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Zafor Ahmed
University of Houston Downtown, ahmedz@uhd.edu

Evren Eryilmaz
College of Business for the California State University, Sacramento

Vinod Kumar
Carleton University

Uma Kumar
Carleton University

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Control Balancing in Offshore Information Systems Development: Extended Process Model

Zafor Ahmed
Marilyn Davies College of Business
University of Houston Downtown
ahmedz@uhd.edu
USA

Evren Eryilmaz
College of Business for the California State University, Sacramento
USA

Vinod Kumar
Sprott School of Business
Carleton University
Canada

Uma Kumar
Sprott School of Business
Carleton University
Canada

Abstract:

Control, broadly defined as any attempt to align individual behavior with organizational objectives, is argued to be a vital instrument for motivating and engaging various stakeholders in ISD projects. Yet, our understanding of control balancing and control dynamics for offshore ISD projects with multiple business stakeholder groups is in its infancy. In this case-based, grounded theory research, we set out to explore the IS phenomenon of offshore ISD through the lens of control theory and control-balancing theory.

Applying a grounded theory method (GTM) in four offshore ISD projects, this research identified a comprehensive understanding of control balancing in the offshore ISD context. Our key findings include organizational control orientations, which explain why certain control configurations are adopted, and the dynamic aspect of the control-balancing process, capturing the transition from one control configuration to another. Implications for theory and practice are also discussed.

Keywords: Control Balancing, Control Dynamics, Offshore ISD, IS Implementation.

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1 Introduction

Control is a critical challenge in information systems development (ISD) projects, particularly in offshore settings where geographic, cultural, and organizational differences complicate oversight and coordination. Control, broadly defined as efforts to align individual behaviors with organizational objectives (Kirsch, 1996), is essential for managing offshore ISD projects, ensuring stakeholder alignment, and mitigating risks arising from distributed work environments. Despite extensive research on control in ISD (Maruping et al., 2009; Tiwana, 2010), the focus has primarily been on control modes rather than control dynamics—the evolving interplay of different control types, frequencies, and directions over a project's lifecycle (Choudhury & Sabherwal, 2003). Offshore ISD projects require a nuanced approach to control, as traditional mechanisms (e.g., contractual oversight and outcome monitoring) often fail to address complexities introduced by distributed teams, asynchronous collaboration, and diverse stakeholder expectations.

Besides developing a client–vendor shared understanding (Rai et al., 2009), several other factors, such as lack of oversight over the vendor's development process (Choudhury & Sabherwal, 2003; Kirsch et al., 2002) and synthesizing the project team's knowledge of a potential software solution, make the successful management of an outsourced ISD project even more perplexing. Other typical characteristics of these offshoring projects (e.g., time zone difference, lack of clear rules, lack of consent oversight, duality of deliverables, communication risks) make effective control a highly challenging task (Tiwana & Keil, 2009).

It is evident that much of the complexity and challenge of offshore ISD arises from a reliance on the collaboration of heterogeneous, cross-disciplinary groups. However, earlier research has shown better performance by such heterogeneous groups on complex tasks given an established "shared understanding" (Bowers et al., 2000). Shared understanding of group members can be defined as "the ability of multiple agents to coordinate their behaviors with respect to each other in order to support the realization of common goals or objectives and mutual knowledge, mutual beliefs, and mutual assumptions" (Bittner & Leimeister, 2014). Shared understanding has been shown to be an important contributor to enhancement of team performance (Mathieu et al., 2000), group member satisfaction (Langan-Fox et al., 2004), coordination of activities among group members (Hsieh, 2006), reduction of iterative loops and re-work (Kleinsmann et al., 2010), increased innovation (Kleinsmann, & Valkenburg, 2008), and team morale (Darch et al., 2009). Besides numerous positive effects, Piirainen, Kolfschoten, and Lukosch (2012) also identified building a shared understanding as one of five critical challenges for effective collaborative design.

One of the ways to build shared understanding among heterogeneous groups in offshore ISD is through effective management of control dynamics (Gregory et al., 2013). Control is crucial for motivating and engaging various stakeholders in ISD projects. This promotes optimal utilization of their capabilities to advance the project towards its goals (Kirsch, 1997, 2004). Extant literature on ISD control has frequently focused on control modes (Maruping et al., 2009; Tiwana, 2010). Control mode refers to the methods and strategies used to manage and oversee a project's progress and performance. These include behavioral control, outcome control, clan control, self-control, and hybrid control. Control dynamics, on the other hand, indicate an ever-changing state of a collection of different types of controls (Choudhury & Sabharwal, 2003), including control modes, control frequencies, and control directions. Despite the complexity and an encompassing nature, control dynamics have been largely ignored by offshore ISD literature (Srivastava & Teo, 2012). Furthermore, research on the use of informal controls (e.g., clan and self-control) for offshore ISD remains sparse and has produced mixed results (Wiener et al., 2015).

Therefore, a portfolio of control in conjunction with a control mechanism approach is well suited to enhance our understanding of control (Kirsch, 1997, 2004) and its effective application for offshore ISD. Gregory et al. (2013) proposed a theory of control balancing—defined as the targeted adjustment of control portfolios through various mechanisms over the lifespan of an ISD—based on a single ISD offshoring project, explaining what needs to be balanced, how control balancing occurs, and why it matters.

Research on control balancing for offshore ISD projects with multiple business stakeholder groups is quite sparse, and the impact of optimal stakeholder engagement is almost wholly neglected (Ahmed et al., 2022). Gregory et al. (2013) called for further validation and extension of their Control Balancing Theory (CBT). Furthermore, Wiener, Mähring, Remus, and Saunders (2016) reported that the primary research focus within this domain has been on control portfolio configuration, with control dynamics largely

overlooked. Despite wide agreement on antecedents to control mode and amount choices and their performance effects, controls have been found to produce inconclusive and partly contradictory results in internal ISD projects (Wiener et al., 2016). Therefore, examining control dynamics through the lens of control balancing for large-scale offshore ISD projects holds much potential for theoretical and practical contributions to control literature. The objectives and contributions of the current research can be summarized by the following research questions:

1. *How do dynamics of control balancing relate to an evolving shared understanding in offshore ISD projects?*
2. *How do control configurations support organizational perspectives in offshore ISD projects?*

This study examines control dynamics in four large-scale offshore ISD projects, primarily through the lens of CBT. Objectives of and contributions from the current research are along the dimensions of theory elaboration and refinement. This research employs Gregory et al.'s (2013) CBT for examining control dynamics. In doing so, it validates their theory of control balancing and contributes to its generalizability. Furthermore, this research discovers additional control balancing process flow in offshore ISD and proposes an extension to Gregory et al.'s (2013) original control balancing process model.

2 Theoretical Background

The primary theoretical perspective of this current research revolves around the concepts of control configuration and control balancing in offshore ISD projects. Hence, it relies heavily on IS project control literature and CBT to explain contradictory findings and unexplained control outcomes.

2.1 Control in Offshore ISD

Control is often considered a dyadic concept because it involves interactions between two entities, typically an agent exerting control (controller) and a target being controlled (controlee). Numerous empirical studies have investigated control in an organizational context (Kirsch, 1997, 2004), primarily focusing on control modes, control style, control antecedents (Kirsch et al., 2002; Kirsch, 1996, 1997), effects of control (Nidumolu & Subramani, 2003; Henderson & Lee, 1992; Maruping et al., 2009), and dynamics related to control choices (Kirsch, 2004; Choudhury & Sabherwal, 2003). However, the targeted adjustment of the control configuration or control balancing is a recent perspective within control literature (Gregory et al., 2013; Remus et al., 2020). In a comprehensive review of 57 control studies by Wiener et al. (2016), only 7 were found to focus on control dynamics. Wiener et al. (2016) also reported that most control research focuses on "ordinary," non-temporary organizations. This is noteworthy because offshore ISD projects have distinctive characteristics due to controllees with diverging priorities and objectives. As a result, control activities may shift from time to time as a project evolves over its finite lifespan.

Despite recent emphasis on considering control styles together with control modes (e.g., Gregory et al., 2013; Wiener et al., 2016), empirical research with such a focus remains scant (Remus et al., 2020). A recent review of control literature by Ramasubbu and Kemerer (2021) recommends four broader approaches for improving control effectiveness, particularly in the context of outsourcing. They are (1) boundary-spanning activities between vendor and client teams that improve trust and knowledge sharing, (2) newer forms of control modes for monitoring the evolution of project outputs (emergent outcomes), (3) control ambidexterity by carefully selecting and combining formal and informal controls, and (4) control elements focused on relationships that improve trust, and on shared cognition and sensemaking. Our own review of recent control literature in an ISD offshoring context also supports a need for multifaceted approach to examine ISD control to understand why, when, and how control shifts. We further believe that a broader perspective related to control consequence and granular examination of control antecedents is essential to understand complex ISD offshoring issues such as organizational tension management, control ambidexterity, and technical debt reduction. Table 1 provides a chronological overview of recent and notable studies concerning offshore and outsourced ISD control.

Table 1. ISD Control Literature Overview

Study	ISD Control Context	Primary focus	Findings
Gregory et al. (2013)	Offshored IS development project	Control balancing and evolution (dynamics)	Control balancing in terms of control type, degree, and style allows an IS offshoring project to progress toward its goals. Balancing activities are highly intertwined with the development of shared understanding.
Wiener et al. (2016)	Internal and outsourced IS projects	Control enactment process and ISD control framework	Control enactment or how the controller interacts with the controllee to put the portfolio of controls into practice. An ISD control framework (combination of control antecedents, control portfolio, and control consequences) to understand this enactment process.
Wiener et al. (2017)	Internal and outsourced IS projects	Effects of control styles on IS project performance	Executives' use of an enabling control style is positively related to IS project performance, whereas their use of an authoritative control style is found to be negatively related to performance. Still, the use of this control style seems to play a critical role in successfully enacting formal controls.
Cha and Kim (2018)	Outsourced IS projects	Client-vendor relationship management in IT outsourcing	Critical factors of outsourcing success include goal sharing, process innovation, information sharing and communication, collaboration for joint work, evaluation standardization, and evaluation feedback. Social controls such as relationships are based on trust and communication with suppliers rather than focusing on only evaluation and management (authoritative control).
Wiener et al. (2019)	Research commentary: Internal and outsourced IS projects (literature review)	Gaps and shortcomings of existing control literature; future direction	Future research should employ data to assess controllers' underlying intentions (i.e., their control purpose), in addition to assessing the modes of selected controls (control configuration) and the style in which these controls are put into practice (control enactment).
Ramasubbu and Kemerer (2021)	IT offshore/ outsourced projects	Technical debt resulting from offshore IT projects and control balancing in ISD	Technical debt or future maintenance work due to project violations and shortcuts can be minimized by appropriate control-balancing decisions in IT-outsourced projects.
Al-Azad et al. (2022)	IT offshore/ outsourced projects	Organizational attitude in Offshore projects based on trust or coordinated control approach	Positive organizational attitude improves knowledge sharing between the client and service providers (i.e., vendors) and creates stronger outsourcing partnerships.
Heuer de Carvalho et al. (2022)	IT offshore/ outsourced projects	Client-vendor relationship in outsourced IT projects in terms of service contract	Technical debt can be minimized by reducing information and competency asymmetries between client and vendor (i.e. shared understanding). Communication and transparency are absolutely essential (trust and coordinated control) but "penalty clauses" on contract (authoritative control) as also required.
Syed et al. (2023)	Internal and outsourced IS projects	Control ambidexterity or simultaneous use of two contrasting control styles	Control-style ambidexterity improves project performance directly and in combination with both formal and informal control.
Ngah et al. (2024)	Offshore & outsourced ISD (literature review)	Relational dynamics and tension management	Using *a* systematic literature review of 127 outsourced IT implementation research, a conceptualization of client-vendor relational dynamics was developed based on a tension perspective. Client–vendor relationship status changes over the life cycle of the project and requires different management approaches (i.e. control needs to be adjusted from time to time).

