that when behavior observability is high, behavior control is used if the controller is knowledgeable, but clan control is likely to be used if the controller has low knowledge. As a third task characteristic, project size also affects the choice of control modes and mechanisms. Kirsch (1997) found that in smaller projects, self-control is more readily used. Larger projects are controlled through more formal control mechanisms (Jaworski 1988). However, Choudhury and Sabherwal (2003) found only partial support for the impact of project size on the choice of controls in outsourced software development projects.

2.2.3.2 Project-related Knowledge of the Stakeholders

A knowledgeable controllee makes the controller feel more confident in using self-control or outcome control (Kirsch 1996). On the other hand, a knowledgeable controller is likely to be more inclined to specify the process the controllee should follow. Hence, project-related knowledge of the controller facilitates behavior control (Eisenhardt 1985; Jaworski and Maclnnis 1989; Kirsch 1996; Kirsch et al. 2002). However, this finding is not supported by Choudhury and Sabherwal (2003) who found that in

the context of outsourced software development projects knowledgeable controllers do not exert greater behavior control.

2.2.3.3 Role Expectations

Role expectations are individuals' expectations and visions about their own roles and the roles of others. In the context of outsourced projects, role expectations reflect the beliefs controllers and controllees have about the distribution of responsibilities (Choudhury and Sabherwal 2003). When controllers expect controllees to manage their own processes, they exercise informal controls by granting individuals considerable autonomy. In contrast, when they expect a formal chain of command, they utilize formal mechanisms of control such as process specifications and formal evaluations of performance. Finally, the use of a control mode also depends on the availability of mechanisms supporting the other control modes (Kirsch 1997; Merchant 1988). For example, the availability of informal control may reduce incentives to use more formal control.

2.2.4 Dynamics of Control

As controllers and controllees learn from their interactions during the course of an ISO project, their perceptions of the factors affecting the choice of controls also change, which in turn motivates them to change their initial portfolio of controls. In her study on the dynamics of control, Kirsch (2004) found that the traditional set of factors influencing the initial portfolio of controls is extended by additional factors as projects progress through their phases. She suggests that a number of influencing factors in the project, stakeholder, and global contexts affect control choices in each phase. These influencing factors are subsequently described in detail.

2.2.4.1 Influencing Factors in the Project Context

The first set of influencing factors related to the project context involves task characteristics, task interdependency, and project performance. As projects move from phase to phase, task characteristics change, causing changes in the use of control mechanisms. Such characteristics include task structure and novelty, as well as the specificity of behaviors and goals (Kirsch 2004). During the course of a project tasks tend to become more routine, better understood, and more structured, which is an environment conducive to formal control (Snell 1992). Project task interdependency can also trigger changes in control choices. Formal and informal control mechanisms are implemented to manage the interdependencies between different phases of a project (Kirsch 2004). Finally, when performance problems arise in one phase, controllers usually respond by adding formal and informal controls

during the phase in which problems are first experienced (Choudhury and Sabherwal 2003) and in subsequent phases (Kirsch 2004).

2.2.4.2 Influencing Factors in the Stakeholder Context

Factors related to the stakeholder context (i.e., knowledge and skills, the nature of the relationship between stakeholders, the lack of common goals, and role expectations) also influence the choice of controls (Kirsch 2004). Over time, different people become involved in projects, changing the mix of knowledge and skills. More or less experience of the stakeholders leads to additional use of informal or formal mechanisms, respectively (Kirsch et al. 2002), as the stakeholders attempt to compensate for less knowledge about the task or leverage their expertise to exercise control. The nature of the relationship among stakeholders can also evolve over time, triggering changes in control choices. Mutual respect between the stakeholders often results in the rejection of formal mechanisms of control in favor of informal ones (Kirsch 2004). Further, Mähring (2002) suggests that increased trust leads to fewer formal control and more informal control. A lack of common goals between controllers and controllees can also cause changes in portfolios of controls. When controllers need to realign goals, they usually use formal control mechanisms such as contracts and pay-for-performance schemes (Eisenhardt 1985). Finally, role expectations can vary during the course of a project. Controllers exercise informal controls when they expect controllees to manage their own processes, and utilize formal controls when they expect a formal chain of command (Choudhury and Sabherwal 2003).

2.2.4.3 Influencing Factors in the Global Context

The last set of influencing factors is related to the global context, in particular, priority differences among stakeholders from different countries, as well as geographic, time zone, and cultural differences. As these differences surface, controllers frequently make adjustments regarding their portfolio of controls. According to Kirsch (2004), priority differences between organizations originating from different local environments can be alleviated with additional informal controls that promote understanding and foster consensus on common goals, priorities, and values. Difficulties arising because of geographic and time zone differences, such as communication barriers, can be partially addressed with the addition of formal and informal mechanisms that improve cooperation and coordination (Carmel 1999). Finally, cultural differences have to be considered when individuals from different countries are involved in the project. Tractinsky and Jarvenpaa (1995) propose to use informal controls, such as face-to-face contact, as they engender learning about different cultures, improved relations, and ultimately project progress.

3 Research Model and Hypotheses

Two research models were developed. The first one considers the relationship between the controller's choice of controls and the controllee's national culture. The second model examines the relationship between the controller's choice of controls and the controller's national culture. With this approach, the researcher attempts to gain a more encompassing understanding of how national culture influences the choice of controls in ISO arrangements. The models draw on six cultural dimensions which can be used to define national culture. Here, however, the focus is not on the cultural characteristics of specific nations. Instead, the emphasis is on understanding how the characteristics of the underlying cultural dimensions interact with ISO project control (Ford et al. 2003).

According to Carmel (1999), 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 six dimensions were selected: *power distance*, *individualism versus collectivism*, and *uncertainty avoidance* (Hofstede 1980), *universalism versus particularism* (Trompenaars and Hampden-Turner 1998), *monochronic versus polychronic time perception* (Hall and Hall 1990), and *activity versus passivity* (Triandis 1982; Lytle et al. 1995). 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. Some of these dimensions have already been applied to (offshore) outsourcing-related research, including power distance (e.g., Hunter and Beck 1996), individualism versus collectivism (e.g., Holmes 1998), uncertainty avoidance (e.g., Straub et al. 1997), and activity versus passivity (e.g., Winkler et al. 2008). The dimension universalism versus particularism was added to the research models because it explains differences in the interpretation of rules which serve as important mechanisms of control (Kirsch 1997). The models were further enhanced by the dimension monochronic versus polychronic time perception because different views about timelines, deadlines, work rhythms, or punctuality may impose challenges to the coordination (and control) of globally distributed projects (Saunders et al. 2004).

3.1 Research Model 1

Figure 3 shows the different constructs and hypotheses. The relationships between the cultural characteristics and control modes are explained and justified below, as specific hypotheses are developed.

3.1.1 Power Distance

In low power distance societies, subordinates are likely to contradict their superiors directly and do not expect to be told what to do (Hofstede 1991). Subordinates participate more in decision making activities and prefer a consultative relationship with their superiors (Hofstede 1991). This kind of relationship is typically less structured and formal and goes along with informal control mechanisms (Kirsch 2004) like self-control. This suggests:

HYPOTHESIS 1: *The lower the controllee's power distance the greater the exercise of self-control.*

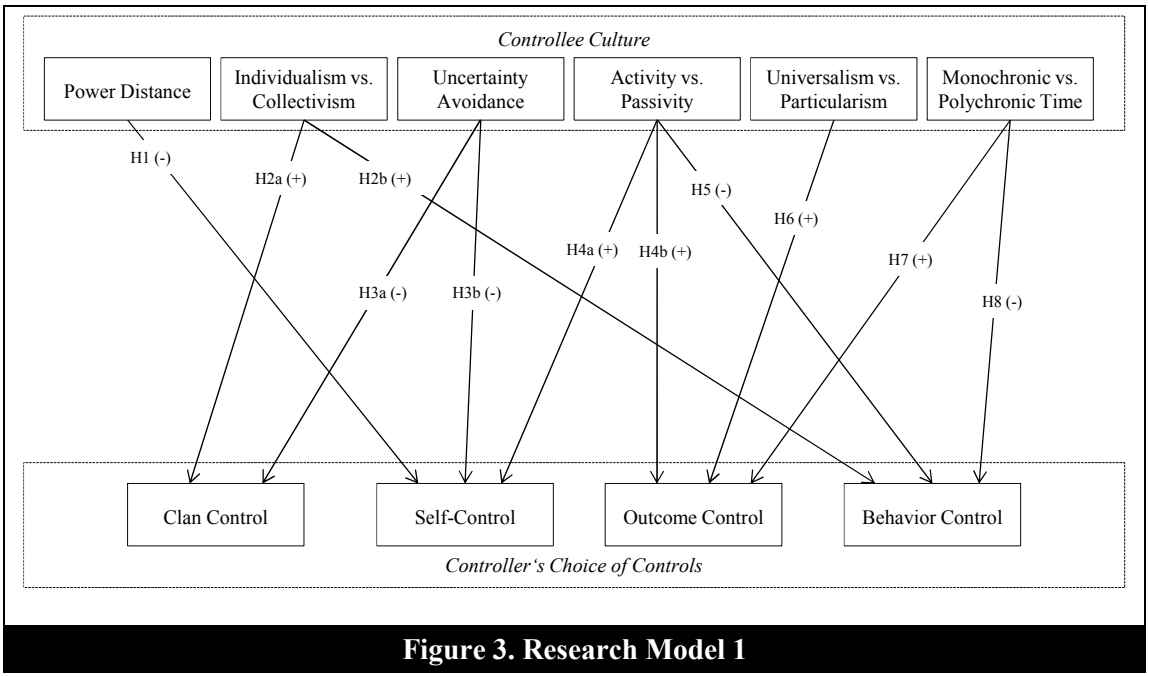

Figure 3. Research Model 1

3.1.2 Individualism versus Collectivism

In a study on collectivistic and individualistic work groups, Earley (1993) 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 (Triandis et al. 1988). Furthermore, social norms, duties, and obligations guide team members' behavior, and group (clan) goals seem to have priority. Collectivistic employees view their relationship with the employer

in moral terms. Therefore, they tend to prefer training and other learning opportunities (Triandis et al. 1988) which can be used as clan control mechanisms (Ouchi 1980). This proposes:

HYPOTHESIS 2: *The higher the controllee's collectivism the greater the exercise of clan control (a) and / or behavior control (b).*

3.1.3 Uncertainty Avoidance

Individuals with low uncertainty avoidance believe that problems can be solved without formal rules (Narayanaswamy and Henry 2005). They do not seem to be dependent on experts and prefer a less structured and rule-oriented environment (Hofstede 1991). They prefer rules only in situations of absolute necessity. This suggests:

HYPOTHESIS 3: *The lower the controllee's uncertainty avoidance the greater the exercise of clan control (a) and / or self-control (b).*

3.1.4 Activity versus 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)" (Lytle et al. 1995, p. 178). Directive forms of management, i.e., guiding the controllee through the process are likely to be effective in passive cultures, whereas in active cultures, autonomy to complete requested tasks is emphasized, and more liberal methods of management are considered effective (Triandis 1982). This suggests:

HYPOTHESIS 4: *The higher the controllee's activity the greater the exercise of self-control (a) and / or outcome control (b).*

HYPOTHESIS 5: *The lower the controllee's activity the greater the exercise of behavior control.*

3.1.5 Universalism versus Particularism

The universalism versus particularism dimension explains how cultures deal with rules. According to Kirsch (1997), rules serve as important mechanisms of control since they articulate acceptable controllee behavior. In universalistic cultures, rules apply irrespective of persons and situations and are strictly adhered to. This suggests that formal ways of conducting business should be utilized when working with universalistic individuals. This suggests:

HYPOTHESIS 6: *The more universalistic the controllee the greater the exercise of outcome control.*

3.1.6 Monochronic versus Polychronic Time Perception

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 (Hall and Hall 1990). In contrast, individuals with polychronic time perception tend to do many things at once, view time commitment only as an objective to achieve when possible, and make changes to plans when needed (Hall and Hall 1990). Here, monitoring the process may be required to assure compliance with project schedules (Choudhury and Sabherwal 2003). This proposes:

HYPOTHESIS 7: *The more monochronic the controllee's time perception the greater the exercise of outcome control.*

HYPOTHESIS 8: *The less monochronic the controllee's time perception the greater the exercise of behavior control.*

Please note that controllees may make commitments to a deadline because they are unwilling to say "no" to a request (Huang and Trauth 2008). This reaction would be consistent with high power distance. Thus, depending on the specific context, not meeting a deadline can be explained with either a high power distance or a polychronic time perception. In addition, it has to be noted that the dimension individualism versus collectivism is interrelated with both the power distance and the universalism versus particularism dimension. Individualistic individuals tend to have a low power distance (Hofstede 1991) and are likely to be more universalistic (Hofstede 2001), and vice versa. Moreover, the cultural dimensions power distance and activity versus passivity are not completely disjunctive. Individuals with high power distance are likely to be more passive and individuals with low power distance to be more active (Winkler et al. 2008).

