Augmenting Conflict Resolution with Informational Response: A Holistic View of Governance Choice in Business Process Outsourcing

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ABSTRACT: We develop a holistic model of governance choice in business process outsourcing (BPO) that represents a highly information-intensive form of outsourcing. We integrate perspectives from neoinstitutional economics and the information-processing view (IPV) of the firm. We argue that the governance structure in BPO is chosen not only to address opportunism concerns arising from relational uncertainty to and encourage cooperation, as suggested by institutional economics, but also as an informational response to task and relational uncertainty to encourage coordination between exchange partners. Using the lens of IPV, we posit that uncertainty in the outsourced task increases the information requirements (IR) of the BPO relationship, which, in turn, leads to more hierarchical governance structures. We also suggest that in addition to directly influencing governance choice, relational uncertainty, a key construct in transaction cost economics (TCE), increases IR, and hence has an indirect impact on governance choice. Furthermore, we hypothesize that technological capabilities enable more hierarchical governance in

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response to increasing IR needs. Data on 130 BPO initiatives provide empirical support for our hypotheses regarding the drivers of IR, its impact on governance choice, and the moderating role of technological capabilities. Our study contributes to theory by integrating the premises of TCE and IPV in the context of BPO, and to practice by underscoring the need to consider information requirements in designing appropriate coordination and collaboration processes.

KEY WORDS AND PHRASES: business process outsourcing, cooperation, coordination, governance, hierarchy, information requirements, uncertainty.

BUSINESS PROCESS OUTSOURCING (BPO)[1] refers to the transfer of the execution and management of information-intensive business processes to an external provider, which, in turn, owns and administers the selected processes based on contracted performance criteria. BPO is the fastest-growing segment of the outsourcing market.[2] Outsourcing has matured from a cost-saving tool for transaction-intensive business processes to a powerful strategy for business transformation [46]. Industry and academic research studies (e.g., [28]) have noted that with technological advances rendering business capabilities portable, even strategic processes like R&D, marketing, and financial planning are moving outside traditional boundaries and changing the way firms' value chain decisions shape their competitive position. The increased diversity of outsourcing objectives has been accompanied by an increase in the variety of contractual structures used to realize these objectives, emphasizing the multitude of complex choices that firms face in governing BPO relationships [10, 28, 46]. Thus, the key determinants of BPO governance structures constitute an important research question.

This issue is especially important given that prior research [2, 12, 46] has attributed the failures of high-value outsourcing initiatives to poor governance that is not responsive to the unique needs of the BPO relationship. For instance, a managerial survey by the Outsourcing Center [26] found that poor governance choice, lack of information sharing, and misalignment of client and vendor interests caused by volatility in the client's business environment or changes to task requirements account for 39 percent of outsourcing failures. An additional 23 percent of failures were attributed to unclear buyer expectations, which could be broadly attributed to poor communication and inappropriate governance structures. Such compelling evidence emphasizes the need for theories of governance that incorporate the challenges and costs unique to outsourcing.

This study develops and tests a model of governance choice that incorporates factors exogenous and endogenous to the BPO setting and helps user firms identify and manage the complexity in their BPO initiatives. Prior research in neoinstitutional economics and strategy [29, 76, 77] has primarily distinguished among governance structures by the degree of hierarchical control in the contract that is used to formalize cooperation and coordination in the BPO relationship. The control and coordination features of vertically integrated organizations are considered most

hierarchical, and market mechanisms are the least hierarchical, leading to a market-hierarchy continuum of governance choices [39]. We draw on this research to identify four dominant BPO governance structures along the market-hierarchy continuum—short-term contract, long-term contract, minority equity alliance, and joint venture—which systematically differ in terms of ownership and control of the outsourced task, level of unification, duration of the relationship, conflict resolution means, and commitment levels. Joint ventures or minority equity alliances, considered to be closer to the hierarchical end of the market-hierarchy continuum in that they most closely replicate the features of vertically integrated organizations, are marked by higher levels of unification, commitment, shared ownership and control, and collaborative conflict resolution.