In summary, it can be said that the extant literature has largely focused on the direct and interactive effects of formal and informal control modes based on certain aspects of the controller–controllee

relationship such as power asymmetries (Wiener et al., 2016), and project characteristics such as performance (Barki et al., 2001; Gopal & Gosain, 2010; Wallace et al., 2004). Only a few recent studies (Table 1) have attempted to examine complex ISD offshoring issues such as tension management, relational dynamics, organizational perspective, strategic partnership, control intention (Wiener et al. 2019), or opportunism management that require a dynamic control perspective that emphasizes why or how controls are triggered and enacted. Furthermore, a long-overlooked aspect in ISD offshoring is the role of power asymmetries in non-traditional forms of control enablers such as personal relationships and shared history between controller and controllee. Rich interaction created by social networks often fosters strong cooperation among group members to attain certain project objectives. For example, Chua et al. (2012) is the only study that has examined social capital as an enabler of clan control in an ISD project.

2.2 Control Balancing in Offshore ISD

Going beyond the dyadic nature of control, control balancing is a well-suited theoretical lens for examining the dynamic nature of a control configuration and measuring the control effectiveness in both vertical and horizontal relationship structures.

Offshore ISD projects comprise numerous critical and interrelated activities within each implementation phase, all requiring inputs from multiple stakeholders, often with non-overlapping knowledge (Maruping et al., 2009). Along with the benefits of these complementary knowledge and skills, engagement also brings the challenge of divergent priorities, goals, motivations, and power relations, each needing proper control and management to ensure a positive outcome (Kirsch et al., 2002).

Dibbern et al. (2008) highlight the challenge of unrealized cost savings in offshore ISD projects, emphasizing that the anticipated economic benefits of offshore outsourcing often fail to materialize due to hidden costs. These additional expenses stem from knowledge integration, vendor control, and project coordination, all of which are influenced by task complexity, vendor capabilities, and offshore-specific barriers such as cultural and geographic distance. By employing both transaction cost economics (TCE) and a knowledge-based view (KBV), Dibbern et al. (2008) underscore the necessity of a more nuanced decision-making approach in offshoring engagements.

Similarly, Levin and Vaast (2008) argue that effective collaboration in offshore ISD hinges on the ability to manage multiparty interactions across geographic, organizational, and cultural boundaries. They find that social, organizational, and functional barriers impede knowledge sharing, reinforce status inequalities, and complicate the development of shared identity and practices, ultimately compromising project success. This perspective aligns with the findings of Krancher and Slaughter (2013), who identify knowledge transfer (KT) as a particularly complex challenge in offshore ISD. While governance mechanisms are essential for mitigating KT-related difficulties, they emphasize the dynamic nature of KT due to the evolving expertise of vendor staff. Consequently, they advocate for adaptive governance strategies that evolve alongside the knowledge acquisition process to enhance the effectiveness of offshore ISD initiatives.

Prior research has recognized the dynamic nature of offshore ISD environments and the existence of adaptive control mechanisms (Sambamurthy & Kirsch, 2000). Kirsch (2004) provided a more explicit examination of dynamic control mechanisms within in-house ISD projects, focusing on "phase-specific" control choices and the factors influencing control-related decisions. However, this investigation was limited in scope, as it did not address the direction or intensity of control. Moreover, a truly dynamic perspective on control requires consideration of control trigger factors that may operate independently of project phases. Kirsch (2004) acknowledged these limitations, emphasizing a need for further research that extends beyond traditional conceptualizations of behavioral, outcome-based, and clan control in complex and dynamic ISD settings.

Motivated by a need to better understand control dynamics in the context of offshore ISD projects, Gregory et al. (2013) proposed a theory of control balancing. They conceptualized control balancing as the act of making targeted adjustments to control configurations. They defined control configuration as a combination of three distinct control dimensions or underlying constructs: control types, control degree, and control styles. Control type refers to both formal and informal aspects of controls, which can be classified into three different categories: (a) procedural, (b) social, or (c) hybrid. Control degree captures the measurement or intensity of applied control. This can range from a tight or frequent application of control to a relaxed or infrequent form. Control style relates to the concept of control direction, which can be unilateral or bilateral. By synthesizing these unique control characteristics, Gregory et al. (2013)

proposed three distinct control configurations: (a) authoritative, (b) coordinated, or (c) trust-based. The control configuration in IS implementation project is summarized in Table 2 (adopted from Gregory et al. 2013).

Table 2. Control Configurations and Balancing States in ISD

Control Configuration	Definition	Meaning and Implication	Typical Examples of
Authoritative control **(AC)** • Procedural control portfolio **(AC.P)** • Tight control degree **(AC.D)** • Unilateral control style **(AC.S)**	An approach to control based on a traditional client–vendor perspective	Client–vendor perspective: • Means that exchange parties see themselves as client and vendor with clearly separated roles and responsibilities • Implies that the client specifies requirements, the vendor delivers upon them, and control selection and use is driven by the client • Results in situations in which the client dominates the relationship from a managerial perspective	• Status reviews • Detailed examination of deliverables • Tracking of project goals • Definition of client/vendor roles and responsibilities • Operational process documents
Coordinated control **(CC)** • Hybrid control portfolio **(CC.P)** • Tight control degree **(CC.D)** • Bilateral control style **(CC.S)**	An approach to control based on a coordination perspective	Coordination perspective: • Means that exchange parties see themselves as partners that need to closely coordinate activities • Implies that client and vendor work toward coordinated, shared goals, search jointly for problem solutions, and select and use control mechanisms accordingly • Results in situations in which neither the client nor vendor dominates	• Joint parallel testing approach • Site visits • Workshops • Reflection-in-action sessions • Coaching of team members • Joint communication plan • Lessons learned sessions
Trust-based control **(TC)** • Social control portfolio **(TC.P)** • Relaxed control degree **(TC.D)** • Bilateral control style **(TC.S)**	An approach to control based on a trust-based perspective	Trust-based perspective: • Means that exchange parties see themselves as part of the same team based upon mutual trust and shared understanding • Implies that the vendor delivers without the client being deeply involved in the process and fewer resources are dedicated to controlling the vendor • Results in situations in which problems get solved instantly, new ideas for improvements are generated, and the vendor takes over more responsibility in the relationship	• Direct and pragmatic coordination • Brainstorming sessions • Spontaneous communication (e.g., facilitated through open-plan offices) • Informal exchange of ideas

In formulating their CBT, Gregory et al. (2013) developed a process model (see Figure 1) to capture the dynamic nature of control shifts in ISD offshoring.

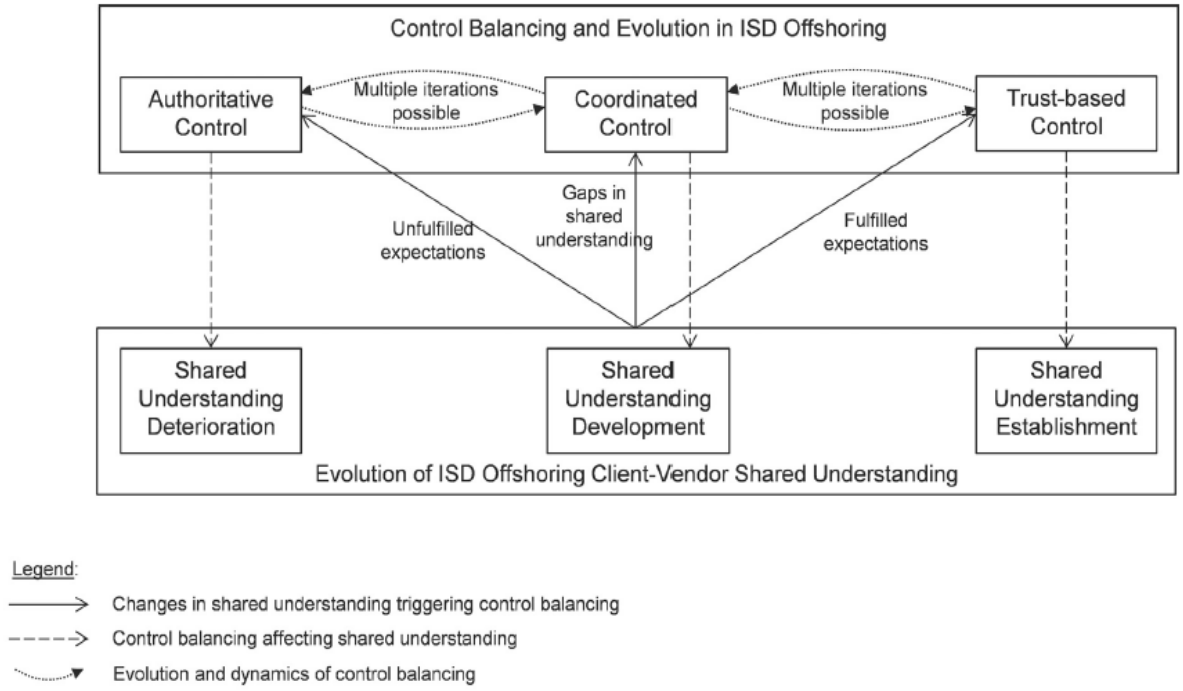

Figure 1. The Process Model of Control Balancing (Source: Gregory et al. (2013))

According to this process model, the magnitude of gaps or discrepancies in shared understanding among stakeholders primarily determines an ISD project's enacted control configuration. Gregory et al. (2013) identified four distinct categories of shared understanding: (a) project processes, (b) business functional knowledge, (c) mutual expectations, and (d) social practices. The magnitude of gaps in shared understanding between the controller and controlee is also influenced by fulfilled or unfulfilled expectations on a continual basis until the project's completion. For example, a gap in client–vendor shared understanding may trigger the enactment of a coordinated control configuration. An impact of such coordinated control is the development of shared understanding that minimizes gaps between controller and controlee. However, depending on a vendor's future performance (i.e., fulfilled or unfulfilled expectations), a coordinated control configuration might shift to an authoritative or trust-based control configuration. Unfulfilled expectations trigger the use of authoritative control with a consequence of shared understanding deterioration, and fulfilled expectations trigger the use of trust-based control, eventually leading to the establishment of a shared understanding (Gregory et al., 2013). However, they were unable to find any case-based evidence for a setback where trust-based control reverts back to authoritative control. The current research suggests that such a shift of control from trust-based to authoritative is a possible scenario, where additional contextual factors are incorporated into the model, such as the experience of the controller or controller's reaction time.

In summary, existing research on control in ISD and offshoring contexts that focuses on formal and informal controls is quite mature. Yet, the different dimensions of control use and the reciprocal effects of control behavior on the client–vendor relationship in an offshore ISD project is still poorly understood (Gregory et al., 2013). As the theory of control balancing establishes a dynamic nature of control configuration in an ISD context, the application of this perspective in multiple large-scale offshore ISD projects holds great potential for control implications on stakeholder engagement and extending the concept of control balancing. Furthermore, a multi-case validation will lead to the generalization of the CBT and allow us to identify any missing components, such as control shifts between authoritative and trust-based configurations.

3 Research Methodology

Seeking to investigate the nature of control dynamics in the context of offshore ISD, and to elaborate and/or refine existing control theory in this regard, this research employs a case-based grounded theory (GT) method (Glaser & Strauss, 1967; Martin & Turner, 1986). Initially, we conducted a thorough review of the ISD literature focusing on control and offshore aspects of implementation, seeking to understand the current state of knowledge. Subsequently, we undertook a case-based grounded theory research project to enrich our current understanding of control in the context of ISD offshoring.