3.2 Research Model 2

The research model shown in Figure 4 considers the relationship between managerial control and national culture of the controller. Specific hypotheses are subsequently developed.

3.2.1 Power Distance

In high power distance societies superiors tend to be autocratic or paternalistic (Hofstede 1991). They usually do not involve their subordinates in decision making activities and keep a directive relationship with them. The managerial authority is clearly in hands of the superiors who seem to be used to issue instructions to the subordinates (Hofstede 1991). This type of relationship usually involves formal control mechanisms, especially behavior control (Kirsch 2004). This suggests:

HYPOTHESIS 1: *The higher the controller's power distance the greater the exercise of behavior control.*

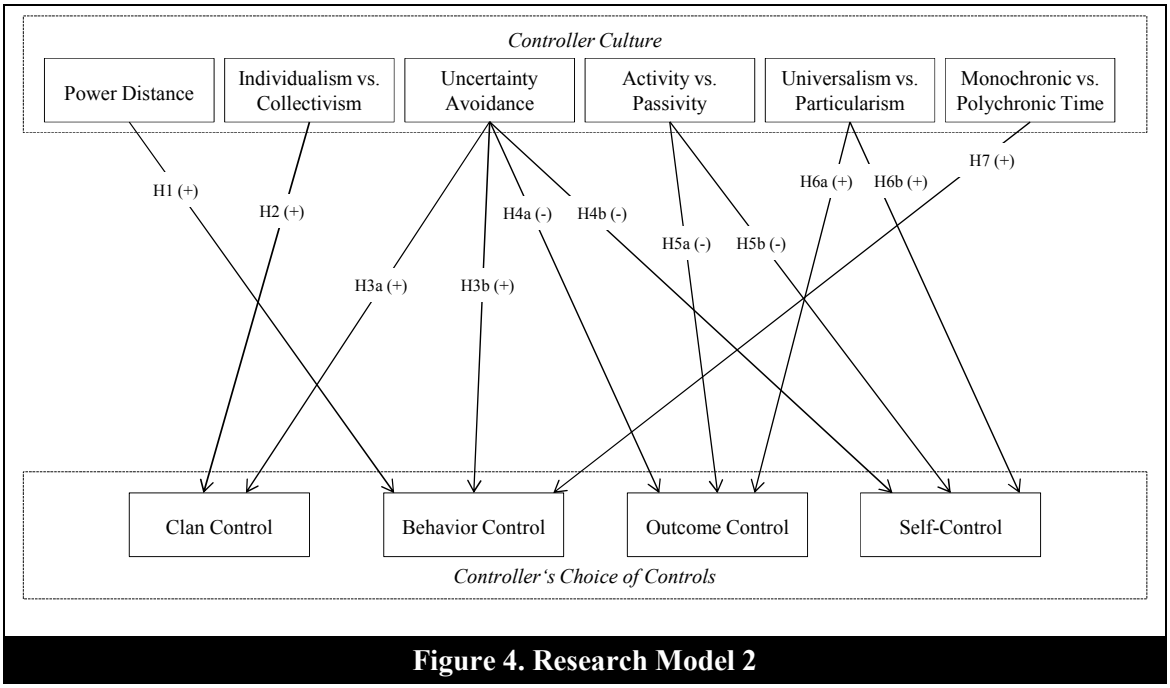

Figure 4. Research Model 2

3.2.2 Individualism versus Collectivism

In collectivistic societies, social norms, duties, and obligations guide managers' behavior, and group (clan) goals seem to have priority (Triandis et al. 1988). They actively attempt to become a regular member of the team and seem to feel more comfortable when they are part of this in-group. This proposes:

HYPOTHESIS 2: *The higher the controller's collectivism the greater the exercise of clan control.*

3.2.3 Uncertainty Avoidance

Individuals with high uncertainty avoidance prefer a structured and rule-oriented environment (Hofstede 1991). They are keen to avoid any kind of risk and feel secure when tightly monitoring and controlling the processes and controllees (Prifling et al. 2008). Moreover, it is expected that controllers attempt to gain a better understanding of the controllees' work flow and attitudes by becoming a member of the team. By contrast, persons with low uncertainty avoidance prefer rules only in situations of absolute necessity (Hofstede 1991) and believe that problems can be solved without

rigidly monitoring the controllee (Narayanaswamy and Henry 2005). Thus, controllers with this behavior pattern are expected to use control mechanisms that leave the controllee more autonomy. This suggests:

HYPOTHESIS 3: *The higher the controller's uncertainty avoidance the greater the exercise of clan control (a) and / or behavior control (b).*

HYPOTHESIS 4: *The lower the controller's uncertainty avoidance the greater the exercise of outcome control (a) and / or self-control (b).*

3.2.4 Activity versus Passivity

Passive individuals do little on their own initiative. They are assumed to be "passive reactors to the world" (Lytle et al. 1995, p. 178). Thus, passive controllers are likely to let controllees complete their tasks autonomously or proclaiming only general requirements. This suggests:

HYPOTHESIS 5: *The lower the controller's activity the greater the exercise of outcome control (a) and / or self-control (b).*

3.2.5 Universalism versus Particularism

In universalistic cultures, rules apply irrespective of persons and situations and are strictly adhered to. Controllers with this cultural pattern are likely to expect the controllees to act in a similar way. Thus, the use of control mechanisms that leave the controllees autonomy to monitor their own progress towards desired goals seems to be likely. This suggests:

HYPOTHESIS 6: *The more universalistic the controller the greater the exercise of outcome control (a) and / or self-control (b).*

3.2.6 Monochronic versus Polychronic Time Perception

Individuals with monochronic time perception take time and deadlines seriously (Hall and Hall 1990). Controllers with this time perception are likely to tightly control for delivery on time. As a controlling tool to avoid delays, they are likely to define the final or interim targets of the ISO project and monitor for their implementation. This proposes:

HYPOTHESIS 7: *The more monochronic the controller's time perception the greater the exercise of behavior control.*

4 Research Methodology

The researcher followed an empirical-confirmatory research approach. To test the research model and the hypotheses, matched-pair survey instruments were developed. Both clients (controllers) and suppliers (controllees) provided information about their cultural background. In addition, clients were surveyed on the use of different control modes and suppliers on their perception of control use by their client counterpart. According to Ko et al. (2005), the use of two questionnaires reduces potential problems resulting from single informant and common method bias.

4.1 Sample and Data Collection

The survey examined ISO in a broad sense including all types of ISO variations along three major dimensions. That is, relevant ISO projects include both near- and farshore projects (*distance* dimension), applications development, applications management, business process, and IS infrastructure projects (*function* dimension), as well as captive offshoring and offshore outsourcing projects (*ownership* dimension). Nevertheless, to ensure the quality of the survey data, projects and respondents had to fulfill specific selection criteria. First, to ensure the reliability of the participant's perceptions and answers, projects either had to be completed for not more than twelve months, or had to be underway for at least three months and already completed one major deliverable. Second, as at least one client-supplier dyad per project was required, projects had to allow access to both a client representative and her/his supplier counterpart. Third, the client and supplier representatives of a dyad must have had operated in their roles for at least 2 months to ensure adequate time for their relationship to evolve.

A website (http://survey.international-outsourcing.de) was set up to host the survey instrument, ease communications to the respondents, and provide higher accuracy and efficiency in data collection and analysis. Next to the online questionnaire, a physical questionnaire was also developed to eliminate coverage error as suggested by Schaefer and Dillman (1998). Dillman's (1999) Tailored Design Method (TDM) was used as an a priori strategy to minimize non-response error and its impact on the validity of inferences. With this approach, multiple contacts with the target population are made to maximize response.

A convenience sample was used to collect the survey data. Management executives of client and offshore supplier firms were contacted by e-mail and phone. The executives at these firms were professional acquaintances. This enhanced the researcher's ability to ensure that the ultimate respondents were appropriate for the purpose of the study. If the executives agreed to participate, they

were requested to identify appropriate ISO projects and participants. The use of this "known sponsor approach" (Patton 1990) resulted in immediate legitimacy and credibility of the researcher and the research study. The executives were then solicited to forward a personalized e-mail with the invitation to participate in the study to their counterpart (if applicable), their internal project team members and the respective counterparts of these members. This e-mail included the link to the website where the survey was hosted and contained a specific ID for each matched pair, which was used to join the data records of the paired client and supplier representatives during data analysis. The e-mail also guaranteed respondents' anonymity, data confidentiality, and provided detailed information about the purpose of the study, the potential benefits, and the level of required participation.

Of the 15 executives who were requested to participate in the study, twelve agreed, for a response rate of 80 %. A total of 80 client and supplier representatives were asked to participate in the study. In all, 76 representatives (37 client and 39 supplier representatives) filled in the questionnaire, resulting in a response rate of 95 %. The non-paired data were dropped from the analysis, resulting in a sample size of 37 unique matched pairs. Follow-up communications with the three nonparticipating executives did not reveal any significant trend or overarching reasons that would point toward a non-response bias. Furthermore, a comparison of the data of early returned questionnaires with that of later returned ones showed no indication of non-response error.

4.2 Instrument Development

Generally accepted guidelines were followed in developing the survey instruments (e.g., Sethi and King 1991). As far as possible, items were used that were developed and applied in previous research. In order to measure the four different modes of control, the researcher adopted Kirsch et al.'s (2002) items for behavior, outcome and clan control, and adapted Brief and Aldag (1981), Choudhury and Sabherwal (2003), and Kirsch et al.'s (2002) items for measuring self-control. Measures for the cultural dimensions power distance, individualism versus collectivism, and uncertainty avoidance were adopted from Hofstede's "Values Survey Module" (1994). For the constructs universalism versus particularism, monochronic versus polychronic time perception, and activity versus passivity, new items were developed since it was not possible to identify suitable measuring instruments from previous studies. An overview regarding the operationalization of the variables is shown in Table 9 in the appendix. All items were rated on five-point Likert scales. All constructs were measured reflectively.