Reviews of the outsourcing literature [5, 38, 39] have emphasized that the study of outsourcing governance is dominated by transaction cost economics (TCE) [76, 77]. TCE emphasizes the role of exchange hazards arising from behavioral uncertainty perceived by the user firm about its relationship with the provider [38, 72] and views hierarchical control as a mechanism to address such exchange hazards and yield collectively beneficial outcomes. When risks of moral hazard and holdup are high, hierarchical governance provides an integrative framework for work and decision making that allows for greater shared control, helps adjudicate differences, overcomes individual conflicts of interest, and enables effective ex post adaptation. Conversely, the potential effects of adopting more hierarchical governance when uncertainty and allied exchange hazards are low include loss of flexibility and decision-making speed. Thus, TCE posits that the level of hierarchical governance must be discriminatingly aligned with exchange hazards [58].[3]

Although transaction costs are indeed a salient subject in outsourcing research,[4] there is evidence in the literature that there are considerations in outsourcing governance beyond transaction costs. For instance, based on an extensive analysis of the extant literature, Lacity et al. [42] found that only 49 percent of empirical findings in IT outsourcing support TCE logic. They concluded that support for TCE in the context of information technology outsourcing (ITO) is mixed: "we are asking too much of TCE—the ITO phenomenon is more complex than can be accommodated by one decision making theory." Similarly, Dibbern et al. [16] noted that postcontractual costs incurred by clients "most often arose independently from the threat of opportunistic behavior." Consistent with this view, Lee and Kim [43] found that coordination initiatives and information sharing are key costs that yield improved client-vendor partnerships and outsourcing performance.

Our study contributes to this growing literature by expanding the basis of BPO governance beyond opportunism concerns to include coordination of complex tasks in dynamic business settings. Over the past decade, there has been a dramatic increase in volatility in modern business and task environments [51]. Such volatility is accompanied by a significant increase in information intensity and rate of information change in products and processes. Thus, the ability to process new information and translate it into everyday decisions is as an important source of firm competitiveness [13, 25, 50, 67]. In turn, the outsourcing of information-intensive

business functions is increasingly motivated by the need to enhance firms' information-processing bandwidth to deal with dynamic environments rather than just by the need to reduce production costs. If managed properly, the ensuing reduction in information overload allows the firm to focus limited information capacity on distinctive competencies [34]. Therefore, we posit that governance choices in modern outsourcing relationships must respond to such impacts of uncertainty in the task environment and coordination requirements in addition to exchange hazards and incentives for cooperation. Furthermore, we posit that in such information-intensive outsourcing, TCE concerns of opportunism, in addition to directly contributing to hierarchical governance, also indirectly influence governance choice by increasing IR beyond those determined by uncertainty in the outsourced process alone.

To focus on the impact of coordination requirements on governance choice in BPO, consider the case of Web markets Inc., which provides institutional clients and analysts with timely, market-sensitive online business intelligence on financial markets [52]. After a careful vendor selection process, the company outsourced the task of tagging news content. The initiative was a failure, however, with Web markets citing the vendor's inability to work independently and lack of responsiveness, and with the vendor blaming the nonavailability of the client when required. Mirani [52] attributed this failure largely to the choice of arm's-length governance, which was inadequate to deal with the communication and coordination challenges in executing the outsourced task.

We build on the information processing view (IPV) of the firm [23, 68] to develop a framework of governance choice that incorporates the coordination challenges in executing the outsourced task. Although TCE and IPV share the assumption of bounded rationality, their focal concerns and key implications do not overlap. IPV is intraorganizationally focused, so it does not deal with exchange hazards. Rather, the theory focuses on the information that needs to be processed within the firm and the different capabilities that address the information needs of the firm to facilitate coordinated decision making. For instance, Tushman and Nadler [70] drew on the IPV to argue that greater levels of environmental uncertainty, task complexity, and interdependence between subunits of the organization create the need to process greater quantities of information and increase coordination requirements. Wang [72] found that the fit between the information requirements (IR) of the firm and the information capabilities (IC) yields superior firm performance. Notable empirical research that extends this concept of fit to the interorganizational context includes Bensaou and Venkatraman [4], who empirically uncovered configurations of fit between IR and IC in the automotive industry to provide explanations for the complexity and diversity of interorganizational relationships. Mani et al. [48] applied the concept of fit between IR and IC to analyze outsourcing performance. They demonstrated that a fit between IR and IC of the outsourcing relationship increases BPO performance, and a misfit is associated with wasted or insufficient resources. These studies suggest that considerations of IR are important in interorganizational relationships and are continually managed through investments in IC to realize performance gains.