A GT has been extensively and effectively used for IS research in an organizational context (Staehr et al., 2012), but there are three primary motivations for adopting this approach here. First, there is an ontological belief inclined towards a critical realist stance for this current research. The existence of an independent reality is assumed, which will allow the generation of "a useful model of reality" (Van de Ven, 2007, p. 59) based on the present research perspective. Furthermore, this study follows the recommendation of Glaser and Strauss (1967) that GT must fit either the data under study or the principle of emergence. Second, offshore ISD projects investigated through this research are situated within an organizational context. In addition, conceptualizing the project as a temporary organization adds further complexity to the context. Although the role of context is not a primary premise for this research, the contextual complexities introduced by the organization and the project must be incorporated into an understanding of the phenomenon to produce accurate and useful results. This is a major premise in grounded theory research (Martin & Turner, 1986; Pettigrew, 1990). Offshore ISD is a complex phenomenon when considered from process, stakeholder, and control perspectives, often related to context. Because an isolated investigation of this phenomenon is not very useful, the present research favors the use of a grounded theory method that incorporates the complexities of the organizational context (Orlikowski, 1993; Martin & Turner, 1986; Pettigrew, 1990). Third, GT originated from an aim to generate empirically grounded theory (Glaser & Strauss, 1967)—"to discover what is going on, rather than assuming what should go on" (Glaser, 1978, p. 159)—based on the systematic exploration of a phenomenon. Supported by a rigorous, systematic, and comprehensive approach to data collection and analysis of multiple offshore ISD projects, the goal here is to identify useful theoretical conceptualizations that explain the relationship between control portfolios, control trigger factors, and control consequences, and closely align with the methodological purpose of a grounded theory.

This research analyzed a total of four instances of ISD offshoring comprising two successful and two failed implementation projects by a Canadian government organization. The primary intent behind this multiple-case study design was to observe and validate control transitions in different empirical situations and to develop a sounder theory. Furthermore, evidence generated from a multiple-case study was strong and reliable and allowed a wider discovery of the theory's evolution (Gustafsson, 2017). This was evident from Yin's (2018) assertion that a researcher in a multiple-case study is able to analyze data within each situation and across different situations, unlike in single-case study settings. Exhibit A1 elaborates on our GT approach and the high-level outcome of each GT step. A failed or "not so successful" project is concluded from looking at multiple criteria, including a lower return on investment, higher support cost, low user satisfaction, failed adoption, and consideration for possible replacement. Exhibit A2 presents a summary profile of all four cases analyzed in this research.

For this research, a total of 41 project participants representing different roles were interviewed, with a minimum of 9 from each selected case. We used a purposive sampling technique in selecting interview participants, ensuring representation across key stakeholder groups. Each interview lasted approximately 80 minutes on average. Table 3 presents a summary of interview participants along with their roles, affiliations, and timeframe of the interviews.

Table 3. Informant's Summary for All Cases

Type of Primary Data	Description of the Informant's Roles & Distribution				
Face to Face Semi-structured Interview Average duration of interviews: 80 minutes	Role of Interviewee	Case A (Jan, 2015)	Case B (Aug, 2014)	Case C (Feb–Mar, 2015)	Case D (Feb, 2015)
	Project Manager	1 (Client) 1 (Vendor)	1 (Client)	1 (Client) 1	1 (Client)
	Business Lead	1 (Client)	1 (Client)	1 (Client)	1 (Client)
	Business Analyst	1 (Client)	1 (Client)	1 (Client)	1 (Client)

	1 (Integrator)		1 (Integrator)	1 (Integrator)
Enterprise Architect	1 (Client)	None	None	1 (Client)
Data Architect	0	1 (Vendor)	1(Client)	1 (Vendor)
Solution Architect	1 (Integrator)	1 (Client)	1 (Client)	1 (Integrator)
Project team member	1 (Client)	1(Client)	1 (Client)	1 (Client)
	1 (Integrator)	2 (Integrator)	1 (Integrator)	1 (Integrator)
	1 (Vendor)	3 (Vendor)	1(Vendor)	1(Vendor)
	10	11	10	10
Total # of interviews	**41**			

In addition to primary interview data, secondary project data were collected to validate project success or failure, gaps in shared understanding, and enacted control portfolio. Secondary data were used to triangulate findings and enhance the validity of this research (Yin, 2018). To facilitate a rigorous, systematic, and comprehensive analysis process, all interview recordings were transcribed. These transcribed interviews, as well as field notes taken during the interview, were analyzed inductively (Bryman & Bell, 2003). A summary of secondary data types is presented in Table 4.

Table 4. Description of the Secondary Data & Distribution

Secondary Data Types	Case A	Case B	Case C	Case D
Emails	10	15	9	12
Meeting minutes	6	8	8	5
Lessons learnt survey	3	3	3	3
Post-deployment incidents (six months)	26	52	107	66
Vendor escalations	10	22	42	37
Quality assurance reports (QA reports)	5	7	5	3
Variance analysis reports (budget, scope and schedule)	2	2	2	2
Microsoft teams/ wiki post reviews	70	80	60	60
Site visit reviews	2	3	1	1

The reliability of this research used a well-documented methodology and case-study protocol (Yin, 2018). A case database was created to store all interviews and field notes to support a clear and documented chain of evidence (Yin, 2018). A summarized view of the chain of evidence is presented for Exhibits B1 and B2. This database supported the derivation of the conclusion from the initial research questions. Several strategies were adopted to ensure finding validity. Themes, patterns, and categories were validated using secondary data comprising primarily of project documentation, meeting minutes, social event records, email communications, and project office records. A member check was conducted after the primary interview and analysis but before the final report preparation.

4 Cross-Case Analysis and Discussion

The four cases achieved different numbers and extents of business benefits from their offshore ISD initiatives. Here we present a brief overview of each case, followed by cross-case analysis and discussion.

Case A: Financial Market Operations (FMO)

Case A replaced a critical legacy system with a commercial off-the-shelf (COTS) solution to enhance functionality and efficiency. The original system, deployed in 2007, supported essential financial operations, including securities lending and term repos, by managing and pricing collateral securities. Recognizing its importance to money market operations, the organization initiated a financial market operations (FMO) project in late 2013. The project was executed incrementally through four releases, each focusing on a specific functionality, between 2013 and 2015.

A 22-member team, including internal staff and vendor consultants, adopted Cadis, a COTS system from IHS-Markit. Cadis replaced the legacy system while ensuring seamless integration and operational improvements. The FMO achieved notable success, evidenced by reduced post-deployment incidents, minimal vendor support requests, widespread adoption, and a significant decrease in processing time for collateral-based overnight lending. These outcomes underscored the project's efficiency and strategic value to the organization.

Case B: Financial Regulatory System (FRS)

Case B focused on replacing an external-facing enterprise system for collecting, validating, and maintaining financial data and returns filed by federally regulated deposit-taking institutions (DTIs) in Canada. The legacy system was jointly owned by three Canadian government institutions, collectively known as the Tri-agency. After analyzing the legacy system and market options, the project team partnered with Deloitte & Touche LLP to implement a Vizor Software-based COTS solution tailored to the Tri-agencies' needs.

The financial reporting system (FRS) project began in May 2011, encompassing four integrated streams: core module implementation, partner secure remote access (PSRA), enterprise application integration (EAI), and organizational change management (OCM). Core module implementation occurred in two phases: the DTI implementation (delivered in late 2013) and the pension plan/insurance company implementation (completed in April 2014). PSRA, EAI, and OCM were executed concurrently. The agile-based approach used multiple sprints to deliver project components.

With a team of 35 and a $19.5 million CAD budget, equally funded by the partner agencies, the project accounted for a 15% contingency for changes and customizations. Development was split between Ottawa and Dublin, Ireland. Despite initial post-launch defects due to complex integration, FRS stabilized within six months, reducing financial return processing time from two hours to 15 minutes.

Case C: Financial Billing Systems Replacement (FBSR)

Case C involved replacing the legacy banknote distribution system (BNDS) of the host organization with a COTS product. The BNDS managed banknote distribution for financial institutions (FIs), facilitating inventory replenishment, new note circulation, excess note retrieval, and worn note retirement. The system charged FIs per transaction, with fees and exchanged amounts recorded as journal entries in the organization's SAP financial system. However, the legacy system relied on fragmented technologies and custom SAP code, leading to billing and reporting inaccuracies identified by FIs. Agency operations center (AOC) users in Montreal and Toronto could not adjust billing transactions before posting, causing mismatched invoices.

Initiated in July 2012, the project spanned 2012–2015, delivering key functionalities incrementally. The team of 15 adopted Cadis, a COTS system by IHS-Markit, with design and development support from internal staff, vendor consultants, and external advisors. Core operations were split between Ottawa and London, UK. The new solution improved data integration and introduced billing correction and report quality assurance features, enabling accurate and authorized reporting.

Despite delivering most functionalities, the project faced significant post-deployment challenges, including severe external billing errors and over 100 unresolved issues. Six months of support failed to resolve these, leading to additional enhancement projects. Consequently, FBSR was deemed a failed project.

Case D: Enterprise Content Management (ECM)

Case D focused on replacing an organization’s content management system with Microsoft SharePoint as part of an enterprise content management (ECM) initiative. The project aimed to create a reliable content repository, improve records management, and integrate seamlessly with existing tools. It sought to enhance information governance, security, and lifecycle management while standardizing practices and clarifying accountabilities for staff.

Unlike the other cases, ECM built upon a previous failed project (2009–2012) that was terminated due to implementation challenges. Despite this setback, motivation to replace the legacy system remained high due to its inability to meet evolving business needs and comply with records retention laws under the Library and Archives of Canada Act.

The SharePoint-based ECM project ran from February 2012 to December 2014, with a $11.5 million CAD budget and a 22-member team comprising internal staff, external consultants, and Microsoft engineers.

Although it delivered some benefits and faced moderate post-deployment issues, poor integration and low adoption (less than 30% usage in a 1500-employee organization) limited its success. Key knowledge remained uncaptured, and client satisfaction was poor. Ultimately, ECM failed to meet its objectives, leaving the organization without the anticipated business benefits.

4.1 Control Balancing Phase I

In the absence of a detailed understanding of processes and deliverables, a trust-based control configuration initially governed relationships between vendors and project teams in all four cases. This reliance on informal controls stemmed from a lack of formal authority, as no binding contracts established dominance by either party.

In Case A, launched in September 2013, the project team and business unit enjoyed a cooperative, trust-based relationship formed through joint efforts to find an optimal solution for the legacy system. However, significant gaps existed between the project team and the vendor, which lacked prior collaboration history. The vendor, based in Europe, had no earlier contracts with the organization, and a similar unfamiliarity existed with extended IT teams. Consequently, the project team shifted to authoritative controls, emphasizing formal documentation, such as contracts, defined roles, meetings, and vendor demonstrations, as highlighted by a business analyst in Appendix A5.

A similar dynamic unfolded in Case B, where the vendor, headquartered in Dublin, partnered with a North American integrator. While initial engagements fostered trust, the absence of shared work history prompted a shift toward authoritative controls. Financial scale, strategic importance, and lack of familiarity drove the adoption of mechanisms such as predefined templates, governance procedures, the organizational gating process, MOUs, and roles matrices.

In both cases, the shift from trust-based to authoritative control aimed to establish shared understanding, protect project timelines, and ensure accountability. While these mechanisms reflected a responsible controller attitude, they underscored the necessity of balancing trust and formal authority to mitigate risks in high-stakes, large-scale ISD projects.