In March 2010, a pretest of the survey questionnaires was conducted with five IS practitioners and four doctoral students. In addition, the questionnaires were reviewed and analyzed by two experienced

IS faculty members who provided feedback and comments for improvement. Following the pretest, an ISO arrangement was selected as the site for the pilot study. This ISO arrangement involved a multinational client organization with annual revenues of more than ten billion US dollars that has sourced IS services to an Indian vendor. A total of eleven respondents participated in the pilot study, eight client and three supplier representatives. The pilot study resulted in clarification of the unit of analysis for the respondents: the client-supplier dyad rather than the overall ISO arrangement (Rustagi et al. 2008). In addition, the wording of some items was slightly changed and the degree of data confidentiality was further emphasized. Respondents in the pilot study were not incorporated into the main study.

Prior research noted the influence of ISO project-related experience (Kirsch 1996, 1997; Kirsch et al. 2002) on control choices. Based on this finding, this influencing factor was used as control variable. The control variable was measured by asking the survey participants how many years they had been working in the field of ISO. Together with the control variable, the researcher also gathered general information about the respondents (e.g., project function), the ISO projects (e.g., offshored IS function), and the client and supplier firms (e.g., firm size), which provided further insight.

5 Data Analysis with Partial Least Squares

In order to test research models and analyze the returned data, the models are usually transformed into a structural equation model. Two types of structural equation modeling (SEM) can be distinguished: covariance-based techniques, as represented by linear structural relations (LISREL), and variance-based techniques, such as partial least squares (PLS). As Gefen et al. (2000) point out, “SEM has become *de rigueur* in validating instruments and testing linkages between constructs” (p. 6). The PLS methodology has achieved an increasingly popular role in empirical research in IS (e.g., Dibbern et al. 2004). This section gives an overview of PLS path modeling in general and provides information on how to use it correctly.

5.1 Nature of PLS Path Models

PLS path models include two different sets of linear equations: the outer model (i.e., measurement model) and the inner model (i.e., structural model). The outer model specifies the relationships between a latent variable and its observed or manifest variables (i.e., indicators or items). The inner model specifies the relationships between unobserved or latent variables. The causality between the latent variable and its indicators is either described by a reflective or a formative mode. In the

reflective mode (Mode A), each indicator represents an error-afflicted measurement of the latent variable. The direction of causality is from the construct to the indicators. Changes in the construct are thus expected to be manifested in changes in all of its indicators (Chin 1998). In the formative mode (Mode B), the direction of causality is from the measures to the construct. Formative measurement models have to be modeled as a combination of its indicators plus a disturbance term (Diamantopoulos 2006). Consequently, each indicator embodies an independent dimension in its own right. An increase in the value of one indicator leads to a higher score for the composite variable, regardless of the value of the other indicators. The indicators collectively represent all the relevant dimensions of the latent variable. One implication of this direction of causality is that omitting one indicator could omit a unique part of the formative outer model and change the meaning of the variable (Diamantopoulos and Winklhofer 2001). The selection of a particular outer mode depends on theoretical reasoning (Diamantopoulos and Winklhofer 2001). The nature of the causal relationship between the indicators and the latent variables in the outer model should be considered when deciding to either use formative or reflective indicators for a construct (Bollen 1989). This decision must be made carefully because misspecification of outer models can bias inner model parameter estimation and lead to incorrect assessments of relationships (Jarvis et al. 2003).

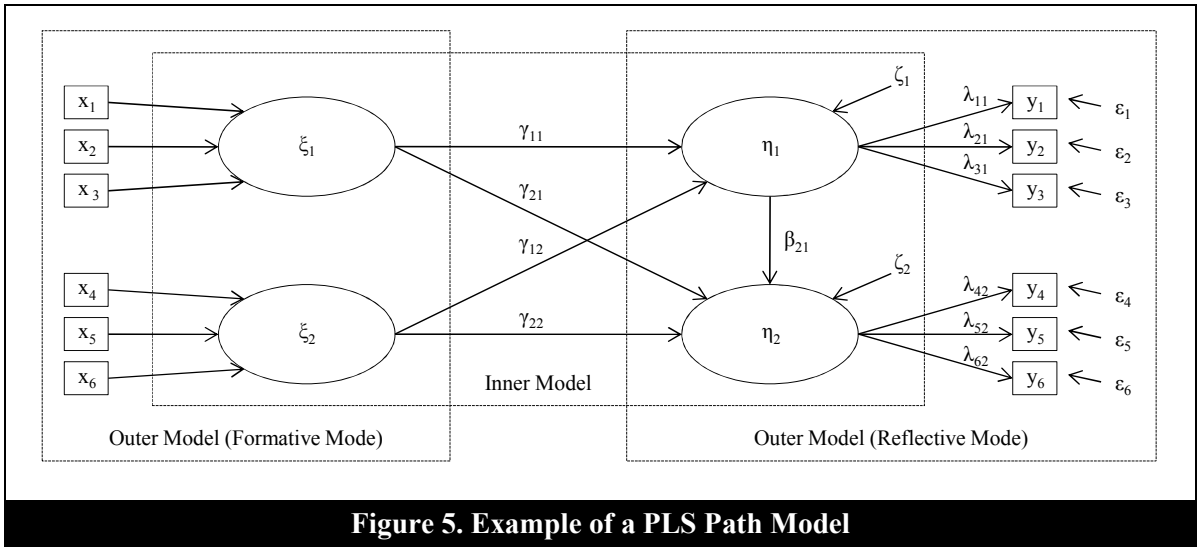

Figure 5. Example of a PLS Path Model

Figure 5 depicts a PLS path diagram of a four-block model with three indicators per block. The relationships between the latent variables and their corresponding indicators are represented by arrows which originate at the latent variable and end at the indicators (Mode A) or vice versa (Mode B). Indicators for the exogenous latent variables (ξ_1, ξ_2) are represented by the x's and for the endogenous

latent variables (η_1, η_2) by the y's. The relationships between the latent variables and their reflective indicators are denoted by the λ's and the relevant subscripts. The interpretation of latent variables with formative indicators is based on the weights; the indicators' loadings, as in Mode A, are not taken into account (Chin 1998). Measurement errors for the reflective indicators are captured by the ε's. Formative measures are assumed to be error-free (Diamantopoulos and Winklhofer 2001).

Concerning the inner model, each structural path represents a theory-based hypothesis. In Figure 5 there are four directional relationships (γ_{11}, γ_{21} γ_{12}, γ_{22}) between the exogenous and endogenous latent variables and one directional relationship (β_{21}) between the two endogenous latent variables. The error terms (ζ_1, ζ_2) associated with the two endogenous variables represent "errors in equations" and indicate that the dependent variables in the model are not perfectly explained by the independent variables.[1]

5.2 Methodological Characteristics

The popularity of PLS path modeling in (IS) research is due to four genuine characteristics. All four characteristics are subsequently discussed in detail.

5.2.1 Reflective and Formative Outer Models

The PLS path modeling algorithm allows the incorporation of cause-effect relationship models that employ both reflective and formative outer models (Diamantopoulos and Winklhofer 2001). Identification problems often arise when incorporating formative measures in covariance-based SEM. Similar problems do not appear in PLS path modeling. The only problematic issue in formative measurement models is connected to the critical level of multicollinearity of the manifest variables.

5.2.2 Sample Size

PLS path modeling is especially suitable for the analysis of small data samples (Chin and Newsted 1999). A rule of thumb for PLS path modeling estimations suggests that the sample size be equal to the larger of the following (Barclay et al. 1995): (1) ten times the number of indicators of the scale with the largest number of formative indicators, or (2) ten times the largest number of structural paths

[1] An independent variable acts as a determinant of a dependent variable. A variable is exogenous if it is not influenced by any other variable in the model. Exogenous variables are always independent variables. Variables which are influenced by other variables in the model are endogenous. Endogenous variables can act as both independent and dependent variables.

directed at a particular construct in the inner path model. However, this rule of thumb can lead to unacceptably low levels of statistical power. There is strong evidence that the ten-times-rule does not take into account the number of indicators, effect size, reliability, or other factors which are known to affect statistical power (Henseler et al. 2009). Further, the choice of an appropriate sample size depends on more than the strength of the relationship or the desired level of power. Marcoulides and Saunders (2006) point out that "[…] a researcher must consider the distributional characteristics of the data [e.g., normality], potential missing data, the psychometric properties of the variables examined, and the magnitude of the relationships considered before deciding on an appropriate sample size to use or to ensure that a sufficient sample size is actually available to study the phenomena of interest" (p. vi). They alert that "PLS is not a silver bullet to be used with samples of any size!" (p. viii). Nevertheless, PLS path modeling is still appropriate for many research situations such as complex research models with sample sizes that would be too small for covariance-based SEM techniques.

5.2.3 Model Complexity

PLS path models can be very complex (i.e., consist of many latent and manifest variables) without leading to estimation problems (Wold 1985). The number of latent and manifest variables may be high in relation to the number of observations. Furthermore, PLS path modeling is methodologically advantageous to covariance-based SEM whenever improper or non-convergent results are likely to occur. Wold (1985) states, for instance, "[i]n large, complex models with latent variables PLS is virtually without competition" (p. 590).

5.2.4 Robustness of the Parameter Estimates

Fornell (1982) asserts that for PLS path modeling "[…] there are no distributional requirements" (p. 443). Therefore, PLS path modeling can be used when distributions are highly skewed (Bagozzi 1994) or the independence of observations is not assured. Studies on the robustness of parameter estimates (e.g., Vilares et al. 2009; Ringle et al. 2007) revealed that when formative latent variables are introduced or data results are skewed, the PLS method demonstrates higher accuracy and robustness compared to covariance-based SEM. However, in general, PLS parameter estimates are less than optimal regarding bias and consistency. The estimates will be asymptotically correct under the condition of consistency at large, i.e., both a large sample size and large numbers of indicators per latent variable (Jöreskog and Wold 1982).

5.3 Guideline for the Evaluation of PLS-Path Model Results

A global goodness-of-fit criterion is not available for PLS path modeling. Consequently, Chin (1998) suggests a catalog of criteria to assess partial model structures. The application of these criteria is systematically divided into a two-step process: First, the assessment of the outer model and, second, the assessment of the inner model.

5.3.1 Criteria for Assessing the Outer Model

The evaluation of the outer model follows different procedures for reflective and formative models, as shown in the following.

5.3.1.1 Assessment of Reflective Outer Models

For a reflective outer model to be reliable and valid all the criteria as listed below should be met. If this is not the case, the researcher may have to exclude single indicators from a specific outer model and revise the path model.

(1) *Content validity:* Content validity reveals to what extent an outer model's variables belong to the domain of the construct (Bohrnstedt 1970). This can be assured through careful selection of the indicators, expert consultation, and pre-tests. It cannot be measured quantitatively.

(2) *Indicator reliability:* Indicator reliability specifies which part of an indicator's variance can be explained by the underlying latent variable. A common threshold is that the latent construct should account for more than 50 % of an indicator's variance. This implies that loadings of the latent construct on an indicator variable should be larger than 0.7. If loadings of reflective indicators within the PLS model are lower than 0.4 they should be eliminated from the outer model (Churchill 1979; Hulland 1999). However, taking into account PLS' characteristic of consistency at large, reflective indicators should only be eliminated after careful considerations. Only if an indicator's reliability is low and eliminating this indicator leads to a significant increase of composite reliability, this indicator should be discarded (Henseler et al. 2009).

(3) *Construct reliability:* This criterion indicates how well a construct is measured by its indicators. Construct reliability can be assessed with composite reliability or Cronbach's alpha. As Cronbach's alpha tends to underestimate the internal consistency reliability of latent variables in PLS path models, it is more appropriate to apply the composite reliability measure (Henseler et al. 2009). A common threshold for values of composite reliability (e.g., Bagozzi and Yi 1988) and Cronbach's alpha (e.g., Hair et al. 2006) is 0.6.