Our study contributes to the previous literature by combining the TCE and IPV frameworks to develop a holistic model of BPO governance choice that incorporates both opportunism and coordination concerns. The simultaneous effects of these factors have received scant attention in prior empirical research on adaptation in vertical relationships. Sobrero and Schrader [65] stated that TCE "investigates only the enforceability of a specific transaction, taking its feasibility as given." They concluded that the "interplay between the contractual and organizational dimension of a relationship has been neglected altogether" and is an important avenue for further research. We posit that governance choice in BPO is an outcome of both TCE and IPV considerations. In particular, we hypothesize that (1) IR of the outsourcing relationship drives the choice of the BPO governance structure, and (2) relational uncertainty, in addition to its direct impact, has an indirect impact on the governance structure through IR. The underlying assumption is that TCE and IPV perspectives together lead to a model of governance choice that is superior to what is possible through either lens in isolation.

Information technology (IT) is integral to BPO execution and management. This is true of transactional processes such as administration or processing services, in which IT performs simple automation or process updates, as well as more strategic processes such as customer analytics or financial planning, in which IT facilitates linkages with other processes and delivers business information to process workers in a timely fashion [48]. Without appropriate IT capabilities, the more hierarchical governance models, which incorporate complex rules, routines, and organizational memory, may become less effective. This is because interorganizational systems are critical to managing communication between firms and coordination of task execution across firm boundaries. IT investments are also critical to monitoring and verifying compliance as well as detecting instances of opportunistic behavior. For all these reasons, our model of governance choice includes IT as a key enabler of the choice of an appropriate governance structure.

For the empirical tests of our hypotheses, we used survey data on 130 active BPO relationships. We found strong support for the integrative role of IR in determining the choice of BPO governance structures, even after accounting for the impact of opportunism concerns on governance. Furthermore, when relational uncertainty is high, more hierarchical governance may be chosen, not only to deal with the opportunism concerns per TCE guidelines but also to manage the resultant increased information flow between the user firm and the provider. We also found that technological capabilities enable more hierarchical governance in response to increasing IR. The theoretical contribution of our work is to demonstrate that the combination of TCE and IPV yields a more complete model of governance choice and to affirm the role of technological capabilities in supporting the implementation of the chosen governance structure. Next, we review related literature to develop our theoretical arguments and hypotheses. We then discuss our data sources, empirical analyses, and evidence. We conclude with implications of the results for further theory development.

Theory and Hypotheses Development

We develop a model of BPO governance choice that incorporates elements of relational uncertainty from TCE, task uncertainty and informational needs from IPV [23, 68, 63], and technological capabilities. IPV [23] characterizes organizations as information-processing networks with bounded rationality that are faced with different levels of uncertainty or contingencies in their task environment. Research in this school [13] posits that the objective of organizational hierarchies is to ensure effective integration of effort between members of a firm so as to respond effectively to various contingencies. The right organizational structure facilitates the right amount of information needed to cope with task uncertainty and achieve desired task performance.

Our study extends this tradition of research to the interorganizational context of BPO. In doing so, we extend the focus of IPV on uncertainty in the task environment as a primary driver of IR. We recognize that in a BPO setting, in addition to information exogenous to the outsourced task environment that must be processed, information endogenous to the relationship between the user firm and the service provider must also be managed continually.

Two assumptions are inherent in the use of IPV as a complementary theoretical foundation to TCE for a model of governance choice in BPO. First, information exchange between the user firm and provider is critical to effective management of the BPO relationship. Such exchange is necessary to overcome cognitive limitations and reduce asymmetry of task information between the user firm and the provider in the BPO relationship. Information exchange helps develop a shared understanding of outsourced tasks and mutual interdependencies required for process management and execution. Diverse views of task concepts such as quality and performance standards need to be resolved for effective task execution. In an organization, culture and affiliation enable members to develop shared meanings [24] required for efficient work design. However, because participant firms in the BPO relationship are affiliated with different organizational cultures, information fills the key role that culture serves in organizations to foster shared meanings [49]. The greater the uncertainty in the outsourced task, the greater is the level of information that must be processed on an ongoing basis in the relationship to communicate task knowledge, enhance provider understanding of the user firm's processes, and facilitate mutual adjustment in behavior.[5]

Information exchange is also necessary to manage exchange hazards borne of the uncertainty perceived by the user firm about its relationship with the provider. TCE posits that such relational uncertainty is correlated with provider opportunism, incentive misalignment, and goal incongruence, all of which exacerbate ex post inefficiencies of costly bargaining and privately favorable distribution of surplus [76]. TCE argues that these exchange hazards encourage choice of more hierarchical governance structures with access to fiat and safeguards against holdup and moral hazard.