Cases A and B each recognized a need to improve shared understanding during the initiation phase, but Cases C and D chose not to introduce cognizant behavioral and outcome-based controls. As a result, Cases C and D experienced divergent expectations, reduced sense of urgency, and limited comprehension of strategic significance. Several informants also reported context-related challenges, where over-reliance on a trust-based control configuration with the vendor and internal IT support teams resulted in delays for multiple deliverables (Appendix A5). Resorting to trust-based and coordinated control configurations without assessing shared understanding negatively impacted several strategic aspects in Cases C and D. These included maintaining executive leadership support, securing scarce organizational resources, implementing process innovation, and changing management to integrate new business processes.

Table 5 summarizes the effective control shifts during Phase I control balancing, which comprised initial vendor engagement, feasibility studies, and project initiation. Although all 4 projects assumed a trust-based control initially, several trigger factors—such as negative anticipation, gaps in shared understanding, and lack of shared history—persuaded controllers of the successful projects (Cases A and B) to adopt an authoritative control style. This control shift eventually supported a shared understanding assessment and resulted in shared understanding development for the successful cases.

Table 5. Phase I Control Balancing Summary for Successful Projects

Control Shifts	Phase Overview	Trigger conditions	Control balancing decisions	Consequences
Trust → Authoritative	Phase I control balancing observed at the beginning of projects, including feasibility studies, project screening, vendor demo,	Gaps in shared understanding: Negative Anticipations Lack of shared history (project processes and social practices)	Control type: Procedural control (formal documentation such as contracts, roles, and responsibilities outline, meetings, vendor demonstrations, milestone tracking, project gating, MOU) Control degree: Very tight (a large number of controls used frequently). For example, Case B introduced	Shared understanding assessment and shared understanding development: Solidification of project (onsite and offshore) processes.

	prototyping, initiation, and requirement gathering.	Protect the project timeline (assessing performance velocity and delivery capabilities) A responsible controller (establishing ground rules)	two additional status review meetings in addition to their daily scrum meetings. Control style: Mostly unilateral. Project teams introduced unidirectional control with most of the stakeholders (i.e., vendor[s], internal IT support, business users)	Agreement on the level of engagements Clarification of mutual expectations on task delivery and communications. Establishment of escalation processes and disaster/deviation handling mechanisms.

4.2 Control Balancing Phase II

As projects transitioned into early implementation phases, such as requirements gathering and analysis, a clear shift in control configurations emerged. Cases A and B initially relied on authoritative control, but both evolved toward a coordinated control approach.

In Case A, the project team initially exercised unidirectional and frequent authoritative control over the vendor and internal IT support to address concerns about cost increases and ensure clarity on the future system state. This approach resolved critical procurement and offshore development issues. However, as the project progressed into requirements analysis and conceptual design, a collaborative approach began to take shape. Design workshops, reassessments of client requirements based on vendor feedback, and site visits by the vendor's technical architects facilitated bi-directional, hybrid control. The solution architect in Case A expressed this shift to coordinated control, emphasizing collaborative engagement during the design phase (Appendix A6).

Similarly, Case B experienced a transition from authoritative to coordinated control through frequent, bi-directional communication and iterative feedback exchanges. These interactions minimized rework, enhanced deliverable accuracy, and expanded project scope coverage. As noted by the project manager (Appendix A6), this approach also fostered strong engagement with extended stakeholders, aligning with the project's life-cycle orientation rather than a short-term, deliverables-focused perspective.

The coordinated control configuration in both cases strengthened relationships between controllers and controlees, enhancing shared understanding. In Case A, joint-parallel testing and development built internal support capabilities, while Case B utilized mandatory training and collaborative engagements to reinforce the social dimension of project sustainability. These shifts from authoritative to coordinated control contributed to improved performance, stakeholder alignment, and long-term project value.

In Cases A and B, control configurations transitioned between authoritative and coordinated styles, whereas in Cases C and D controls were initially informal and relaxed. This relaxed approach in Cases C and D was shaped by contextual factors that obscured the triggers for balancing control. In Case C, the assignment of an inexperienced project manager during the requirements and planning phase played a critical role. Effective shared understanding assessment relies on emotional intelligence, which develops through experience (Goleman, 1998; Salas et al., 2015). Lacking this foundation, the project manager adopted a traditional control approach, focusing on status tracking and meetings. This led to unidirectional, authoritative controls with frequent procedural oversight. Consequently, Case C prioritized assessing shared understanding rather than fostering its development, hampering collaborative progress. In Case D, other factors contributed to a relaxed relationship between the vendor, internal IT teams, and the client. These included limited monitoring capability, insufficient technical expertise, and overly optimistic assumptions about previously gathered requirements. The controller's high reliance on the vendor, coupled with the absence of a shared understanding assessment, masked critical control triggers. This perpetuated a coordinated control configuration from Phase I, but not one motivated by legitimacy concerns or contingency management (Adler & Borys, 1996). As a result, this enabling control style failed to achieve shared understanding development.

The mismatched control strategy in Case D manifested in missed requirements and delayed deliverables, highlighting the consequences of inadequate alignment between control configurations and project needs.

Table 6 summarizes the effective control shifts during the Phase II control balancing, which comprises requirement and planning, and analysis and conceptual design activities. Although Cases A and B demonstrated initial authoritative control, several trigger factors—such as divergent interpretations, client anticipation of cost increase, and increased stakeholder engagement—persuaded the controllers to sway between authoritative and coordinated control styles. This control shift in Phase II of control balancing eventually resulted in shared understanding development for the successful cases (A and B).

Table 6. Phase II Control Balancing Summary For Successful Projects

Control Shifts	Phase Overview	Trigger conditions	Control balancing decisions	Consequences
Authoritative → Coordinated	Phase II control balancing observed in the early lifecycle of projects but after initiation, including requirement and planning, analysis, and conceptual design activities.	Gaps in shared understanding: Eliminate divergent interpretations (understand vendor's interpretation of requirements) Increased stakeholder engagement (eliminate unexpected cost increase by integrating client's functional requirements with vendor's technical limitations) Client's expectations clarification (address any potential change request situation due to poor elicitation and missing sub-requirements) Client's anticipation of cost increase	Control type: Hybrid control includes both procedural control elements, such as requirement tracking and validation, milestone tracking, status update meetings, and project variance tracking, and social controls such as requirement elicitation workshops, design workshops, and lessons-learned meetings. Control degree: Moderate to tight control with high frequency (large number of controls used frequently). For example, workshops with the vendor and re-assessment of client requirements based on vendor feedback increased significantly in Cases A and B. Control style*:* Mostly bilateral. Project teams and vendors jointly decided on the frequency of site visits and design workshops, but project team applied unilateral control with respect to internal IT supports.	Shared understanding development: Control switch from authoritative to coordinated and vice versa leading to a rapid understanding of most requirements A collaborative work style leads to a high level of stakeholder engagement. This helped increase the accuracy and scope of requirements coverage Solidification of requirements increased client confidence in future performance

4.3 Control Balancing Phase III

During the design and development phase, control configurations shifted noticeably across the projects. In Cases A, B, and D, control mechanisms oscillated between coordinated and trust-based configurations, while Case C maintained a unidirectional, authoritative control style.

In Case A, the vendor's proactive involvement during the conceptual design phase fostered confidence from the client, reducing negative expectations. While status reviews, milestone tracking, and defect assessments initially focused on internal support team progress, delays in the development of glueware modules prompted a shift to bilateral control. Both client and vendor project managers moved towards coordinated control to address requirement discrepancies, reflecting a collaborative response to evolving needs (Appendix A7). In Case B, the project initially maintained a coordinated control configuration due to the involvement of multiple vendors and partner agencies. However, as development progressed, the project team developed a strong understanding with the vendors, especially through the sprint cycle. Regular sprint reviews, deliverable demonstrations, and "lessons learned" sessions helped build shared understanding and trust. By the end of the project, both the team and vendors relied heavily on informal communication and idea exchange. This shift from coordinated to trust-based control was driven by reduced negative anticipation and a stronger sense of shared understanding. The project's success was further facilitated by open communication, team empowerment, and increased vendor responsibility, all contributing to high team dynamics and cohesion. The shift also led to vendors assuming greater responsibilities than initially anticipated, indicating a mature and trusting working relationship.

The dominant control configurations for Cases C and D were authoritative and coordinated. For example, in Case C a significant portion of the development work was done by the project's technical team, with occasional assistance from and design validation by the vendor. Interactions with the vendor during the first few iterations of development appeared more balanced and bi-directional. This later changed into unidirectional and frequent control when some critical reports were discovered to be missing. This control shift was a direct consequence of the negative outcomes and unfulfilled expectations during development (Appendix A7). Case D also experienced several unfulfilled expectations resulting from a lack of cooperation from and engagement by the internal support teams. The project team also resorted to multiple escalations to enforce vendor cooperation. An increase in status tracking and meeting frequency was observed in comparison to earlier phases of the project.

Table 7 summarizes the effective control shifts during Phase III control balancing, comprising design and architecture and development activities. Although Cases A and B initially demonstrated coordinated control, several trigger factors—such as reducing stakeholder involvement, fulfilled expectations, and the vendor's onsite presence—persuaded the controllers to assume trust-based control styles by employing social and informal exchanges. This control shift eventually resulted in shared understanding development for the successful cases (A and B) in Phase III of control balancing.

Table 7. Phase III Control Balancing Summary For Successful Projects

Control Shifts	Phase Overview	Trigger conditions	Control balancing decisions	Consequences
Coordinated → Trust based	Phase III control balancing observed in the middle of the project's lifecycle included design and architecture and development activities.	Reduced Gaps in shared understanding: Need to reduce stakeholder involvement with the processes. Joint workshops and social activities lead to consensus among stakeholders. Controlees' timely delivery of design components and fulfilled expectations on the controller's side. Improved relationship resulting from a permanent onsite presence of vendor's representative in the host organization.	Control type: Mostly social and informal control elements such as "lunch n learn" sessions, instant messaging between controller and controlee, phone calls and emails, and idea boards. Control degree: Moderate to very relaxed control with a low frequency (small number of controls used infrequently). For example, Case B reduced two additional status review meetings to one per week and reduced their daily scrum meetings to three per week with the provision of ad hoc meetings as required. Control style: Mostly bilateral. Project teams and vendors jointly decided on the idea sessions and brainstorming sessions, and frequency of the "lunch and learn" gatherings. The internal IT support team was motivated via organizational reward gift cards ($20 and $30).	Shared understanding establishment: Reduced monitoring of the controlees resulted in fewer administrative activities (e.g., status meetings, emails, workshops) Efficient work processes result in significant cost savings by avoiding reworks and approval delays. Controlee taking more responsibilities than anticipated or required by contractual obligation. Control oscillated between coordinated and trust-based configurations.

4.4 Control Balancing Phase IV

As the projects approached the end of development activities and were preparing for production deployment, control configurations took another noticeable turn. Control configurations for Cases A and B again differed from the control configurations of Cases C and D.

Towards the end of the project's lifecycle (i.e., during delivery, deployment, and closeout), Cases A and B developed a trusting relationship with their respective vendors. For example, during Case A's development phase, vendor performance and deliverable quality did not show much deviation from the project team's expectations. This helped reduce additional tracking efforts for the project team, and both the project team and vendor demonstrated heavy reliance on an informal exchange of ideas and communications—i.e., a trust-based control configuration (Appendix A8). Similarly, in Case B, joint communications and demonstration sessions were commonly observed between vendors and the project

team. Both the vendor and the project team worked diligently to resolve any issues or concerns that resulted from client acceptance testing. Despite an established shared understanding with the vendor, project governance and client concerns for the accuracy and completeness of deliverables coerced the controller to introduce a mix of procedural and social control mechanisms. In Case A, the project team actively tracked all knowledge transfer sessions and internal training sessions targeted for the COTS support team and client. Furthermore, coordinated efforts toward feedback gathering, lessons learned, and deliverables reviews or walkthroughs were prevalent between the client, project team, and vendors.