(4) *Convergent validity:* Convergent validity indicates that a set of indicators represents one and the same underlying construct, which can be shown through their unidimensionality (Henseler et al. 2009). The average variance extracted (AVE) is a common criterion of convergent validity (Fornell and Larcker 1981). An AVE value of at least 0.5 indicates sufficient convergent validity, meaning that more variance is due to indicator variance than error variance (e.g., Götz et al. 2009).

(5) *Discriminant validity:* Discriminant validity describes the dissimilarity in a measurement of different constructs, i.e., the joint set of indicators is expected not to be uni-dimensional (Götz et al. 2009). A necessary condition for discriminant validity is that a latent variable shares more variance with its assigned indicators than with any other latent variable (Fornell and Larcker 1981). In statistical terms, the AVE of each latent variable should be larger than its highest squared correlation with any other latent variable. A more liberal criterion requires that the loading of each indicator is greater than all of its cross-loadings (Chin 1998; Götz et al. 2009).

5.3.1.2 Assessment of Formative Outer Models

In formative outer models traditional validity assessments and classical test theory do not apply (Bollen 1989; Bagozzi 1994). The concepts of reliability and construct validity are not adequate when using a formative mode. Therefore, other criteria have to be applied when assessing formative outer models. These criteria are subsequently presented in detail.

(1) *Expert opinion:* Theoretical rationale and expert judgments are deemed appropriate when determining whether a construct has a more reflective or formative nature (Diamantopoulos and Winklhofer 2001; Rossiter 2002).

(2) *Nomological validity:* The formative index should behave within a net of hypotheses as expected, i.e., carry the intended meaning (Henseler et al. 2009). Those relationships between the formative index and other constructs in the path model that are adequately referenced in prior research should be strong and significant.

(3) *External validity:* The construct's error-term ζ, which represents the part of the construct that is not captured by any indicator, should be low. The size of this error can be estimated by regressing the formative index on a reflective measure of the same construct (Henseler et al. 2009). In such a case reflective indicators serve as formative outer model's external validation. It must be possible, however, to operationalize the formative construct reflectively. Henseler et al. (2009) suggest a value of 0.8 as a minimum for external validity, which would mean that the formative index carries about 80% of the intended meaning.

(4) *Significance of weights:* An indicator can be irrelevant for the construction of the formative index because it does not have a significant impact on the formative index (Henseler et al. 2009). The significance of the estimated indicator weights can be determined by means of bootstrapping. The different indicators' weights can be compared to determine their relative contribution to the construct (Sambamurthy and Chin 1994). In PLS, the indicators' weights are optimized to maximize the explained variance of the dependent variables in the model. Thus, a formative construct's small absolute weights should not be misinterpreted as a poor outer model (Chin 1998). Established thresholds do not exist.

(5) *Multicollinearity:* If an indicator exhibits high multicollinearity the indicator's information could be redundant. The degree of multicollinearity can be assessed by calculating the variance inflation factor (VIF) (Diamantopoulos and Winklhofer 2001). A rule of thumb is that VIFs greater than 10 reveal a critical level of multicollinearity.

It has to be noted, though, that formative indicators should never be distorted only on the basis of statistical outcomes, because this may significantly change the content of the formative index (Jarvis et al. 2003). Insignificant formative indicators should not be discarded as long as it is conceptually justified. According to Henseler et al. (2009), eliminating insignificant or highly collinear formative indicators does not go along with a substantial change in the structural model estimates, providing further support for the decision to retain such indicators in the PLS path model.

5.3.2 Criteria for Assessing the Inner Model

The four typical criteria for the assessment of the inner model are discussed in the following.

(1) *Coefficient of determination (R^2):* The R^2-value is a measure of the predictive power of a model for the dependent variables. R^2-values of 0.67, 0.33, and 0.19 are considered as substantial, moderate, and weak, respectively (Chin 1998). If an endogenous latent variable is explained by only a few (e.g., one or two) exogenous latent variables, values of 0.33 may be acceptable (Henseler et al. 2009). However, the R^2-value should hold a substantial level if the endogenous latent variable relies on several exogenous latent variables. If the R^2-values show lower results the theoretical underpinnings have to be challenged and demonstrate that the model is incapable to explain the endogenous latent variables.

(2) *T-statistics:* The goodness of the path coefficients can be tested by means of asymptotic t-statistics, which are obtained by resampling methods such as bootstrapping. Significant paths that show the hypothesized direction provide a partial empirical validation of the theoretically assumed relationships between latent variables. Paths that show signs contrary to the expected direction or are insignificant

do not support the a priori formed hypotheses. The t-value should be at least 1.98 for a significance level of 5 % (two-tailed) and 1.66 for a significance level of 10 %. The path coefficients should reach at least a level of 0.1 (Huber et al. 2007).

(3) *Effect size (f^2):* The effect size refers to the basic population of the analysis. The effect size can be evaluated for each effect in the path model by means of Cohen's (1988) f^2. The change in the endogenous variable's determination coefficient is calculated by estimating the inner model twice, i.e., once with and once without a particular independent latent variable ($R^2_{included}$, $R^2_{excluded}$). Values for f^2 of 0.02, 0.15, and 0.35 signify a small, medium, and large influence of the latent exogenous variable on the particular latent endogenous variable (Cohen 1988; Chin 1998). The effect size can be calculated with the following formula:

$$f^2 = \frac{R^2\ included - R^2\ excluded}{1 - R^2\ included}$$

(4) *Stone-Geisser's Q^2:* The Stone-Geisser criterion (Stone 1974; Geisser 1975) postulates that the model must be able to provide a prediction of the endogenous latent variable's indicators. A latent variable's indicators provide predictive relevance, if the Q^2-value for the particular endogenous latent variable is larger than zero. This criterion can be measured using blindfolding procedures (Tenenhaus et al. 2005). The blindfolding procedure is only applied to endogenous latent variables that have a reflective outer model operationalization. The relative impact of an independent variable on the predictive relevance of an endogenous latent variable can be assessed by means of the measure q^2. The q^2-value can be measured with the following formula:

$$q^2 = \frac{Q^2\ included - Q^2\ excluded}{1 - Q^2\ included}$$

Similar to the f^2-evaluation, the inner model is estimated twice, once with and once without a particular independent latent variable ($Q^2_{included}$, $Q^2_{excluded}$). Again, the blindfolding procedure can be used to evaluate the q^2-value. Values for q^2 of 0.02, 0.15, and 0.35 reveal a small, medium, or large influence of an independent variable on the predictive relevance of a particular endogenous latent variable.

6 Data Analysis and Results

Before assessing the two research models, some descriptive statistics are provided. In total, 26 ISO projects were identified, of which six were executed with third party suppliers, two with joint ventures / strategic alliances, and nine with global IT service providers or subsidiaries of the client firm, respectively. 22 projects involved large-scale supplier firms, while four projects included small or medium-sized firms. Of the nine client firms, two are small or medium-sized enterprises, and seven large-scale enterprises. As shown in Table 2, the sample client firms represent multiple industries.

Table 2. Characteristics of the Client Firms

Industry	Number of Firms[2]	%	Number of Projects	%
Avionics	1	8.3	4	15.4
Energy	2	16.7	3	11.5
Health Care	2	16.7	4	15.4
IT	3	25.0	4	15.4
Manufacturing	3	25.0	10	38.5
Tobacco	1	8.3	1	3.8
Total	12	100	26	100

Two client project managers (7.7 %) stated that their company had less than one year of experience with the supplier firm involved in the ISO project. Seven client representatives (26.9 %) reported that their firm had one to five years of experience with the supplier, whereas 17 managers (65.4 %) indicated that their companies had more than five years of experience with the ISO project partner. While 62 % of the client representatives stated having more than 5 years of experience in the field of IS, only 24 % declared having the same amount of experience in the field of ISO. In contrast, 70 % of the supplier representatives indicated having more than five years of experience in both the IS and ISO field. Additional descriptive statistics regarding the clients and suppliers' professional experience are displayed in Tables 10, 11, and 12 in the appendix.

In their firms the majority of the client and supplier representatives had positions such as "project manager" or "senior project manager". In the ISO projects investigated, 20 (14) of the 37 client

[2] Two of the nine participating client firms operate in several industries; one in the manufacturing, energy, and health care industries, the other in the energy and health care industries.

(supplier) representatives described their position as “project manager”, four (ten) as “team leader”, two (one) as “team member”, five (one) as “member of steering committee”. Six (eleven) client (supplier) representatives had positions other than the ones specified above.

The focus of 20 ISO arrangements was characterized as “applications development”. Three projects were described as “applications management”, two as “IT infrastructure management”, and one as “applications testing”. The volume of the ISO projects is displayed in Table 3.

Table 3. ISO Project Volume

Project Volume	Number of Projects	%
Less than 24 person months	5	19.2
25 to 59 person months	2	7.7
60 to 119 person months	4	15.4
120 to 599 person months	8	30.8
600 or more person months	7	26.9
Total	26	100

6.1 Assessment of the Research Models

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. Incomplete data records were excluded from the analysis. To test the research models and analyze the returned data, the research models were transformed into a structural equation model, using the software SmartPLS. PLS tests the psychometric properties of the scales used to measure the variables and analyzes the strength and directions of the pre-specified relationships (Barclay et al. 1995). Basically, the data analysis for each research model followed a two-step process as suggested by Chin (1998): First, the outer model was assessed by systematically evaluating PLS estimates for measuring reliability and validity. Second, the inner model and its hypotheses were tested and the effect of control variables was analyzed. This two-step process was first applied to research model 1, which considers the relationship between the controllee’s culture and the controller’s choice of controls. Then, the relationship between the controller’s culture and choice of controls was analyzed (research model 2).

6.1.1 Research Model 1

6.1.1.1 Assessment of the Outer Model

As suggested in literature (e.g., Henseler et al. 2009), five criteria must be met in order to obtain a reliable and valid outer model. These criteria include content validity, indicator reliability, construct reliability, convergent validity, and discriminant validity.

(1) *Content validity:* Content validity indicates to what extent the variables of an outer model belong to the domain of the construct (Bohrnstedt 1970). This was assured by selecting well established indicators, consulting experts, and conducting pretests.

(2) *Indicator reliability:* Indicator reliability specifies which part of an indicator's variance can be explained by the underlying latent variable. If indicator loadings within the PLS model are lower than 0.4 they should be eliminated (Churchill 1979; Hulland 1999). Item loadings were analyzed using the PLS path weighting scheme. First the item loadings of the independent variables were examined. A number of items measuring the independent variables were below the 0.4 threshold. The results of the PLS analysis indicated problems with two power distance items, two collectivism items, three uncertainty avoidance items, and two universalism items. Based on the results, these items were eliminated from the model. PLS analysis was then run again reporting high loadings (above 0.58) for all items. Thereafter, attention was turned to the dependent variables. The generated item loadings showed problems with two outcome control items, and one self-control item. After removing these items from the model all items loaded at 0.57 or higher. Table 13 in the appendix displays the loadings of all retained items.

(3) *Construct reliability:* Construct reliability or internal consistency indicates how well a construct is measured by its items. Construct reliability can be assessed with the composite reliability measure. This measure was developed by Fornell and Larcker (1981) and can be similarly interpreted as Cronbach's alpha (Barclay et al. 1995). Here, only the results for the composite reliability are reported because in PLS path models the composite reliability measure delivers more precise results than the Cronbach's alpha measure. As shown in the "Fornell" column in Table 4, all measures of reliability exceed the recommended cut-off of 0.6 and are thus deemed to be reliable.

(4) *Convergent validity:* Table 4 displays the correlation analysis of the independent variables, the dependent variables, and the control variable. The boldface diagonal cells are the square root of average variance extracted (AVE), which is a measure of the variance shared between a construct and its indictors. All variables in Table 4 have an AVE of at least 0.5, which establishes convergent validity for all scales (Fornell and Larcker 1981).