We posit that information exchange hazards, in addition to their direct impact on governance choice, also increase the IR of the BPO relationship. The greater the

exchange hazards, the greater the need for mutual sharing of private information, including that on long-term plans and goals; the objective is to foster trust and enable the relationship to be characterized by mutuality and cooperation [60]. Moreover, when exchange hazards are high, greater levels of information sharing are required to monitor service levels and provider behavior. Examples of such information sharing include the results of "third party monitoring, disclosure of necessary documents to justify work done, and, if possible, benchmarks to gauge the performance of the work done" [60]. All of these information exchange practices serve to address the uncertainty perceived by the user firm about its relationship with the provider and allied opportunism costs. In brief, our model assumes that information exchange is critical not only for effective coordination and execution of the outsourced task but also for addressing opportunism concerns and overcoming incentive conflicts to facilitate effective cooperation.

The second assumption inherent in the use of IPV as complementary to TCE in an information model of governance choice in BPO is that governance structure, in addition to ensuring cooperation, is also a coordination mechanism that provides the necessary information bandwidth to resolve issues in work design borne of cognitive conflict. This is especially salient to information-intensive BPO relationships. For example, Glazer's [25] seminal work on information-intensive firms acknowledged that as the traditional exchange hazards pertaining to appropriability or scale diminish in information-intensive vertical relationships, the inherent attributes of information, and not necessarily exchange hazards alone, will dictate the structure through which the process operates. The role of information requirements as an organizing principle in BPO relationships is consistent with emergent research in strategy that points to the complementarity between the contractual and relational structures in vertical relationships [30, 36, 59].[6] Yet, these studies do not emphasize the specific role of the governance structure as an informational response to coordinating actions between participant firms. Our study seeks to fill this gap through the joint consideration of IR and exchange hazards in the choice of BPO governance.

Governance Structures for Business Process Outsourcing

Early institutional economists [76], being motivated largely by efficiency considerations, often dealt with polar forms of interfirm governance—markets and hierarchies (or vertically integrated organizations)—to the exclusion of other intermediate forms. The consideration in choosing one of these two governance forms was a comparison of production costs or costs of ownership of a business function with transaction costs of transferring ownership to an opportunistic agent. TCE posits that managers will choose the less costly of these two governance forms. Transactions, for which the likelihood of opportunism and risks of costly bargaining and privately favorable redistribution of surplus are high, are best governed by hierarchies.

Subsequent researchers, however, recognized that these polar forms of governance are "empty ideal types into which few empirical observations fall" [66]. And other

investigators presented empirical evidence that contracts can be developed to simulate hierarchies [29, 64]. As a consequence, researchers began to explore alternative forms such as recurrent contracts, equity alliances, and relational contracts that simulated hierarchies to various degrees along the market-hierarchy continuum [61].

We build on this body of research to identify four governance archetypes in BPO relationships—short-term contract, long-term contract, minority equity alliance, and joint ventures. These forms vary in cooperative mechanisms that address appropriation concerns and align incentives as well as in coordination mechanisms that synchronize actions [29, 64]. We distinguish among these governance structures with respect to various hierarchical attributes—extent of shared ownership and control, level of centralization/unification, duration, extent of formal mechanisms for conflict resolution, and level of commitment—which are enumerated in Table 1. The four governance forms are arranged in increasing order of these hierarchical attributes with the forms closer to the hierarchical end of the market-hierarchy continuum most closely replicating the control and coordination features of organizations [29, 54]. Thus, short-term contracts, the least hierarchical in the market-hierarchy continuum, are characterized by the transfer of ownership and control to the vendor and by market-based arm's-length relationships with short-term focus and low commitment. By contrast, equity arrangements, the most hierarchical form, involve joint ownership and control of the outsourced task, ongoing value creation over longer time horizons, and higher levels of centralization/unification and commitment.