Contrary to a smooth organizational integration of the new IS, informants from Cases C and D reported several instances of missed requirements, integration conflicts, and discovery of design deviations. These led to a higher number of unfulfilled expectations and negative anticipations. For example, in Case C, the client reported multiple high-priority incidents after some accounting entries in the organization's SAP general ledger did not balance. As these incidents were reported immediately during the go-live and closeout, they also triggered several escalations on the production support side. Technical experts from the project team had to be brought in to resolve the issue. The business owner described one of the root causes as a lack of procedural control (Appendix A8). In Case D, as the project moved into the delivery stage, status review and validation activities related to deliverables significantly increased. This increased level of scrutiny resulted from a few unexpected defects that were discovered during user-acceptance testing. The project team revisited all vendor contractual obligations to ensure that these commitments were fully met, and pointed out deliverable gaps in a more formal fashion by escalating the issue to the project's program oversight committee. Consequently, the projects in Cases C and D adopted a formal and unilateral control style in respect to the vendor and IT support teams.

Table 8 summarizes the effective control shifts during Phase IV control balancing (quality assurance, deployment and delivery, and project closeout). Although Cases A and B initially demonstrated relaxed, informal control or trust-based control, several trigger factors—e.g., elevated negative anticipation, client pressure on controller, or discovered defects—persuaded the controllers to assume a hybrid, bi-directional, or coordinated control. Because both the controller and controlee previously enjoyed an established shared understanding, a sudden deterioration of shared understanding led to shared understanding repair through coordinated control instead of shared understanding assessment or development.

Table 8. Phase IV Control Balancing Summary For Successful and Failed Projects

Control Shifts	Phase Overview	Trigger conditions	Control balancing decisions	Consequences
Trust → Authoritative Trust → Coordinated	Phase IV control balancing observed in at the very end of project included quality assurance, deployment and delivery, and project closeout.	Unfulfilled expectations Negative anticipations Missing requirements in vendor delivery reducing trust between controller and controlee A significant number of defects resulting from quality assurance Significant pressure on controller to meet deadlines	Control type: Procedural controls re-introduced by Cases B, C, and D (formal documentation such as defect reports, incident and change reports, performance variance reports, approvals and mandatory training, steering committee meetings, organizational change control procedure, and contractual obligations verifications and negotiations) Control degree: Very tight (a large number of controls used frequently). For example, Cases B, C, and D introduced mandatory training sessions for IT support, quality variance reports for vendors, and multiple dry runs for the development team to prepare for parallel operations and migrations. Control style: Mostly unilateral. Project teams introduced unidirectional control with most of the stakeholders (i.e., vendor[s], internal IT support, business users)	Shared understanding deterioration, or shared understanding repair: Vendor taking a defensive approach to protect their bottom line (i.e., fixed price contract and justify the out-of-score change implementations) Multiple escalations on both the vendor side and with the internal IT support teams. Renegotiation and agreement on subsequent delivery of missed requirements by avoiding formal legal actions Protecting organizational reputations by avoiding a "failed" classification

4.5 Control Orientations

Delving deeper into each control balancing scenario, we discovered four distinct control orientations: (a) strategic, (b) responsibility, (c) harmony, and (d) persuasion. We found that each control orientation had

different impacts on the shared understanding (SU) between controller and controllee. We captured four such impacts: SU assessment, SU establishment, SU maintenance, and SU repair. A summarized comparison of these orientations and their definitions is presented in Table 9.

Table 9. Summary of Control Orientations

Control Orientations	Related Project Phases	Control Configuration Objective	Impact on Shared Understanding (SU)
Strategic	Pre-initiation; Initiation	Aligning the project with organizational objectives and strategic management of stakeholders	SU Assessment Trust → Authoritative
Responsibility	Requirement and planning; Analysis and conceptual design	Aligning stakeholder's expectations and project objectives at a logical level	SU Development Authoritative ←→ Coordinated
Harmony	Design & architecture; Development	Aligning project deliverables to organizational capability and minimizing the negative impact on non-project stakeholders, thus aligning stakeholder's expectations and project objectives at a physical level	SU Establishment Coordinated ←→ Trust
Persuasion	Delivery; Close-out	Promoting project objectives related to the user's acceptance of deliverables and reinforcing the achievement of "strategic values" promised during the gating phase.	SU Repair Trust → Coordinated

4.5.1 Strategic Orientation

Strategic control orientation can be defined as a deliberate attempt by the controller to align the controlee and project with organizational objectives through an authoritative control configuration.

Strategic control orientation was observed very early in each project's life cycle, during the opportunity exploration and strategic initiative proposal phases of the project, which can also be considered the pre-project phases. At an early stage, engaging stakeholders selectively but optimally appeared to be a rudimentary force to help build project capabilities and much needed social capital. Although a trust-based control configuration was prevalent at the inception of each project, a cognizant attempt to assess the level of shared understanding was apparent through vendor proposal evaluations and vendor demonstrations. Subsequently, the control configuration assumed an authoritative approach. This shift helped tackle several challenges throughout the project's life cycle, such as top management commitments, project champion, organization-wide project visibility, timely and effective escalation, project management strength, and culture-change management.

4.5.2 Responsibility Orientation

Responsibility control orientation can be defined as a deliberate attempt by the controller to align the stakeholder's expectations and project objectives at a logical level by oscillating between coordinated and authoritative control configurations.

Responsibility orientation was more salient during the early implementation phases—i.e., project kick-off, requirement and planning, and analysis and conceptual design—that immediately followed the strategic pre-initiation phase of each project. Control configuration observed during this phase supported the notion of "aligning expectations at a logical level." Therefore, tools and processes employed at this stage supported a more encompassing control approach. With a binding contract and memorandum of understanding in effect, the project team enacted several procedural and behavioral controls in an authoritative manner. An authoritative control approach was intended to assess the vendor's true efficacy and minimize negative anticipations on the controller side. However, multiple shifts between authoritative and coordinated controls were observed as the controllee attempted to establish itself as an equal partner. This control iteration was very effective in the development of a shared understanding and minimization of pre-disposed negative anticipation.

4.5.3 Harmony Orientation

Harmony control orientation can be defined as a deliberate attempt by the controller to align the stakeholder's expectations and project objectives at a physical level by oscillating between coordinated and trust-based control configurations.

As project implementation moved towards the design and development phases, each project team adjusted its processes, tools, and control objectives to promote harmony among different stakeholder

groups and other internal processes. In terms of control configuration, the salient theme of this phase was aligning stakeholder needs with organizational and project capabilities from a physical and logical resources perspective and removing roadblocks for the core project team. Resulting from multiple iterations between authoritative and coordinated control configurations, controller and controllees developed a high level of shared understanding. However, due to a mix of in-house and offshore development activities, overall progress towards the target was clouded. In such a context, occasional integration challenges or other minor failures could lead to a significant rise in negative anticipation. Thus, both the controller and controllee oscillated between trust-based and coordinated control configurations to maintain the desired level of shared understanding. As observed in Cases C and D, a failure to maintain such a balance can lead to a significantly reduced level of shared understanding and high negative anticipation.

4.5.4 Persuasion Orientation

Persuasion control orientation is the intentional effort by the controller to validate project objectives and deliverables while reinforcing the achievement of strategic values by using a coordinated control approach.

Persuasion appears as the fourth and the final salient category of control orientation where control configurations take an instrumental turn. This was observed during the delivery and close-out phases. A common objective during this phase was to demonstrate value realization to a diverse group of internal and external stakeholders. Although successful projects, such as Cases A and B, may demonstrate a high level of shared understanding and a trusting relationship, some elements of authoritative control were mandated by the project management office (PMO) and the organization. Application of controls aimed to promote project objectives, including facilitation of the user's acceptance of deliverables, negotiation of future enhancements and bug fixes, finalizing support agreements, dispute resolutions and alternative dispute resolutions with vendors, and promoting process and culture change within the organization. Therefore, the return of coordinate control configuration was observed as attempts to repair some deterioration in shared understating. However, a significant deviation in shared understanding may lead to a full authoritative control configuration with an aim to rebuild shared understating, which may not succeed (e.g., Cases C and D).

5 Discussion: Control Balancing Process Model

Investigating control dynamics over the life cycle of four large-scale, offshore ISD projects, this research examined the related phenomenon of control balancing through primary data and existing CBT developed by Gregory et al. (2013). While Kirsch (2004) explored similar questions, such as how stakeholders exercise control during different phases of large IS projects and why control choices change across phases, the current research differs significantly in every aspect. Kirsch (2004) proposes a control dynamics model, illustrating how control evolves through project phases—collective sensemaking, technical winnowing, and collaborative coordinating—shaped by changing project, stakeholder, and global contexts. In contrast, our study argues that control balancing extends beyond a simple shift in "control style" to encompass changes in control configuration, including control style, direction, and intensity. Additionally, we identify a reciprocal relationship between control balancing and shared understanding, both of which evolve dynamically throughout offshore ISD's lifecycle.

Going beyond a simple 'functional purpose' to a more abstract level of 'intended purpose', our analysis reveals invaluable knowledge in the areas of control orientation, and control balancing process corresponding to the 'why', 'when', and 'how' aspects of control balancing. In the following sections, we discuss the organizational significance of control balancing decisions and the dynamics of the control configuration or 'control balancing process'.

5.1 Control Balancing and Extended Process Model of ISD Control Balancing

In our examination of the nature of control balancing in offshore ISD, we discovered four new categories of shared understanding. We grouped eight types of SU into three abstract dimensions: contextual, interpersonal, and technical. This reconceptualize of SU considerably enhanced our existing understanding and application of the CBT. For example, Gregory et al. (2013) associated the change in shared understanding to the ISD control configuration. However, the direction of this relationship is not clear. They found that unfulfilled expectations trigger a shift to authoritative control, while fulfilled

expectations trigger a shift to trust-based control, but not coordinated control. Gregory et al. (2013) also associated authoritative control with a single possible outcome of shared understanding deterioration and did not find any relationship between trust-based control and the authoritative control configuration. Our reconceptualization of shared understanding enabled us to clearly explain why control configurations shift and why they shift to another anticipated control configuration.

Furthermore, we found the existence of a control balancing relationship between trust-based control and the authoritative control configuration. We also found that instances of non-deteriorating shared understanding were an outcome of adopting authoritative control. These novel findings allowed us to refine and extend the original process model of ISD control balancing. This extended process model is presented in Figure 3.