(5) *Discriminant validity:* A necessary condition for discriminant validity is that a latent variable shares more variance with its assigned indicators than with any other latent variable (Fornell and Larcker 1981). The off-diagonal cells in Table 4 are the correlations between the constructs. The values in the diagonal cells are higher than all other cells in the same row, indicating discriminant validity for all scales. 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.

Table 4. Research Model 1 – Correlations between Constructs

Construct	Fornell	PD	CO	UA	AC	UN	TP	BC	OC	CC	SC	EX
Power Distance (PD)	0.65	**0.48**										
Collectivism (CO)	0.87	-0.05	**0.77**									
Uncertainty Avoidance (UA)	1.00	0.11	0.26	**1.00**								
Activity (AC)	0.81	-0.13	0.40	0.07	**0.60**							
Universalism (UN)	1.00	0.17	0.27	0.15	0.14	**1.00**						
Monochronic Time Perception (TP)	0.67	0.25	0.42	0.28	0.30	0.35	**0.52**					
Behavior Control (BC)	0.67	0.07	0.35	-0.01	0.27	0.03	0.48	**0.50**				
Outcome Control (OC)	0.73	-0.16	0.29	0.05	0.33	0.15	0.48	0.47	**0.50**			
Clan Control (CC)	0.84	0.29	0.16	0.04	0.10	-0.16	0.13	0.44	0.10	**0.57**		
Self-Control (SC)	0.81	-0.46	0.25	-0.35	0.19	-0.08	0.06	0.24	0.32	0.02	**0.60**	
ISO Experience (EX)	1.00	-0.07	-0.09	-0.22	0.18	-0.20	-0.12	-0.06	0.03	-0.37	-0.11	**1.00**

6.1.1.2 Assessment of the Inner Model

The inner model examines the significance of the relationships among the independent and the dependent variables of the research model. There are four criteria for the assessment of the inner model. First, the R^2-values provide the strength of the overall model. R^2-values of 0.67, 0.33, and 0.19

are considered as substantial, moderate, and weak, respectively (Chin 1998). Second, the t-statistics provide information about the goodness of the path coefficients and should at least reach a t-value of 1.66. Path coefficients specify the strength of each individual relationship and should have a value (b) of at least 0.1 (Huber et al. 2007). The support or rejection of the hypotheses is provided by the size and direction of the path coefficients and is reported with the p-value (Bollen 1989). Third, the effect size can be measured by means of Cohen's (1988) f^2. Values for f^2 of 0.02, 0.15, and 0.35 signify small, medium, and large influence of an independent variable on a dependent variable (Cohen 1988; Chin 1998). Finally, the predictive relevance of a dependent variable can be assessed with the Stone-Geisser criterion Q^2 (Stone 1974; Geisser 1975). Q^2-values above zero indicate predictive relevance of the dependent variables. Values for q^2 of 0.02, 0.15, and 0.35 reveal a small, medium, or large influence of an independent variable on the predictive relevance of a particular dependent variable.

A bootstrap resampling method (500 re-samples) was used to determine the significance of the paths within the inner model. The sample size of 37 was slightly below the recommended minimum of 40, which represented ten times the largest number of structural paths directed at a particular construct in the inner path model (Barclay et al. 1995).

The overall results of the model are shown in Figure 6. Hypothesis 1 pertains to power distance. As predicted, power distance has a significant and negative relationship with the use of self-control ($b = -0.417$; $t = 2.635$; $p < 0.05$). Thus, the lower the controllee's power distance the greater the exercise of self-control. Collectivism has no significant effect on the use of clan control and / or behavior control. Therefore, Hypothesis 2a and 2b are not supported. Hypothesis 3a suggests a negative relationship between uncertainty avoidance and the exercise of clan control. This relationship is not significant. Hypothesis 3b proposes a relationship between uncertainty avoidance and the exercise of self-control. As hypothesized, the results indicate a significant negative relationship between uncertainty avoidance and the use of self-control ($b = -0.373$; $t = 2.197$; $p < 0.05$). This finding suggests that if the controllee's uncertainty avoidance is low, the exercise of self-control is high, and vice versa. Hypothesis 4, which suggests a positive relationship between activity and the exercise of self-control (Hypothesis 4a), as well as activity and the exercise of outcome control (Hypothesis 4b), is not supported. Hypothesis 5, which suggests a negative relationship between activity and the use of behavior control, and Hypothesis 6 proposing a positive relationship between universalism and the use of outcome control, are not supported, either. A positive relationship is assumed between monochronic time perception and the exercise of outcome control. This relationship is significant in the direction predicted ($b = 0.535$; $t = 2.056$; $p < 0.05$). Hence, Hypothesis 7 is supported, i.e., the more monochronic the controllee's time perception the greater the use of outcome control. Finally,

Hypothesis 8, which presumes a negative relationship between monochronic time perception and the exercise of behavior control, is not supported. Table 5 gives an overview of all hypotheses test results.

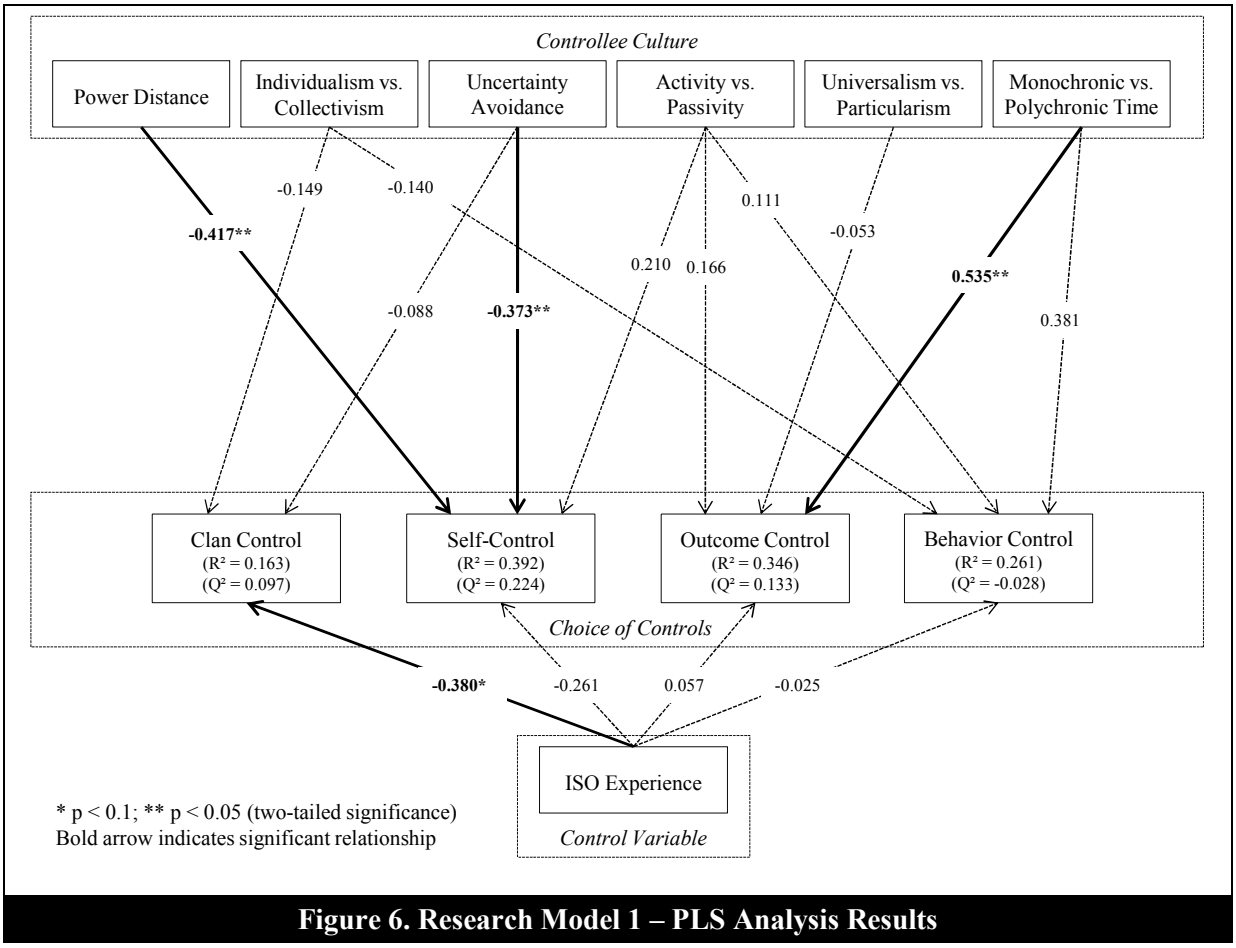

Figure 6. Research Model 1 – PLS Analysis Results

As shown in Figure 6, approximately 26 % ($R^2 = 0.261$) of the variance in behavior control, 35 % ($R^2 = 0.346$) of the variance in outcome control, 16 % ($R^2 = 0.163$) of the variance in clan control, and 39 % ($R^2 = 0.392$) of the variance in self-control are explained. The standardized path coefficients range from 0.373 to 0.535. An evaluation of the f^2-value revealed medium effect sizes for the relationships between monochronic time perception and the use of outcome control ($f^2 = 0.26$), power distance and the exercise of self-control ($f^2 = 0.28$), as well as uncertainty avoidance and the exercise of self-control ($f^2 = 0.16$). For all other relationships between the independent and dependent variables no substantial effects were reported. Blindfolding procedures were used to check for the predictive relevance of the dependent variables. Predictive relevance is established for outcome control ($Q^2 = 0.133$), clan control ($Q^2 = 0.097$), and self-control ($Q^2 = 0.224$). No predictive relevance was reported for behavior control

(Q^2 = -0.028). An examination of the q^2-values revealed that power distance (q^2 = 0.11), uncertainty avoidance (q^2 = 0.08), and activity (q^2 = 0.03) have a small influence on the predictive relevance of self-control. A small influence of monochronic time perception (q^2 = 0.08) on the predictive relevance of outcome control was also reported.

Table 5. Research Model 1 – Hypotheses Test Results

		Hypothesis	Standardized Path Coefficient	t-Value for Path	p-Value (two-tailed)
✓	H1	Power Distance → Self-Control (-)	-0,417	2,635	0.05
x	H2a	Collectivism → Clan Control (+)	-0,149	0,527	
x	H2b	Collectivism → Behavior Control (+)	-0,140	0,584	
x	H3a	Uncertainty Avoidance → Clan Control (-)	-0,088	0,462	
✓	H3b	Uncertainty Avoidance → Self-Control (-)	-0,373	2,197	0.05
x	H4a	Activity → Self-Control (+)	0,210	1,510	
x	H4b	Activity → Outcome Control (+)	0,166	0,727	
x	H5	Activity → Behavior Control (-)	0,111	0,470	
x	H6	Universalism → Outcome Control (+)	-0,053	0,294	
✓	H7	Monochronic Time Perception → Outcome Control (+)	0,535	2,056	0.05
x	H8	Monochronic Time Perception → Behavior Control (-)	0,381	1,414	

"✓" indicates Hypothesis is supported
"x" indicates Hypothesis is not supported

Considering all results, the model's fit (i.e., the model as a whole is consistent with the empirical data at hand) is improvable. To improve the fit of the model it has to be modified. According to Diamantopoulos and Siguaw (2009), it is of utmost importance that any modifications made to the original model must be meaningful and theoretically justifiable. Regarding this model, improvements of fit could be achieved by omitting irrelevant linkages or including presumably important linkages among the variables. For instance, a positive relationship between uncertainty avoidance and the exercise of behavior control and / or outcome control could be expected, arguing that controllees with high uncertainty avoidance need more formally and clear-cut rules and procedures they can act in accordance with. Additionally, a positive relationship between the controllee's power distance and the use of behavior control and / or outcome control could be hypothesized. The theoretical reasoning behind this relationship is that controllees with high power distance usually expect to be told what to do (Hofstede 1980) and are thus likely to prefer the use of formal control mechanisms. There are other

parameters that could potentially be added to or removed from the model given its set of variables. However, any modified model must be tested and validated on a different sample since the same data set must not be used to both develop a model and evaluate its fit (Breckler 1990). Due to the availability of only one small data set, modification procedures were not performed.