Short-term, arm's-length BPO contracts are discrete transactions in which autonomous vendors are selected for performing nonspecific tasks whose ownership and control can be transferred relatively easily. The vendor benefits from scale economies, and the ex ante costs of contract design are relatively low. Therefore, in these exchanges, it is costly to develop a social structure that complements the contractual structure [49]; the contract represents the primary mode of information exchange between the participant firms. Contractual terms are also the primary means of conflict resolution, which is often adversarial and relies on societal legal systems to enforce the contract terms [61, 75]. As a consequence of these relational attributes, the level of commitment in these short-term BPO contracts is relatively low.

In long-term BPO contracts, the ownership and control of the outsourced task may be transferred to the vendor in the case of simple, modular tasks or jointly shared by the client and vendor in the case of more complex tasks that share interdependencies with the rest of the client organization [47]. In either case, the longer-term perspective helps to reduce opportunistic behavior and improve commitment in these relationships. Although the participant firms are autonomous, the relationship is more embedded and its governance more bilateral [61, 62], rendering commitment level in these relationships higher than that in arm's-length contracts. Although the neoclassical contract law facilitates enforcement of contractual terms, greater levels of embeddedness, the social structure of the relationship, and longer tenure allow for conflicts to be resolved in a collaborative rather than an adversarial manner.

Table 1. Distinguishing Characteristics of BPO Governance Structures

Distinguishing characteristics	Governance forms			
	Short-term contract (least hierarchical)	Long-term contract	Minority equity alliance	Joint venture (most hierarchical)
Ownership and control	Ownership and control of task assets transferred to the vendor	Ownership and control of task assets may be transferred to the vendor or shared by exchange partners	Ownership and control of task assets shared by the client and vendor	Ongoing production and rationing of wealth
Centralization/ unification	Low	Low	Medium	High
Duration	Short	Medium	Medium to long	Medium to long
Means of conflict resolution	Market norms and legal systems	Norms of reciprocity and legal systems	Norms of equity self-selected by the client and the vendor and based on mutual trust	Norms of equity self-selected by the client and the vendor and based on mutual trust
Commitment	Low	Moderate	Moderate	High

BPO relationships characterized by equity structures, wherein the client takes a minority stake in the vendor or both firms create a new, independent venture where both take a stake, are closest to organizational hierarchies. Unification in equity structures facilitates hierarchical coordination between participant firms; hierarchical control is shared between participant firms and is not an exclusive link as in the case of a wholly owned subsidiary [32]. Risks and rewards are proportional to the level of ownership, thereby creating incentives for the participant firms to make ex ante commitments and cooperate with each other [35]. Firms are committed to the ongoing production of wealth over longer periods of time, thereby, allowing for greater relational embeddedness and emergence of a social structure between participant firms. As a consequence of greater commitment, embeddedness, and cooperation between participant firms, conflict resolution is collaborative rather than adversarial. Unification in equity structures also allows for improved coordination between firms. Lower levels of formalization enable timely sharing of information, expertise, and clarification of task outputs to address contingencies as they arise. All of these reduce cognitive conflict and improve shared understanding of the outsourced task [30].

Information Requirements and Governance Choice

The attributes of more hierarchical governance structures such as equity arrangements help address the IR of the BPO relationship as well as increase the processing capabilities of the relationship in three related but distinct ways. First, in a short-term BPO contract (the least hierarchical structure), a resource group in the vendor organization is typically shared by and generates scale across multiple contracts. By contrast, more hierarchical governance structures will likely have a dedicated management team, control apparatus, and other strategic resources committed to ongoing optimization of activities that contribute to the accomplishment of jointly defined objectives. Creating more unified, self-contained governance structures is analogous to the strategy of creating self-contained tasks [23] in organizations. Galbraith [23] argued that self-containment reduces the amount of output diversity facing resource groups in organizations, thereby limiting the information processed in determining priorities and negotiating resources, skills, schedules, and other inputs required for task completion. Similarly, greater unification, inherent in more hierarchical governance structures, reduces the information processed in determining and negotiating priorities and schedules for the focal BPO relationship. Through the mutual allocation of task responsibilities and contingent actions that unification entails, more hierarchical structures guide, legitimize, and reinforce information flows between participant firms. Furthermore, well-established operating procedures and collaborative dispute resolution in more hierarchical structures are akin to rules in organizations or habits in individuals [23]. They provide a memory for handling situations, rendering interactions more predictable, and mitigating the challenges of communication and decision making that contribute to IR.