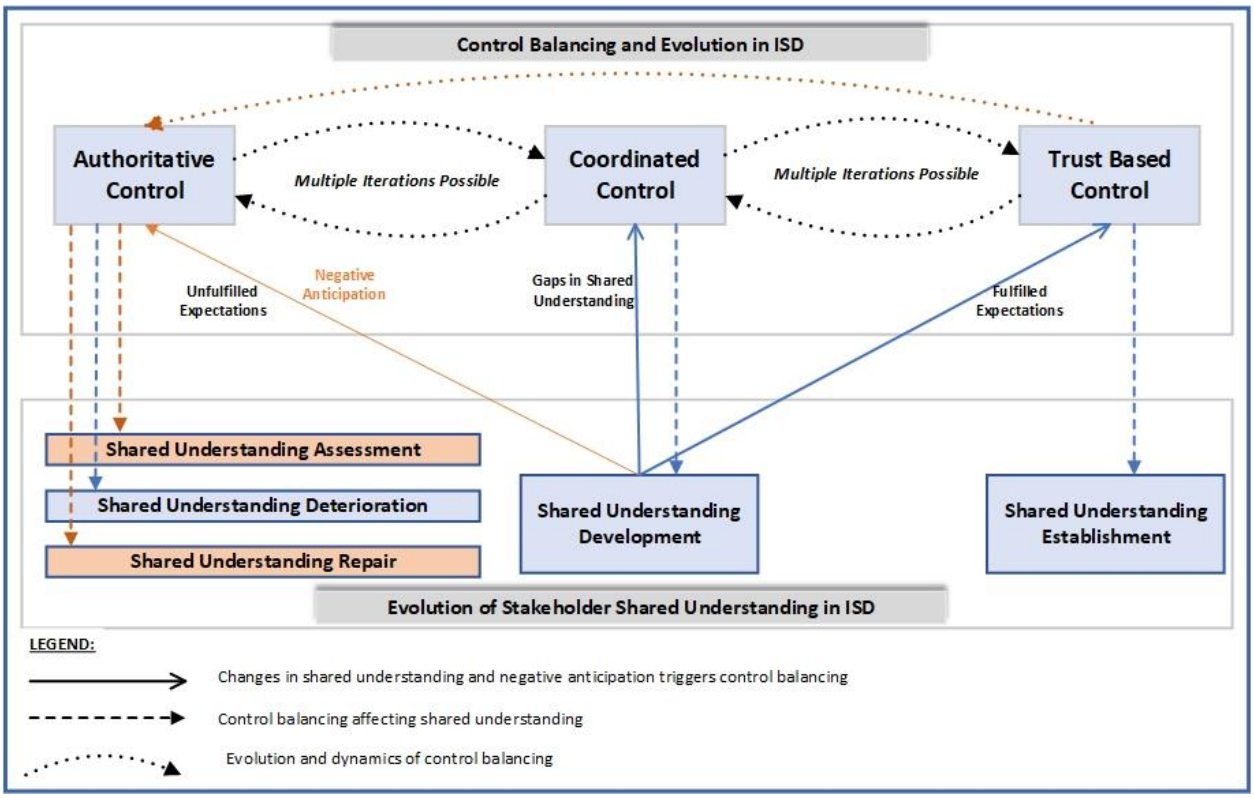

Figure 3. Extended Process Model of Control Balancing in ISD (Orange Color Captures the Enhancement)

5.2 Authoritative Control Shifts and Implications

Authoritative control or frequent application of procedural controls in a unilateral style was observed multiple times over the life cycle of our analyzed cases. We found two completely opposing effects on shared understanding resulting from authoritative control.

Prior to the initiation of each ISD project, both client and vendor interacted with each other in a relaxed or informal manner, indicating an absence of control dominance. However, upon formal project initiation, Cases A and B demonstrated an authoritative control, whereas Cases C and D did not. Gregory et al. (2013) indicated the existence of a "vicious cycle" where a deterioration of shared understanding can occur due to authoritative control. Our analysis indicates this to be partially true. Cases A and B adopted an authoritative control stance at the very beginning of the project life cycle when the client and the vendor lacked significant similarities on any of the three dimensions of shared understanding. Client control attempts during this early implementation phase (e.g., project kick-off, requirement and planning, and analysis and conceptual design) supported the notion of expectation alignment at the logical level. Therefore, the employed strategies, tools, and processes supported a strict and encompassing control approach. With a binding contract and memorandum of understanding in place, clients in Cases A and B enacted several procedural and behavioral controls in an authoritative manner. Such adoption of authoritative control in the absence of historical shared understanding allowed swift improvement of the shared understanding in all three dimensions. Frequent status reviews and goal-tracking activities by

clients allowed all parties to be in agreement regarding project deliverables (SU7, SU8), vision and priorities (SU4, SU6), project timeline and processes (SU1), and organizational process (SU2). This approach also allowed the client to assess the vendor's true efficacy (SU4, SU6) and minimize any predisposed negative anticipation (SU6). In Cases A and B, improvements on multiple dimensions of shared understanding paved the way for the parties to transition to a more relaxed coordinated control configuration. However, multiple shifts between authoritative and coordinated controls were observed as the vendor attempted to establish itself as an equal partner.

We noticed similar positive effects in applying an authoritative control in all four cases where control configuration oscillated between authoritative and coordinate controls. These were due to shared understanding deterioration in a dimension other than the interpersonal. Because these shifts to authoritative control were driven by a gap in either the contextual or technical dimension, we found the overall effect on shared understanding to be a positive one, where action was undertaken either to assess or repair damages done rather than cause further damages.

5.3 Coordinated and Trust-based Control Shifts and Implications

According to control balancing theory, multiple iterations between coordinated control and authoritative control, and coordinated control and trust-based control are possible due to fluctuations in the level of shared understanding. Consequently, a coordinated control configuration has been found to facilitate a shared understanding development, while a trust-based control configuration facilitates shared understanding establishment (Gregory et al., 2013). Our analysis largely aligns with these earlier findings. In addition to earlier findings, we discovered several new control balancing decisions and implications. Lack of awareness of these ISD control behaviors may lead to incorrect control enactment and have severe negative consequences on a project's outcome.

Our analysis of four offshore ISD projects indicates the enactment of authoritative control for Cases A and B due to a very low level of shared understanding in all three dimensions. This allowed both projects to quickly improve their shared understanding and move to a coordinated control configuration. Subsequently, coordinated control between the client and vendor further improved the level of shared understanding in all three dimensions. A strong shared understanding enabled a trusting relationship between client and vendor where most procedural controls were minimized to save time, and more informal or social exchanges were introduced to promote an efficient working environment. Thus, a significant improvement in all three dimensions of shared understanding can allow the parties to move from a coordinated control setting to a more relaxed trust-based control configuration. This, in turn, enables the establishment of shared understanding between parties.

The establishment of shared understanding in Cases A and B was observed through control iterations between trust-based and coordinated control configurations. As project implementation progressed through design, development, and integration activities, each project team adjusted their processes, tools, and control objectives to promote harmony among different stakeholder groups and enhance the efficiency of internal processes. The salient theme at this stage was aligning stakeholder needs with organizational and project capabilities from a physical and logical resources perspective and removing roadblocks for the core project team. Although the client and vendor developed a high level of shared understanding at this point, a mix of in-house and offshore development activities often blurred the client's view of overall progress towards the project's end goal. In a context such as this, occasional integration challenges or other minor failures could lead to a significant rise in negative anticipation (SU4, SU6) and cause rapid deterioration in the interpersonal dimension. Thus, both the client and vendor oscillated between trust-based and coordinated control configurations to maintain a high level of interpersonal shared understanding. A failure to maintain such a balance can significantly reduce the level of shared understanding by increasing negative anticipation. In the presence of other technical or contextual project issues, this may trigger a less-desired shift from trust-based to authoritative control, as observed in Cases C and D.

6 Contribution to Theory and Practice

Through a GT-based case study, this research elucidates the dynamic, reciprocal, and multifaceted nature of control balancing in ISD offshoring projects. Although this approach challenges assumptions and addresses some shortcomings in prior control research—i.e., control portfolios and configurations—the primary contribution here is centered around the theory of control balancing and control enactment

process. Resulting from a wide application of the CBT, this study presents new control flows, a new trigger factor, and new states of shared understanding. Collectively, these discoveries offer refinement and enhancement of the existing CBT, and a clear understanding of organizational perspective on control through control orientations.

This research offers practical values for offshore ISD projects. Two of the failed cases provide vivid examples of incorrect control configurations and the negative implications of shared understanding between controller and controlee. The most significant benefit of these findings is that the controller can assume an authoritative control configuration from a trust-based control configuration without shared understanding deterioration. At times, an authoritative configuration can be applied as the organizational or project context requires. Furthermore, control trigger factors such as negative anticipation should be assessed carefully as the controller's arbitrary preference can trigger a control shift, leading to an incorrect control configuration.

7 Conclusion

This research set out to explore the existing IS phenomenon of offshore ISD through a novel perspective of control balancing and control enactment. The objective was to validate the theory of control balancing in an offshore ISD context, as well as examine in a robust way diverse relationships among control configurations, and control trigger factors. Consequently, control theory and control balancing theory informed the development of this argument. Control theory and control balancing theory were employed to capture and validate the dynamic nature of control configurations in multiple offshore ISD projects. Finally, through an analysis and synthesis of four offshore ISD cases, new relationships were discovered among control configurations and control consequences, as well as new control configuration shifts, leading to a refinement of the existing control framework (Gregory et al., 2013). Additionally, we identified four distinct control orientations for each project: (a) strategic, (b) responsibility, (c) harmony, and (d) persuasion.

Applying a GT method, this research identified a new control trigger factor, negative anticipation. This trigger factor was found to be independent of the existing trigger factor of unfulfilled expectations. Whereas unfulfilled expectations required some form of transaction between the controller and controlee, negative anticipation can be fact-based (e.g., poor present performance of the controlee) or a bias on the controller's side. While analyzing control dynamics and control balancing flows, a new form of control transition from trust-based configuration to authoritative configuration was discerned. This trait was discovered in those cases where challenges or issues were discovered towards the end of the project's lifecycle. Although Gregory et al. (2013) did not report any such control transition, at least two occurrences of control shifts were identified here where trust-based configuration directly jumped to an authoritative configuration. The consequences of such a new shift were distinct from those reported by Gregory et al. (2013). This research found that a shift from trust-based to authoritative can lead to either an assessment or repair of shared understanding between controller and controlee. The actual outcome of that event depends on what triggered the shift and the previous state of shared understanding. These discoveries, collectively, led to a revised version of the control balancing process model (Gregory et al. 2013).

7.1 Limitations

Our study is not without limitations. The primary limitation is the adoption of a GT approach, limiting the potential of building a new theory despite a large volume of data. Second, the open coding indicated the existence of a small number of new themes and codes that were not integrated due to our methodological approach. These findings have the potential for future theoretical contributions for further GT research. Third, our selected projects were mostly a combination of agile and offshore development models with a solution integrator as the middle component. Future research might explore whether control balancing is contingent upon the choice of systems development methodology and the number of controllers–controlees in the mix. Fifth, our study focuses on a Canadian government organization and its specific projects which may limit the generalizability of our findings to other geographical or organizational contexts. Another limitation of this research is the role of technology and pre-existing social capital among the stakeholders as promoting or inhibiting forces of control balancing in such a context. In terms of methodology, the limited use of referral-based selection of informants in this study may contribute to viewpoint homogeneity. Additionally, as with all research utilizing secondary data, certain limitations exist. Specifically, not all email communications and meeting minutes were available for analysis, which may have affected the comprehensiveness of the findings.

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Declaration of AI

We used generative AI to copy-edit portions of this manuscript.