The controllees' experience in the field of ISO was included into the model as control variable. A significant negative relationship between ISO experience and the exercise of clan control ($b = -0.380$; $t = 1.928$; $p < 0.1$) was found, i.e., the lower the controllee's ISO experience the greater the use of clan control. The results for the relationships between the controllees' ISO experience and the other dependent variables are displayed in Figure 6.

6.1.2 Research Model 2

The same procedure that was used to test research model 1 was applied to the data analysis of research model 2. First, the outer model was assessed. Second, the inner model and its hypotheses were tested. Finally, the effect of the control variable was analyzed.

6.1.2.1 Assessment of the Outer Model

(1) *Content validity:* As in model 1, content validity was established by carefully selecting the indicators, consulting experts, and conducting pre-tests.

(2) *Indicator reliability:* Again, item loadings were analyzed using the PLS path weighting scheme. First, the item loadings of the independent variables were analyzed. As in research model 1, a number of items were below the 0.4 threshold, including three power distance items, two collectivism items, two uncertainty avoidance items, one activity item, and one universalism item. After eliminating these items from the model, PLS analysis was run again resulting in high loadings (above 0.57) for all items except one monochronic time perception item (0.39), which was slightly below the recommended cut-off of 0.4. However, this violation was not considered serious enough to warrant action. Next, the loadings of the dependent variables' items were examined. The results of the PLS analysis indicated problems with three outcome control items and one self-control item. After removing these items from the model, all items loaded above 0.45. Table 14 in the appendix provides an overview of the loadings of all retained items.

(3) *Construct reliability:* As seen in the "Fornell" column in Table 6, all constructs are deemed to be reliable since the results for composite reliability are all above the common threshold of 0.6.

(4) *Convergent validity:* Table 6 displays the correlation analysis of the independent variables, the dependent variables, and the control variable. The boldface diagonal cells are the square root of average variance extracted (AVE). All variables in Table 6 have an AVE of at least 0.5, indicating convergent validity for all scales (Fornell and Larcker 1981).

(5) *Discriminant validity:* A necessary condition for discriminant validity is that a latent variable shares more variance with its assigned indicators than with any other latent variable (Fornell and Larcker 1981). The off-diagonal cells in Table 6 are the correlations between the constructs. The AVE values in the diagonal cells are consistently greater than the off-diagonal correlations, indicating discriminant validity for all scales. Further, 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.

Table 6. Research Model 2 – Correlations between Constructs

Construct	Fornell	PD	CO	UA	AC	UN	TP	BC	OC	CC	SC	EX
Power Distance (PD)	1.00	**1.00**										
Collectivism (CO)	0.73	0.18	**0.58**									
Uncertainty Avoidance (UA)	0.71	-0.32	0.29	**0.56**								
Activity (AC)	0.85	-0.13	0.24	-0.12	**0.75**							
Universalism (UN)	0.82	0.10	0.00	-0.20	0.10	**0.70**						
Monochronic Time Perception (TP)	0.63	0.03	-0.18	0.05	-0.16	-0.03	**0.53**					
Behavior Control (BC)	0.65	-0.16	0.07	0.00	0.08	-0.06	0.45	**0.50**				
Outcome Control (OC)	0.73	-0.13	0.33	0.20	0.15	0.34	-0.04	0.08	**0.59**			
Clan Control (CC)	0.81	-0.23	0.33	0.32	0.17	0.08	0.38	0.48	0.02	**0.53**		
Self-Control (SC)	0.72	0.12	0.01	-0.43	0.46	0.14	0.14	0.15	0.12	0.21	**0.50**	
ISO Experience (EX)	1.00	0.13	0.28	-0.11	0.27	-0.25	-0.42	0.00	-0.04	-0.22	0.11	**1.00**

6.1.2.2 Assessment of the Inner Model

Again, the bootstrapping procedure (500 re-samples) was used to determine the strength of the inner model's paths. As in research model 1, the sample size of 37 fell slightly below the recommended minimum of 40. Figure 7 provides a detailed overview of the overall test results.

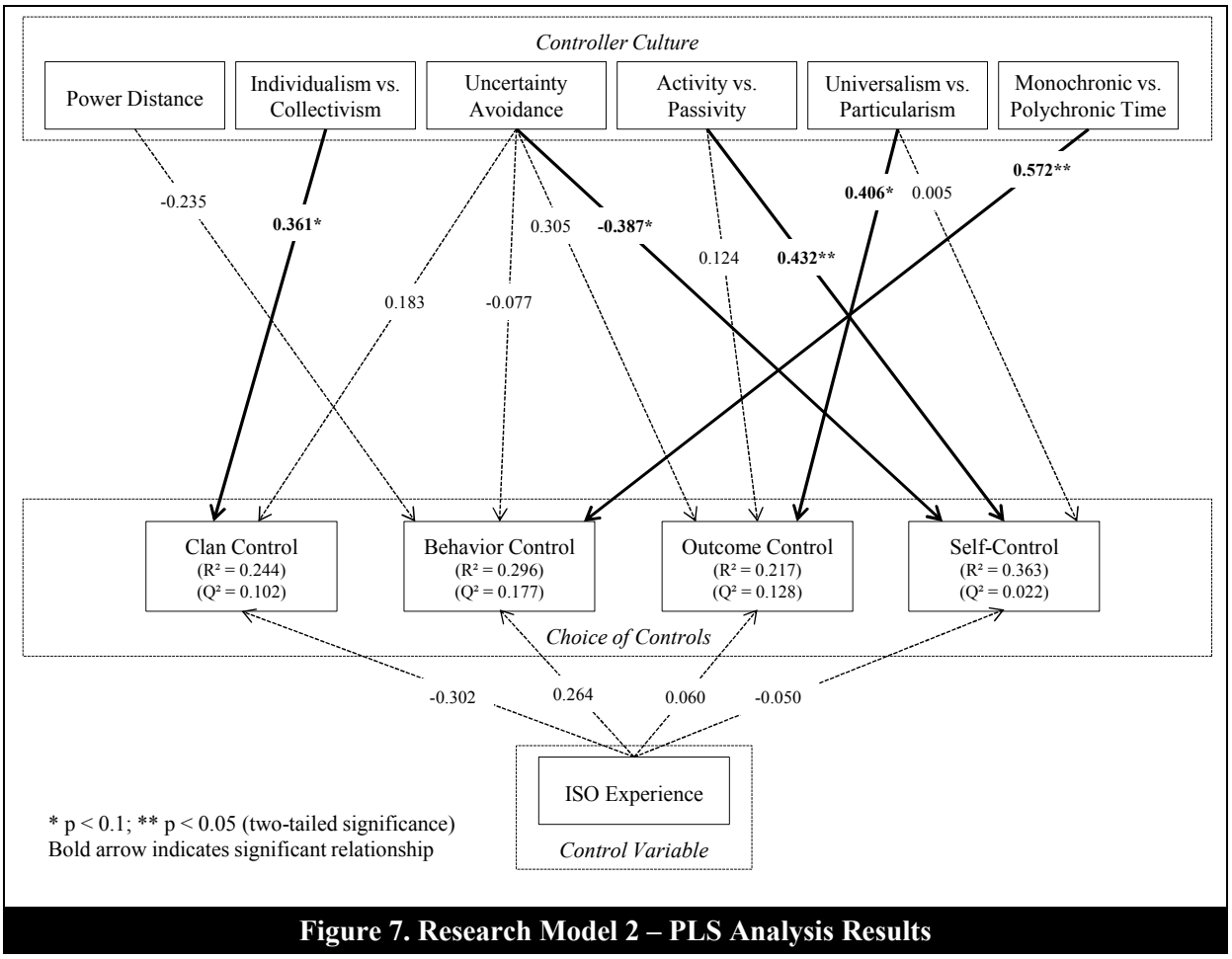

Figure 7. Research Model 2 – PLS Analysis Results

Hypothesis 1, which suggests a positive relationship between power distance and the exercise of behavior control, is not supported. The relationship between collectivism and the use of clan control (Hypothesis 2), however, is significant in the direction predicted ($b = 0.361$; $t = 1.806$; $p < 0.1$), indicating that if the controller's collectivism is high the exercise of clan control is high, and vice versa. Hypothesis 3a and 3b are not supported. Neither the relationship of uncertainty avoidance with the exercise of clan control, nor the relationship of uncertainty avoidance with the exercise of behavior control is significant. Though Hypothesis 4a, suggesting a negative relationship between uncertainty

avoidance and the use of outcome control is not supported, the relationship between uncertainty avoidance and the exercise of self-control (Hypothesis 4b) is significant in the direction predicted (b = -0.387; t = 1.769; p < 0.1). This finding reveals: The lower the controller's uncertainty avoidance the higher the exercise of self-control. Hypothesis 5a, proposing a negative relationship between activity and the exercise of outcome control, is not supported. The relationship between activity and the use of self-control (Hypothesis 5b) is significant in the direction opposite to that predicted (b = 0.432; t = 2.102; p < 0.05), indicating that if the controller's activity is high the exercise of self-control is high, and vice versa. Universalism is positively associated with the use of outcome control (b = 0.406; t = 1.730; p < 0.1). Thus, Hypothesis 6a is supported. In contrast, Hypothesis 6b, which suggests a positive relationship of universalism with the exercise of self-control, is not supported. Hypothesis 7, suggesting a positive relationship between monochronic time perception and the exercise of behavior control, is supported (b = 0.572; t = 2.027; p < 0.05), i.e., the more monochronic the controller's time perception the greater the exercise of behavior control. Table 7 summarizes the hypotheses test results.

Table 7. Research Model 2 – Hypotheses Test Results

		Hypothesis	Standardized Path Coefficient	t-Value for Path	p-Value (two-tailed)
x	H1	Power Distance → Behavior Control (+)	-0,235	1,3381	
✓	H2	Collectivism → Clan Control (+)	0,361	1,8062	0.1
x	H3a	Uncertainty Avoidance → Clan Control (+)	0,183	0,9156	
x	H3b	Uncertainty Avoidance → Behavior Control (+)	-0,077	0,3826	
x	H4a	Uncertainty Avoidance → Outcome Control (-)	0,305	1,4108	
✓	H4b	Uncertainty Avoidance → Self-Control (-)	-0,387	1,7688	0.1
x	H5a	Activity → Outcome Control (-)	0,124	0,555	
✓	H5b	Activity → Self-Control (-)	0,432	2,1015	0.05
✓	H6a	Universalism → Outcome Control (+)	0,406	1,7301	0.1
x	H6b	Universalism → Self-Control (+)	0,005	0,0224	
✓	H7	Monochronic Time Perception → Behavior Control (+)	0,572	2,0271	0.05

"✓" indicates Hypothesis is supported
"x" indicates Hypothesis is not supported

As illustrated in Figure 7, about 30 % (R^2 = 0.296) of the variance in behavior control, 22 % (R^2 = 0.217) of the variance in outcome control, 24 % (R^2 = 0.244) of the variance in clan control, and 36 % (R^2 = 0.363) of the variance in self-control are explained. The standardized path coefficients for the

significant relationships range from 0.361 to 0.572. Results of the f^2-value signify small influences of power distance on the exercise of behavior control ($f^2 = 0.07$), and activity on the use of outcome control ($f^2 = 0.02$). Medium effects were found for the relationships between uncertainty avoidance and the exercise of outcome control ($f^2 = 0.11$) as well as self-control ($f^2 = 0.22$), universalism and the exercise of outcome control ($f^2 = 0.14$), collectivism and the use of clan control ($f^2 = 0.12$), as well as activity and the exercise of self-control ($f^2 = 0.21$). A strong effect size was reported for the relationship between monochronic time perception and the use of behavior control ($f^2 = 0.38$). In all, the strong effect sizes support the practical relevance of the findings. For all other relationships between the independent and dependent variables no effects were found. Blindfolding procedures were used to analyze for the predictive relevance of the dependent variables. The Q^2-values for behavior control ($Q^2 = 0.177$), outcome control ($Q^2 = 0.128$), clan control ($Q^2 = 0.102$), and self-control ($Q^2 = 0.022$) are above zero, thus indicating predictive relevance for all dependent variables. An evaluation of the q^2-values indicated a small influence of power distance ($q^2 = 0.07$) on the predictive relevance of behavior control. Monochronic time perception has a medium effect on the predictive relevance of behavior control ($q^2 = 0.16$). Outcome control's predictive relevance is affected by activity ($f^2 = 0.02$), universalism ($f^2 = 0.09$), as well as uncertainty avoidance ($f^2 = 0.04$), which also influences the predictive relevance of clan control ($f^2 = 0.04$) and self-control ($f^2 = 0.10$). Finally, collectivism has a small impact on clan control's predictive relevance ($f^2 = 0.04$).

Considering all results, the model fits fairly well. The model was not modified since it is recommended that "when an initial model fits well, it is probably unwise to modify it to achieve even better fit because the modifications may simply be fitting small idiosyncratic characteristics of the sample" (MacCallum 1992, p. 501).

In this model, the controllers' ISO experience was included into the model as control variable. As shown in Figure 7, the control variable was not found to be significant.

7 Limitations

Before examining the results of the study and their implications, some of its key limitations must be discussed.

The first limitation concerns the sample and data. In this study, only a moderate sample size was achieved. Gathering matched-pair data is especially challenging. Though considerable effort was expended to increase the number of respondents, only 37 completed controller-controllee pairs were

returned. This sample size could potentially limit the power of the statistical techniques. However, the results did yield a number of statistically significant findings. Moreover, the findings of this study may be specific to ISO arrangements between Germany and India because the majority of the participating controllees were Indian, while most controllers were German. Finally, it must be taken into consideration that not all of the participants might have been totally honest when filling in the questionnaire. For instance, questions involving potential criticism on superiors may have been answered more conservatively by the Indian participants due to their culture.

A second limitation refers to the research setting. The researcher argued that national culture is the key factor influencing the choice of controls in ISO projects. However, given a different research setting, the dynamics of cultural influences at different levels of culture might be different.

The third limitation regards the view of control in this study. Because control choices may change during the ISO project, this study may not be able to capture the temporal aspect of the activities. Further, the extent to which the four control modes were exercised was not examined. Thus, no statements can be made about the amount of the different control modes used in ISO projects. Finally, this study only provides insight into the client's choice of controls. Hence, there is no understanding of the mechanisms used internally by the supplier. This is especially true for the mechanisms used to exercise self-control.

The fourth limitation concerns the measures. In research model 1, the R^2-value for clan control (R^2 = 0.163) was below the minimum requirement of 0.19 (Chin 1998). This violation challenges the strength of the model's theoretical underpinnings. Revising the model may improve the theoretical foundation and lead to better results. In research model 2, the PLS loading for one monochronic time perception measure (0.39) was slightly below the conventional threshold of 0.4. Nonetheless, taking into account PLS' characteristic of consistency at large, this item was not eliminated from the model. Further, new scales were developed for the constructs universalism versus particularism, monochronic versus polychronic time perception, and activity versus passivity, since it was not possible to identify measures from previous studies. These scales can be enhanced and refined in future research. Moreover, there are potential correlations between some of the cultural constructs. The dimension individualism versus collectivism is interrelated with both the power distance and the universalism versus particularism dimension. Individualistic individuals tend to have a low power distance (Hofstede 1991) and are likely to be more universalistic (Hofstede 2001), and vice versa. The cultural dimensions power distance and activity versus passivity are not completely disjunctive, either. Individuals with high power distance are likely to be more passive and individuals with low power distance to be more active (Winkler et al. 2008). Finally, the power distance and monochronic versus

polychronic time perception dimensions may be interrelated. Depending on the specific context, not meeting a deadline can be explained with either a high power distance or a polychronic time perception. Despite these limitations, the results of this study shed important insight into the impact of culture on the choice of controls.

8 Discussion and Implications

This study was motivated by the need to better understand the impact of culture on the choice of controls in ISO projects. This study reveals that the controller's culture also affects the choice of controls, similar to the controllee's culture, which has been the focus of prior research (e.g., Narayanaswamy and Henry 2005).

The results for research model 1 suggest that if the controllee's power distance is low the use of self-control is high, and vice versa. Thus, if controllees ask for guidance, i.e., expect to be told what to do, 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., Prifling et al. 2008; Winkler et al. 2008).

Narayanaswamy and Henry (2005) already argued that the controllee's uncertainty avoidance is inversely associated with the use of self-control. This relationship was found to be significant. Controllees with small risk averseness put less emphasis on pre-planning and have a more hands-on attitude. Providing autonomy by exercising self-control seems to be useful in these cases. Self-control can be implemented by the controller in a number of ways such as training the controllee in appropriate techniques for self-management, or introducing performance evaluation schemes that reward self-management.

Research model 1 also examined the relationship between monochronic time perception and the exercise of outcome control. As predicted, the results present a positive significant relationship. Controllees with monochronic time perception, who view time as structured and sequential, usually complete tasks on time. Hence, controllers seem to perceive these controllees as reliable and, therefore, use outcome control mechanisms like written project plans that do not require constant monitoring.

Besides a number of significant relationships, there are multiple hypotheses of research model 1 which are not supported. The relationships between collectivism and the exercise of clan control, as well as

collectivism and the use of behavior control were not found to be significant. One plausible explanation for these insignificant relationships may be that exercising these control types is very costly. For instance, implementing clan control by participating in project team meetings or exercising behavior control by monitoring the controllees requires considerable time and commitment the controller may not have or be willing to expend. Another explanation may be that clan control is not exercised if the controllee's ISO experience is high. PLS results which revealed a significant negative relationship between the controllee's ISO experience and clan control support this argumentation. The same explanations may apply for the insignificant relationships between uncertainty avoidance and the exercise of clan control, activity and the use of behavior control, as well as monochronic time perception and the use of behavior control. Besides these insignificant relationships, the hypotheses predicting a relationship between activity and the exercise of outcome control, as well as activity and the exercise of self-control are not supported, either. Considering the fact that no relationship between the controllee's activity and the use of any control mode shows significance, suggests that the controllee's activity has no influence on the controller's choice of controls. Further, the hypothesis predicting a positive relationship between universalism and the exercise of outcome control is not supported. However, this is not to say that the controllee's universalism has no impact on the choice of controls since relationships between universalism and the exercise of other control modes may be significant, but could not be tested due to the small sample size.

The results for research model 2 suggest that the controller's collectivism is positively associated with the exercise of clan control. Hence, a collectivistic controller is more likely to use clan control than an individualistic controller. Controllers may feel more comfortable maintaining control over the controllees when understanding the links between observable behaviors and project progress. This can be achieved through exercising clan control, i.e., participating in the project team meetings, understanding the project teams' goals, norms, and values, and overall attempting to become a regular member of the project team.

As hypothesized, the results of the PLS analysis indicate a negative significant relationship between uncertainty avoidance and the use of self-control. This suggests that a controller with low uncertainty avoidance strongly exercises self-control, whereas a controller with high uncertainty avoidance hardly uses self-control. This is comprehensible since conventional wisdom holds that the need to avoid uncertainty usually goes along with the desire to control.

Research model 2 also examined the relationship between the controller's activity and the exercise of self-control. The results suggest that if the controller's activity is high the exercise of self-control is high, and vice versa. The findings for this relationship show a direction opposite to that predicted. One

possible explanation for this finding is that controllers who are used to work independently and on their own initiative also expect this work attitude from their controllees. Therefore, the controllers implement self-control more readily, for instance, by communicating to the supplier that self-management is valued, thereby establishing an appropriate environment for self-management.

Additionally, it was found that universalism positively correlates with the exercise of outcome control. A universalistic controller may be used to adhere to rules and procedures and expect the same from the controllee. In this context, the controller may find it useful to implement control mechanisms that reward the controllee for meeting targets without having to control for the process (outcome control).

The controller's monochronic time perception was also found to be significantly and positively associated with the exercise of behavior control. Controllers with a strong monochronic time perception take deadlines seriously and are thus likely to tightly control the process and monitor the controllees for delivery on time.

Another interesting finding concerns the use of self-control and outcome control. The controller's uncertainty avoidance and activity are both significantly correlated with the use of self-control, but neither shows a significant relationship with the exercise of outcome control. In contrast, a significant relationship was reported for the controller's universalism with the exercise of outcome control. However, the predicted relationship between universalism and the use of self-control was not found to be significant. Given the fact that self-control and outcome control are never exercised at the same time suggests that the use of one of these two control modes excludes the exercise of the other.

Although hypothesized, there is no significant relationship between the controller's power distance and the use of behavior control. Similarly, no significant results were reported for the relationship between the controller's uncertainty avoidance and the exercise of behavior control, as well as the relationship between the controller's uncertainty avoidance and the use of clan control. In general, the insignificant findings deserve further scrutiny since there may be important factors not included in this study that mediate the relationship between culture and the choice of controls.

8.1 Implications for Research

The results of this study suggest a number of implications for researchers, from which several directions for future research can be derived.

First of all, the small sample size considerably limited the number of possible hypotheses in this study and, thus, potential significant relationships may have been ignored. For instance, as already proposed by earlier research (Narayanaswamy and Henry 2005), the relationship between the controllee's

uncertainty avoidance and the exercise of behavior control and / or outcome control could be examined in future research. One possible argument for this hypothesis is that controllees with high uncertainty avoidance only feel secure when the required outcomes and behaviors are defined. Additionally, a positive relationship between the controllee's power distance and the use of behavior control and / or outcome control could be hypothesized. In this case it could be argued that controllees with high power distance usually expect to be told what to do (Hofstede 1980) and are thus likely to prefer the use of formal control mechanisms.

While prior studies usually examined self-control mechanisms that were implemented internally by the controllee, this study focuses on mechanisms the controller uses to assist and promote the exercise of self-control by the controllee. Although other researchers have already taken this view of self-control (e.g., Choudhury and Sabherwal 2003), this is the first study that applies this view to ISO projects. In this context it is an interesting finding that controllers do not seem to exercise self-control and outcome control together at the same time. Future research could further examine this link.

In order to empirically test for the relationship between national culture and self-control implemented by the controller, new measures for self-control were adapted from existing literature and successfully applied for the first time. The finding of reliable and valid measures for self-control further enhances prior research on the exercise of control. Additionally, new items were developed for the cultural dimensions activity versus passivity, universalism versus particularism, and monochronic versus polychronic time perception. Especially the construct activity versus passivity showed a high psychometric quality. However, there is a need for replication and future research could further enhance these scales.