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Appendix A: Title of the Appendix (If Applicable)

Exhibit A1. Grounded Theory Research Process: Steps, Tasks, and Outcomes

Research steps	Tasks	Outcome
Problem formulation	• Establishing the phenomenon in terms of its practical relevance as a prerequisite to produce grounded theory that has "grab" (Glaser & Strauss, 1967). • State what the problem is from a practice and theory perspective and why it is important (Van de Ven, 2007). • Screening prior research to identify gaps in the literature (Urquhart, 2007).	• Identified the offshore ISD projects as a practically relevant problem with which many organizations and project teams often struggle. • Problem identified as the "balancing" and "rebalancing" of control configuration that is often not well understood and a source of struggle for the project team or controller. • Identified potential gaps and area of contribution in the literature on offshore ISD, and control configurations by examining the theory of control balancing.
Multiple case study design	• Establishing engaged relationship with practitioners and negotiating access to data (Pan & Tan, 2011; Van de Ven, 2007). • Selecting multiple candidate studies and motivating the rationale for conducting a multiple case study, e.g., the main criterion for revelatory cases is "when an investigator has an opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation" (Yin, 2018).	• Obtained approval from the leadership team and reached an agreement with a large, reputable government organization to conduct a multiple case study of four different enterprise IS implementation projects. Approval included access to both primary data collection through face-to-face interviews and secondary data collection from organization's electronic repositories. • Selected revelatory cases—four instances of offshore ISD targeting four distinct operations areas of the organization, which has been inaccessible to scientific investigation before (Choudhury & Sabherwal 2003, p. 313; Dibbern et al., 2008, p. 359).
Open coding & data collection	• Gathering rich primary and secondary data, including intensive interviewing (Charmaz, 2006). • Coding the data and understanding what it is about by going through interview transcripts line by line, assigning conceptual labels to data segments, and identifying core categories (Glaser, 1978). • Adhering to the principle of emergence of grounded theory. Categories should emerge from the data in the sense that they must "fit" (they must be readily, not forcibly, applicable to and indicated by the data under study) and "work" (they must be meaningfully relevant to and be able to explain the behaviour under study) (Glaser & Strauss, 1967). • Triangulating and comparing different slices of data to find similarities and differences (Charmaz, 2006).	• Conducted multiple in-person interviews, and obtained project documentation such as charters, gating decisions, project management plan, meeting minutes, escalations, contract-related documents, project completions report, and post-deployment incident/problem records. • Generated more than 85 initial codes and more than 450 pages of notes and analytical memos (including spreadsheet categorization notes/analysis). • Identified categories related to the existence of multiple and changing control categories without applying existing concepts identified in control literature that are relevant to the understanding of control balancing decisions in IS implementation projects. • Compared multiple perspectives, including project team, business users, partners, vendors, internal support teams, and the leadership team and compared multiple sources of data. • Compared the use of multiple processes and tools from controller's intent perspective.
Selective coding & data collection	• Delimiting further coding to only those concepts and variables that relate to the emerged categories (Glaser, 1978). • Making constant comparisons between instances of data labelled as a particular category and other instances of data in the same category to substantiate categories (Urquhart, Lehmann, &	• Delimited further coding to a set of tentative core categories, which evolved into control configurations. • Followed the constant comparisons technique of grounded theory research, focusing on the development of categories and concepts by constantly comparing data to data (e.g., primary

	Myers, 2010). • Further data collection is guided by the principle of theoretical sampling, i.e., deciding on analytic grounds were to sample from next (Glaser & Strauss, 1967, p. 45).	interview data to secondary data such as project documentation from electronic repository). • Utilized three existing control configuration categories from the control balancing theory as well allowed flexibility to discover new core category • Discovered new code categories that have been presented on Exhibit B1.
Theoretical coding & data collection	• Analysis and specification of theoretical relationships between core concepts and categories (Bryant & Charmaz, 2007, p. 25). This theoretical coding (Glaser, 1978), also referred to as iterative conceptualization (Urquhart et al., 2010), is aimed at increasing the level of abstraction, relating categories to each other, and clarifying which categories may be properties of others.	• Constructed detailed case narratives to capture sequences of events and their relationship at different project phases. • Validated the application of three different control configurations with four distinct intent which forms the four distinct control orientations, influenced by salient trigger factors.
Scaling up	• Engaging with other theories for theory building. To raise the level of conceptualization and scale up the emerging theory, existing theories or concepts should be used for comparisons (Urquhart, 2007). Thereby, metatheories and theoretical categories with limited empirical content and general scope are particularly suitable as heuristic or sensitizing devices (Kelle, 2007). • Grouping higher-level categories into broader themes with the goal of increasing the generalizability of the theory and being able to relate the theory to the broader literature (Urquhart et al., 2010).	• Engaged with literature on control balancing (Gregory et al., 2013) and control enactment (Wiener et al. 2019) in ISD context. • **Identified** four different organizational motivation for enacting controls • **Identified** different control configurations: (1) Authoritative, (2) coordinated, and (3) trust-based control.
Theoretical integration	• Relating the theory to other theories in the same or similar field by comparing the substantive theory generated with other, previously developed theories (Glaser, 1978; Urquhart et al., 2010).	• Compared our core category of control configurations with control balancing theory (Gregory et al., 2014) and notion of "a portfolio of control modes" (Kirsch, 1997), the literature on control dynamics (Choudhury & Sabherwal, 2003; Kirsch, 2004). • **Enhanced** the Gregory et al., (2013) ISD control balancing process model with new control transitions, additional trigger factors, and new states of the key impact construct (Shared Understanding -SU)

Exhibit A2. Summarized Profile of All Analyzed Cases

Case	Purpose	Stakeholder Composition	On-shore Activities (30%)	Offshore Activities (70%)	Budget	Duration	Post deployment
Case A: Financial Market Operations (FMO)	Replace a legacy system with COTS based Information System	Core project team, extended project team, support personnel, consultants, vendor, business users	Project Planning & Control; Client validation Testing; IT Integration testing (network, Storage, and authentication); Vulnerability assessment (VAS); Data Migration – wet test; System parallel operation; Cut over/Go live;	Glue ware (integration code) development; Customized interface development; New modules /business functionalities (code); Data migration - dry testing; Joint Parallel Testing; JLP (Just like production) simulation; Legacy data conversion module development; Bug fixes	10.5 Million (CAD)	24 months	Successful
Case B: Financial Regulatory System (FRS)		Core project team, extended project team, support personnel, consultants, vendor, solution Integrator, business users, partner organizations, external users/partners			19.5 Million (CAD)	26 months	Successful
Case C: Financial Billing Systems Replacement (FBSR)		Core project team, extended project team, support personnel, consultants, vendor, business users			12.5 Million (CAD)	18 months	Failed/ Replacement is being considered
Case D: Enterprise Content Management (ECM)		Core project team, extended project team, support personnel, consultants, vendor, business users			16.5 Million (CAD)	32 months	Failed

Exhibit A3. Practical Guidelines for Control Balancing in ISD Offshoring Projects (Source: Gregory et al. (2014, Table 12))

Guideline	*Gregory et al. (2014) Recommendations*	Additional *Recommendations based on this research*
1. Make conscious control balancing decisions	We recommend that client and vendor project managers recurrently assess control balance and ask the question: How **good** is my control configuration in terms of the three dimensions (i.e., control types, degree, and style), given the current situational requirements for achieving both project related and relationship-related goals and objectives? Ideally, such reflection-in-action 'leads to conscious control balancing decisions that proactively tackle project and relationship challenges.	• We recommend that client and vendor project managers recurrently assess control balance and ask the question: How **appropriate** is my control configuration in terms of the three dimensions (i.e., control types, degree, and style). • A conscious control balancing decision must be driven by the affected dimension (contextual, interpersonal, or technical) of the shared understanding and allow proactive tackling of project and relationship challenges.
2. Leverage the advantages of a bilateral control style	We recommend that client and vendor project managers sit together and think about control jointly, thereby compensating for the natural drift of (hierarchical, bureaucratic) organizations toward efficiency, traditional project success criteria, and authoritative control. The implication is that project managers should try to move as early as possible toward the right in our process model (see Figure 1) in which control configurations are characterized, among other things, by a bilateral control style.	None
3. Balance project and relationship requirements	We recommend that client and vendor project managers establish and maintain the delicate balance between achieving short-term goals of project success and achieving long-term goals of relationship development which are equally needed for ISD offshoring success.	None
4. Develop shared understanding in the relationship	We recommend that client and vendor project managers view critical offshoring issues such as project processes, business-functional knowledge, mutual expectations, and social practices from a ***shared understanding perspective***. For example, client and vendor need to accumulate joint knowledge that is embedded in the relationship; both client and vendor need to learn and adapt to one another to develop negotiated social practices.	We recommend that client and vendor project managers view critical offshoring issues such as project processes, business-functional knowledge, mutual expectations, and social practices from a "***dimension of shared understanding***" perspective and adopt a generalized control balancing response based on the affected dimension. The distinct dimensions that must be considered are: • Contextual dimension of Shared Understanding • Interpersonal dimension of Shared Understanding • Technical dimension of Shared Understanding

Exhibit A4. Phase I Evidence of Control Balancing

Phase I Evidence of Control Balancing				
	Cases achieved greater benefits		**Cases achieved fewer benefits**	
Cases	**A (FMO)**	**B (FRS)**	**C (FBSR)**	**D (ECM)**
Control Shift	Trust → Authoritative	Trust → Authoritative	Trust → Trust	Trust → Coordinated
Evidence (SU1 through SU8 indicates different types of shared understanding outlined in Appendix B1) (AC, CC, and TC indicates different types of control dimensions outlined in Table 2)	*[O]ur feeling [SU6] about the vendor was bit of mixed and the reason for this is simple. … [T]he product we selected is mainly used for a different purpose—different from our intended use [SU7]. … [W]e wanted to minimize [SU6] tons of CR [change requests] down the road. … [W]e wanted to get as much as we could [SU6] into the SOW and drive [AC.P] that as we go forward.* *(Business Analyst, Client Side)*	*They couldn't just go with the answers coming in [RFP responses from vendor] [SU4, SU6] without really seeing it in action. … [I]t looked totally different approach [SU7, SU8] for this new system—we used to have disconnected offline processing but now it's all online [SU7]. Vizor [the solution vendor] was a small company [SU6] specialised in a niche market so we wanted a big solution integrator behind the project to manage so that if things go south [SU4, SU6], they [solution integrator] can throw some more horsepower at it [the project]. … [There were] more communication channels, but who was going to monitor [V]izor in Ireland? … [A]t the beginning we had lots and lots [AC.D] of technical and process meeting [AC.P] but they [solution vendor and solution integrator] also needed to update the JIRA [tracking system] and timeline daily [AC.D].(Solution Architect)*	"*One major issue was that some team members were not as responsive or diligent as we expected [SU4, SU5].* *Yes, PMs over reliance on skype and teams chat was fast [TC.P], but important information was sometimes lost or misunderstood. This is not a time to fool around [TC.S]. We must have it [requirements] in black and white [written down formally] [SU1]."* *(Technical Lead)*	*"I think our early project approach was a bit problematic [SU1].. I noticed lack of clear decision-making authority. Because we were trying to coordinate everything [CC.S, CC.D] and make decisions jointly [CC.P], we often ended up in lengthy discussions [CC.P] without reaching a conclusion. I agree that close coordinate is important, but there needs to be a balance! [SU5, SU6]* *(Sr. Developer, IT Support)*

Exhibit A5. Phase II Evidence of Control Balancing

Phase II Evidence of Control Balancing				
	Cases achieved greater benefits		**Cases achieved fewer benefits**	
Cases	**A (FMO)**	**B (FRS)**	**C (FBSR)**	**D (ECM)**
Control Shift	**Authoritative ←→ Coordinated**	**Authoritative ←→ Coordinated**	**Trust-based → Authoritative**	**Coordinated → Trust-based**
Evidence (SU1 through SU8 indicates different types of shared understanding outlined in Appendix B1) (AC, CC, and TC indicates different types of control dimensions outlined in Table 2)	*"[I]nitially all the design decisions were made by us [the client] but the biggest problem here is with any other COTS based solution, what we [clients] were asking was causing some major work for the offshore team [vendor] [SU7, SU8]. … [W]e decided to include them in our design review process [CC.P] and sometimes they were also pushing back to revisit some of our [business] original requirements [CC.S]." (Solution Architect)*	*"Understand this—we will be measured against these number of rows and number of values [SU6], … So, whatever we have on this table [requirement matrix] [SU 7, SU8], [it had] better be accurate. … The way they [vendor] define the conversion is like for like. If [the legacy data is] not clean, you better clean it up [CC.P]. Otherwise they are gonna hit us dollars [with changes] [SU6] and we did run into that with [Agency 3] data, there are some extraordinary costs that they [Agency 3] had to bear but going back and forth [CC.S] did save us a lot [SU1, SU4]." (Sr. Project Manager, IT)*	*"We trusted [TC] their [vendor] judgement [SU3] coz they were already doing a bigger project for us but it was still not clear [SU8] how the integration between our Toronto and Montreal [SU7, SU8] operation center gonna happen. So started adding more [AC.D, AC.S] review meetings[AC.P], and checklists [AC.P]" (Project Manager)*	*"It seemed everyone understood each other [SU7] but in implementation we found out that was really not the case. I think this got masked by our frequent interactions at the idea-space [TC.P] and not capture everything in the WBS [work break down structure]. You really need a stringent oversight and verification here [requirement gathering] not skype and idea-space [brainstorming & informal exchange] [TC.P, TC.D, SU5]" (Enterprise Architect)*