It may also be interesting to examine the extent to which certain control modes are exercised under different cultural settings. It is certainly reasonable to presume that more control is exercised when cultural differences between controllers and controllees are great. However, some cultural characteristics might have a stronger impact on the amount of control that is exercised in cross-cultural projects than others. Further, future research could examine the dynamics of control in cross-cultural projects, since changes in control choices may take place differently when individuals with different cultural backgrounds are involved. Finally, it would be promising to examine the different effects of culture on the choice of informal versus formal control modes.

It is obvious that the relationship between culture and control is a more complex phenomenon than uncovered by this research. Therefore, extensive research is needed in the future to better understand the impact of culture on the choice of controls.

8.2 Implications for Practice

Earlier research on control (e.g., Kirsch 2004) already acknowledged the important role of cultural differences. The results of this study further enhance prior research and point out that cultural differences play a significant role for the choice of controls and, thus, strongly influence the success of ISO projects. As found in this study, both the controller and controllee's national culture have to be considered when exercising control. One general recommendation is, thus, that controllers and controllees should awaken to the importance of their own and their counterpart's national culture. Only if both sides understand the origin of cultural issues that may arise during the course of an ISO project, necessary steps can be taken to successfully solve such problems. One way to reduce the risk of culture induced problems is to provide cultural training for both the controllers and controllees, as well as communicate a lot with each other. Another possibility is to nominate a person as cultural intermediary who has experience with both the controller and controllee's national culture and, thus, "speaks both languages". This person may act as a central person of contact whenever cultural issues arise. Clearly adapting to either the controller or controllee's culture may also help to mitigate cultural issues. Besides these recommendations there are some general management practices that may help to deal successfully with cultural differences. These practices include selecting dedicated project managers, assigning clear roles, arranging regular meetings, installing steering committees, and providing strong leadership. In this context, it is important to note that such management practices do not change the cultural norms and values of either the controllers or controllees directly. If at all, persistent changes of behavior patterns that uphold beyond the end of a particular project may only be achieved over a very long time. Nonetheless, particular management techniques may influence the actual behavior of the ISO project members in a way that behavioral differences between the controllers and controllees that negatively affect the cooperation are alleviated.

9 Conclusions

The approach of this study has been to combine three distinct streams of research – control, IS offshoring and culture to examine the impact of national culture on the choice of controls.

Culture is an important factor to consider when developing control strategies in ISO projects. While cultures have found to change slowly (Hofstede 1980), the effects of cross-cultural issues on ISO projects have quickly become an important topic for many companies doing business across country borders (Gupta and Raval 1999; Nicholson and Sahay 2001; Rottman and Lacity 2004).

Acknowledging cross-cultural issues has become crucial due to the rapidity and intensity of globalization in the IS industry (Hirschheim 2006; Sahay et al. 2003). Given the importance of a fitting control strategy for the success of ISO projects, a major goal is to design a control strategy that fits the cultural setting. This would enhance the effectiveness of control mechanisms and, thus, increase the performance of ISO projects. However, existing control literature largely omits cross-cultural issues and, thus, neglects their effect on the exercise of control. This research partially addresses this gap and aims to contribute to the ISO and control literature in several ways. First, Narayanaswamy and Henry's (2005) theoretical work was extended by adding three additional cultural dimensions (activity versus passivity, universalism versus particularism, and monochronic versus polychronic time perception), and most importantly, by empirically testing the developed hypotheses. This resulted in the first quantitative study on the impact of culture on the choice of controls in an ISO context. Second, the researcher did not concentrate on the controllee's culture only, as done in prior studies, but also examined the controller's cultural background. This resulted in a more comprehensive understanding of how culture influences the choice of controls and revealed that both group's culture has to be considered when managing ISO projects. Third, by using the controller-controllee dyad as the unit of analysis, the researcher was able to examine the direct control relationship within a matched pair. Finally, rather than focusing only on one specific ISO variation, the researcher considered ISO in general (with regard to all variations along the distance, function, and ownership dimensions), thereby providing interesting insight into different ISO projects and models.

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Appendix

Table 8. Frequently Cited Models of National Culture	
Citation(s)	Cultural Dimension
Fukuyama (1995)	High Trust versus Low Trust
Glenn (1981)	Associative versus Abstractive
Glenn (1981)	Ideologists versus Pragmatists
Hall (1976); Hall and Hall (1990)	High Context versus Low Context
Hall (1976); Hall and Hall (1990); Lewis (1992)	Monochronic versus Polychronic Time Perception
Hofstede (1980); Triandis (1988); Trompenaars (1993)	Individualism versus Collectivism
Hofstede (1980)	Power Distance
Hofstede (1980)	Uncertainty Avoidance
Hofstede (1980)	Masculinity versus Femininity
Hofstede and Bond (1988); Kluckhohn and Strodtbeck (1961)	Long Term Orientation, Temporal Focus
Kluckhohn and Strodtbeck (1961)	Human Nature
Kluckhohn and Strodtbeck (1961)	Man-Nature
Kluckhohn and Strodtbeck (1961)	Activity Orientation
Kluckhohn and Strodtbeck (1961)	Relational Orientation
Lessem and Neubauer (1994)	Pragmatism versus Idealism
Lessem and Neubauer (1994)	Rationalism versus Humanism
Parsons and Shils (1951)	Self-Orientation versus Collectivity-Orientation
Parsons and Shils (1951); Trompenaars (1993)	Universalism versus Particularism
Parsons and Shils (1951); Trompenaars (1993)	Achievement versus Ascription
Parsons and Shils (1951); Trompenaars (1993)	Specificity versus Diffuseness
Parsons and Shils (1951); Trompenaars (1993)	Affective versus Neutral
Trompenaars (1993)	Internal versus External Control
Trompenaars (1993)	Time Orientation

Table 9. Operationalization of the Variables			
Construct	Label	Item	Reference(s)
National Culture			
Power Distance	PD1	I have a good working relationship with my direct superior	Hofstede (1994)
	PD2	I am consulted by my direct superior in her / his decisions	

	PD3	How frequently are you afraid to express disagreement with your superiors?	
	PD4	An organization structure in which certain subordinates have two bosses should be avoided at all costs	
Collectivism	CO1	I have sufficient time for my personal or family life	Hofstede (1994)
	CO2	I have good physical working conditions (good ventilation and lighting, adequate work space, etc.)	
	CO3	I have security of employment	
	CO4	I have an element of variety and adventure in my job	
Uncertainty Avoidance	UA1	How often do you feel nervous or tense at work?	Hofstede (1994)
	UA2	One can be a good manager without having precise answers to most questions that subordinates may raise about their work	
	UA3	The rules (or guidelines) of a company or organization should not be broken - not even when the employee thinks it is in best interest of the company	
	UA4	Competition between employees usually does more harm than good	
Universalism	UN1	Rules and laws are unalterable and should be adhered to always	-
	UN2	A person who strictly adheres to contracts is trustworthy	
	UN3	I interpret rules and laws less strictly for friends than for strangers	
Activity	AC1	I frequently complete tasks on my own initiative	-
	AC2	I take the initiative to find solutions to recurring issues	
	AC3	I reluctantly accept challenging tasks	
Monochronic Time Perception	TP1	Preset plans should only be altered when absolutely necessary	-
	TP2	Time targets can be sometimes exceeded	
Managerial Control			
Behavior Control	BC1	I expected the supplier to follow an agreed written sequence of steps toward the accomplishment of project goals	Kirsch et al. (2002)
	BC2	I assessed the extent to which existing written procedures and practices were followed during the development process	
Outcome Control	OC1	I placed significant weight upon project completion to my satisfaction	Kirsch et al. (2002)
	OC2	I used pre-established targets as benchmarks for the	

		supplier's performance evaluations	
	OC3	I placed significant weight upon project completion within budgeted costs	
	OC4	I evaluated the supplier's performance by the extent to which project goals were accomplished, regardless of how the goals were accomplished	
	OC5	I placed significant weight upon timely project completion	
Clan Control	CC1	I placed a significant weight on understanding the project team's goals, values, and norms	Kirsch et al. (2002)
	CC2	I actively participated in project meetings to understand the project team's goals, values, and norms	
	CC3	I attempted to understand the project team's goals, norms, and values	
	CC4	I attempted to be a "regular" member of the project team	
Self-Control	SC1	I established an appropriate environment for self-management by communicating to the supplier that self-management is valued	Brief and Aldag (1981), Choudhury and Sabherwal (2003), Kirsch et al. (2002)
	SC2	I introduced performance evaluation schemes that reward self-management	
	SC3	I enhanced the supplier's ability to exercise better self-management	
	SC4	I trained the supplier in appropriate techniques for self-management	

Table 10. Respondents Profile – Client Experience

	Experience in her / his position in the company	%	Experience in the IS field	%	Experience in the ISO field	%
< 1 year	3	8.1	2	5.4	2	5.4
1 - 5 years	25	67.6	12	32.4	26	70.3
> 5 years	9	24.3	23	62.2	9	24.3
Total	37	100	37	100	37	100

Table 11. Respondents Profile – Supplier Experience						
	Experience in her / his position in the company	%	Experience in the IS field	%	Experience in the ISO field	%
< 1 year	1	2.7	2	5.4	1	2.7
1 - 5 years	29	78.4	9	24.3	10	27.0
> 5 years	7	18.9	26	70.3	26	70.3
Total	37	100	37	100	37	100

Table 12. Respondents Profile – Counterpart Experience				
	Client's experience with supplier counterpart	%	Supplier's experience with client counterpart	%
< 6 months	5	13.6	7	18.9
6 - 12 months	9	24.3	9	24.3
13 - 24 months	10	27.0	5	13.6
> 24 months	13	35.1	16	43.2
Total	37	100	37	100

Table 13. Research Model 1 – Outer Loadings					
Culture Construct	Item	Loading	Control Construct	Item	Loading
Power Distance	PD2	0.73	Behavior Control	BC1	0.67
	PD4	0.66		BC2	0.74
Collectivism	CO2	0.82	Outcome Control	OC2	0.70
	CO3	0.93		OC4	0.79
Uncertainty Avoidance	UA3	1.00		OC5	0.57
Activity	AC1	0.72	Clan Control	CC1	0.82
	AC2	0.70		CC2	0.70
	AC3	0.90		CC3	0.82
Universalism	UN2	1.00		CC4	0.67
Monochronic Time Perception	TP1	0.58	Self-Control	SC2	0.87
	TP2	0.83		SC3	0.67
				SC4	0.76

Table 14. Research Model 2 – Outer Loadings					
Culture Construct	Item	Loading	Control Construct	Item	Loading
Power Distance	PD2	1.00	Behavior Control	BC1	0.86
Collectivism	CO2	0.82		BC2	0.51
	CO3	0.70	Outcome Control	OC1	0.92
Uncertainty Avoidance	UA1	0.89		OC5	0.58
	UA3	0.57	Clan Control	CC1	0.45
Activity	AC1	0.94		CC2	0.85
	AC2	0.79		CC3	0.59
Universalism	UN2	0.76		CC4	0.92
	UN3	0.90	Self-Control	SC1	0.87
Monochronic Time Perception	TP1	0.97		SC2	0.53
	TP2	0.39		SC3	0.63

Erklärung

Eidesstattliche Erklärung

Ich versichere, dass ich die Arbeit ohne fremde Hilfe und ohne Benutzung anderer als der angegebenen Quellen angefertigt habe und dass die Arbeit in gleicher oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegen hat und von dieser als Teil einer Prüfungsleistung angenommen wurde. Alle Ausführungen, die wörtlich oder sinngemäß übernommen wurden, sind als solche gekennzeichnet.

Nürnberg, den 28. Juli 2010

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