Exhibit A6. Phase III Evidence of Control Balancing

Phase III Evidence of Control Balancing				
	Cases achieved greater benefits		**Cases achieved fewer benefits**	
Cases	**A (FMO)**	**B (FRS)**	**C (FBSR)**	**D (ECM)**
Control Shift	**Coordinated ←→ Trust based**	**Coordinated → Trust based**	**Authoritative → Authoritative**	**Trust based → Coordinated**
Evidence (SU1 through SU8 indicates different types of shared understanding outlined in Appendix B1) (AC, CC, and TC indicates different types of control dimensions outlined in Table 2)	*"Modules coming in from the other side [offshore] was working smoothly with very little issues[SU7, SU8] and they [vendor in UK] didn't need to stay in office in evenings anymore [TC.S, TC.D]. Any issues we notice, we would log a defect in their bug tracker [TC.P] and typically we would see a fix by the next morning—very fast. … [I]f you look at Tuckman's ladder—I would say the team was really in at "performing" mode with very little conflicts [TC]. But occasionally we would reflect [CC.P, CC.S] and educate each other [CC.P] as we did things to avoid repeat mistakes [SU5, SU3].* *(Sr. Project manager)*	*"Expectations were very clear [SU4, SU6]…[T]here was a lot of cubicle discussions [TC.P] and WebEx sessions [virtual joint development with offshore team] [TC.P, TC.S] [SU5]. … [D]eadlines were bit tight for the new Markit plugin that we needed for the Matlab integration[SU6]. This [plugin] was developed by [vendor/offshore] [SU7]. … [I]t took them [vendor] a while before we got a working plugin but at the end, they managed to pull it off [SU4]. " (Developer, COTS support)*	*"Cognos reports were left until the last minute [SU4]. … It led to a lot of changes just before the deployment. … [O]fficially we were doing iterative development [SU1, SU2] but suddenly [the PM] started touching base [AC.P, AC.S] with the vendor and infrastructure first thing every morning [AC.D]."* *(Business Lead/Analyst)*	*"We said the business needs to give us the test resources [CC.S] for functional, regression and system integration testing. So, we combined functional testing with UAT essentially[CC.P, CC.S]. That is they are testing the system as it going to be for them as opposed [to us] testing it and saying it's all good and they not accepting it. This worked well for defects or missed requirements ..… [W]e have an agreement on what to do [SU3] …we will do lessons learnt review [CC.P] after each [CC.D] joint testing session to update defect ownership log [CC.S].* *(Business Analyst, Vendor)*

Exhibit A7. Phase IV Evidence of Control Balancing

Phase IV Control Balancing Evidence				
	Cases achieved greater benefits		**Cases achieved fewer benefits**	
Cases	**A (FMO)**	**B (FRS)**	**C (FBSR)**	**D (ECM)**
Control Shift	**Trust based → Coordinated**	**Trust based → Authoritative**	**Authoritative → Authoritative**	**Trust based → Authoritative**
Evidence (SU1 through SU8 indicates different types of shared understanding outlined in Appendix B1) (AC, CC, and TC indicates different types of control dimensions outlined in Table 2)	*"We went through several joint workshops [CC.P] and client-integrated testing [CC.P] to bring the business and support team up to speed. Unfortunately bugs were discovered, but what stood out to me was the willingness of [name of vendor], pinpoint the issue and take ownership [CC.S] rather than push-back and protect the bottom-line [contract money] attitude. We collaboratively determined necessary adjustments [CC.S] and also did post-mortems in the form of 'lessons learned' [CC.P]"* *(Project Manager, Partner Agency)*	*"In the delivery phase, I adopted an approach akin to an orchestra conductor. Each team member, whether onshore or offshore, played a crucial role like an instrument. My job was to ensure harmony and precision. I introduced daily [AC.D] 'delivery & defect reviews,' [AC.P] [SU1] where each side knew what is expected off of them[SU4, SU6]. This [rigorous routine] kept everyone accountable [AC.D, AC.S]. In an sense I was authoritative but I was also supportive to ensure a smooth landing"* *(Project Manager, Client)*	*"We noticed at the UAT [user acceptance testing] invoices sent to chartered banks for unused bank note circulation were wrong [SU7, SU8]...only weeks away from the cutoff date, we had no choice but to be tough on vendor [AC.P, AC.D, AC.S]. ……. Although we redefined some testing roles [AC.P] to better manage the outstanding bugs [SU1], overall operational process stayed the same [AC→AC]."* *(Business Owner/Client)*	"*Some deployments were fine but other had issues. We simply couldn't afford a second failure [SU4] … so we created a backlog and forced [AC.S] the vendor commit to a timeline and schedule [AC.P, AC.S]. … [T]his is what we agreed on [bug fixes and missing requirements] and I am not paying you twice to do the same job [i.e., change requests]. We were already over budget and two months out."* *(Sr. Project Manager, Client)*

Appendix B

Exhibit B1. Chain of Evidence- Theoretical integration (Source: Urquhart (1999))

Dimensions of Shared Understanding	Areas of Shared Understanding (SU)	Definition/Meaning	Codes/Indicators (Selection)
Contextual Related to the formal and structured project and organizational and inter-organizational environments/processes	Project processes (SU1)	Shared understanding about project processes refers to mutual agreement about project goals, objectives, and tasks, as well as operational approaches, processes, and procedures for achieving them	• Reengineering goals and objectives • Project milestones and timelines • Project phases, sub-projects, and work streams • ISD approaches • Project methodology • Initial requirements gathering • Functional specifications • Technical specifications • Coding • Unit test/component integration test/quality control test/integration 1. test/user acceptance test • Configuration/rollout
	Organizational processes (SU2)	Shared understanding about organizational processes refers to mutual agreement about project's immediate operating environment (the place of performance), constraints, and facilitators that affect project performance	• Internal resource negotiation • Resource cost sharing • Performance reporting/evaluations • Steering committee/PMO • Procurement policies • Contingencies and risk management policies • Existing capabilities • Project approval gates (PMO)
	Inter-organizational (SU3)	Shared understanding about inter-organizational processes refers to mutual agreement about project's secondary operating environment (project partners and vendor's organization), constraints, and facilitators that affect project performance	• Memorandum of understanding • Cost sharing • Oversight committee • Decision making and approvals • Data governance • External stakeholder sensitivity
Interpersonal Concerns team members' expectations, values, interests, and perspectives	Mutual expectations (SU4)	Shared understanding about mutual expectations refers to negotiated views and consensus about mutual expectations, roles and responsibilities, and their fulfillment	• Roles and responsibilities residing with client and vendor • Distribution of workload between client and vendor in each phase and task area • Expectation fulfillment or nonfulfillment • Unrealistic expectations • Clarifying and communicating expectations • Adaptation of expectations • Clear separation of client and vendor responsibilities • Shared client and vendor responsibilities • Development of shared expectations
	Social practices (SU5)	Shared understanding about social practices refers to shared views and compromises about social communication and work practices resulting from mutual behavioral adaptation	• Transparency of communication • Discussion and consensus finding • Communication of problems and issues • Handling of software documentation • Motivation to learn new social practices • Style of asking questions • Punctuality/time attitude • Perfectionism • Role of family • Respect • Aloofness • Accommodation and avoiding disagreement • Planning/risk averseness

			• Hierarchy and status boundaries • Negotiated culture • Mutual learning and adaptation
	Interests and perspectives (SU6)	Shared understanding about mutual expectations refers to views and consensus about values, interests, and perspectives not explicitly negotiated by the engaged parties	• Ethical decision making • Challenge the underlying assumptions • Continuous sharing and negotiation of knowledge • Approach to fulfillment or nonfulfillment • Taking advantage/exploitation • Corporate social responsibility • Sense of urgency • Sense of significance
Technical Related to the tasks necessary to develop new project artifacts and deliverables	Business-functional knowledge (SU7)	Shared understanding about business-functional knowledge refers to joint knowledge about the client's business application domain, systems, and functional requirements	• Financial services domain knowledge • Understanding of client's business and processes • Functionality of client systems • Functional requirements • Understanding risk of core banking reengineering • Client- and banking-specific terminology
	Business-non-functional knowledge (SU8)	Shared understanding about business- nonfunctional knowledge refers to joint knowledge about the client's IT infrastructure and nonfunctional requirements	• Integrating emergent technologies with archaic legacy systems in organization's the IT architecture • Technical change management • IT security context • Data governance procedure • Implications of systems shutdown • Business consequences of systems failure

About the Authors

Dr. Zafor Ahmed is an Assistant Professor of Management Information Systems in the Marilyn Davies College of Business at the University of Houston–Downtown. He earned his Ph.D. in Management Information Systems from Carleton University in Ottawa, Canada. His research interests include analytics, data mining, recommender systems, and control and stakeholder management in information systems projects.

Dr. Ahmed has published his work in respected information systems journals, including the *Journal of Management Information Systems (JMIS)*, *Communications of the Association for Information Systems*, *Information & Management*, and the *International Journal of Information Management (IJIM)*. He brings over 17 years of industry experience in IT project management, enterprise information systems implementation, and IT security—most of which was gained at the Bank of Canada, the country's central bank.

Evren Eryilmaz is an associate professor of Management Information Systems and the Director of the Center for Small Business at the California State University Sacramento. He earned his PhD in Information Systems and Technology from Claremont Graduate University. He enjoys teaching hands on subjects such as Machine Learning in Business Decision Making, Big Data Technologies, Social Media Analytics, System Analysis and Design, and Capstone courses. His research interests include text analytics, design science research, online health/entrepreneurial communities, and stakeholder management in software development projects. He has published his research in premier journals including the Journal of Management Information Systems, Information & Management, and Journal of the Association for Information Systems. He received the outstanding faculty awards for research and teaching at the California State University Sacramento in 2023 and 2025. Under his leadership, the Center for Small Business received a $20,000 grant from the Bank of America Foundation in 2024.

Dr. Uma Kumar is a Professor of Technology Management and the Director of the Research Centre for Technology Management at Carleton University. Her research is in the area of management of technology including technology transfer, efficiency in new product development, e-government, quality in R&D, managing R&D internationally, sustainable new product development, and ERP adoption and implementation. She has published over 250 articles in refereed journals and proceedings. Her more than 20 papers have won best paper awards at prestigious conferences. Twice, she has won Carleton's Prestigious Research Achievement Award. She has also won the faculty teaching excellence award and the Graduate Mentoring Award at Carleton University. She is the recipient of a number of research grants from reputed research funding agencies.

Dr. Vinod Kumar is a professor of Supply Chain Management at the Sprott School of Business (Director of School, 1995-2005), Carleton University. Dr. Kumar has published over 350 articles in refereed journals and proceedings. He has won several Best Paper Awards in prestigious conferences, Scholarly Achievement Award of Carleton University for the academic years 1985-86 and 1987-88 and Research Achievement Award for the year 1993, 2001, 2007 and 2015. He is on the editorial board of several International Journals. In addition, Dr. Kumar has also served for several years on the Board of Governors and the Senate for Carleton University and on the Board of the Ontario Network of e-Commerce. Dr. Kumar's research interests are in optimizing performance of operation systems; technology transfer; new product development; technology adoption; e-commerce applications and e-Government. He is on Canadian Who's Who since a number of years.