Second, unification frequently covaries with joint decision processes that move decision making to where pertinent information exists in the exchange [68]. Joint action and decision processes involve costly investments in managerial time and effort. When the control and ownership of the outsourced task is transferred to the provider through an arm's-length contract, there is little need or incentive for the client to invest in joint decision processes. The provider responds to high-powered incentives and is the residual claimant of any ex post surplus. Thus, managerial time and effort expended in joint action is wasted and engenders misplaced performance expectations [46, 60]. However, when control or ownership of the outsourced task is shared or when the two firms are committed to the ongoing production of wealth, then they have the incentive to invest in joint action and decision making. The trust and solidarity engendered in more unified structures complement the incentives to provide safeguards for costly investments in joint action and decision processes. Joint action and decision processes enable timely sharing of information, expertise, and clarification of task outputs that must ultimately be integrated back into the user firm's value chain. Increased emphasis on coordination and lower levels of formalization, in addition to facilitating a shared understanding of changes in the information environment of the outsourced process, help create a shared purpose that increases information-processing capabilities and minimizes conflict.

Third, in more hierarchical governance forms, collaborative dispute resolution procedures associated with more unified BPO structures provide a memory for handling future contingencies, render outcomes more predictable by relying on relational norms rather than societal legal systems, and mitigate the challenges of communication and decision making that contribute to IR. In the context of knowledge sharing, Nickerson and Zenger [54] observed that when diverse groups have to share their knowledge and develop a common language, markets and high-powered incentives are not suitable mechanisms and authority- or consensus-based hierarchies are preferred governance structures. Consensus-based hierarchies are characterized by low-powered incentives, collaborative dispute resolution mechanisms, and a common firm-specific identity and language, all of which enable effective transfer of information between the client and vendor. We argue that the configuration of features inherent to equity alliances render them closer to consensus-based hierarchies. For all of these reasons, we argue that more hierarchical governance structures allow the appropriate level of coordination and control between the client and provider in BPO relationships characterized by high IR levels. Thus, we propose the following hypothesis:

> *Hypothesis 1: The higher the IR, the more hierarchical the chosen BPO governance structure.*

Technological Capabilities of the Outsourcing Relationship

IS research emphasizes the role of IT in helping firms in BPO relationships address their information needs and indicates that technological capabilities and decision

structures are often jointly determined [5]. Mendelson and Pillai [51] found that organizations operating in "fast clockspeed environments" use IT to route information among decision makers to act quickly and effectively. Thus, in a shift from "automating" to "informating" roles, firms in information-intensive environments use IT more to improve communication and interaction than to solely provide data processing services [50, 81]. We argue that the informating capabilities of technology in information-intensive environments allow for more hierarchical attributes of governance in response to higher IR of the BPO relationship. A hierarchical governance structure involves complex planning and coordination mechanisms, a greater number of embedded rules and routines, and thus greater organizational memory. The firm's technological resources enhance the capacity of existing modes of communication, create new channels, introduce new decision mechanisms, and enable more efficient use of information during task execution [23]. The positive moderating impact of technological investments is consistent with emergent research [48], which has found that sophisticated technological capabilities are necessary for complex coordination inherent to more hierarchical governance. In the context of offshoring, Doh et al. [18] noted that IT support in the form of voice, data, and video applications are critical for interactive outsourcing services, which necessitate real-time, person-to-person exchanges. Similarly, Aron and Singh [1] found that in newer hybrid forms of BPO organization, user firms and providers deploy IT to "exchange information in real time and to embed themselves deeply in each other's companies."

As an illustration of the role of IT in reducing information overload in a BPO relationship, consider Merrill Lynch's outsourcing of the complex restructuring of its wealth management workstation platform, a fully integrated desktop for its financial advisers, to Thomson Financial.[7] The integration of Merrill's back office with Thomson's front office involved a variety of real-time communication technologies and systems integration efforts to measure process performance and output, respond efficiently to business changes, and effectively represent information flows required for sound decision making. The foregoing arguments emphasize that IT deployed in managing the BPO relationship enable firms to better use hierarchical structures in managing high-volatility business environments and dynamic task requirements. Hence, our second hypothesis:

> *Hypothesis 2: The greater the technological capabilities of the BPO relationship, the greater the positive impact of IR on the level of hierarchical governance.*[8]

Task Uncertainty and Information Requirements

When uncertainty in the outsourced task is high, the establishment of routines and procedures for process execution and management becomes difficult, and participant firms are frequently confronted with unfamiliar events during process execution that are not covered by internal or standard representations. As a result, firms need to

search for heuristic solutions to cope with a wide range of problems, which necessitates ongoing acquisition of task information from diverse organizational actors [15]. In addition, BPO often pervades an organization horizontally and may require the sponsorship of multiple departments or functions. Task uncertainty engenders repetitive cycles of intraorganizational information exchange, leading to integrative bargaining and reconciliation between stakeholders in deciding what tasks to disaggregate from the value chain and coordination of varied efforts required to transfer value from the outsourced task environment to the user firm. Information flows required between sponsoring departments for solution search and task coordination increase IR. Drawing on prior research [e.g., 57, 67], we propose two primary sources of uncertainty in the outsourced task: (1) task complexity and (2) task interdependencies.

Task Complexity

Task complexity is defined in terms of task analyzability and task variety and is a widely deployed construct in outsourcing research [40]. An analyzable task comprises events that are "hard, measurable and determinant" [14]. When a task is analyzable, outcomes are well understood, and the task administrators follow an objective, computational procedure to resolve problems [15]. We define task variety as the frequency of occurrence of events that deviate from mean values of stability and uniformity of inputs and outputs, thereby requiring different methodologies than is the norm for successful completion of task objectives. Our conceptualization of task variety is consistent with the notion of task variability or content variety [57] as well as the concept of sequential variety [56]. Pentland [56] noted that whereas content variety focuses on variability in the inputs or outputs, sequential or process variety reflects diversity of work processes that an organization uses to transform inputs into outputs. Complex tasks are marked by low levels of analyzability and high variety.

An increase in task complexity renders it relatively difficult to establish rules, procedures, and predetermined responses to potential problems. In such cases, given the relatively few information cues, task complexity causes an increased number of exceptions or deviations. Incomplete task information also means that it is difficult to identify the type of information needed and assess the utility of that information to an outsourced task [15]. All of these result in greater information turnover in the BPO relationship.

Mohr and Spekman [53] suggested that complex outsourced tasks require different cognitive maps and solution search mechanisms for execution. Such tasks necessitate information exchange for the development of heuristics from multiple knowledge sets, a shared language for the transfer of such knowledge, and reconciliation of divergent beliefs about the heuristic that is appropriate for the task. On the other hand, simpler tasks have more well-developed bases for identifying and evaluating solutions and require interaction between different knowledge sets only to identify a broad solution. Agents can work independently to choose specific solutions in this

broad solution space that are appropriate for the problem. The more heuristic-based approach to executing complex tasks clearly necessitates greater information and knowledge transfer between the user firm and the provider in execution of complex tasks. For all of these reasons, we posit our next hypothesis:

Hypothesis 3a: The higher the complexity of the outsourced task, the higher the IR.

Task Modularity

The modularity of the outsourced task is defined by its ability to function as a coherent subtask that can be analyzed, modified, and enhanced, independent of its influence on other organizational processes. Interdependencies of the outsourced task require repetitive cycles of identification of process stakeholders, impact assessment, and bargaining and reconciliation among these stakeholders. They also limit the synergistic specificity or degree to which the outsourced task achieves greater functionality through its components' being specific to one another, thereby necessitating variety in coordination efforts required to transfer value back to the user firm ([66]). In building a knowledge-based theory of the firm, Nickerson and Zenger [54] considered "high-interaction" problems, for which it may be infeasible to decompose the overall problem into components and which require extensive interactions among actors with different knowledge sets in order to create maximum value. Nickerson and Zenger's model underscores the importance of communication, knowledge sharing, and information transfer in the execution of such tasks. In an intraorganizational context, Tushman and Nadler [70] noted that "tasks with a minimal amount of intra-unit interdependence can be pre-planned, and their information processing requirements are minimal … [whereas] tasks which involve reciprocal interdependence … cannot be pre-planned and are associated with greater uncertainty." We extend this notion to the interorganizational context to posit that the increased level of coordination between the vendor and multiple actors in the client organization required to support task interdependencies increases IR:

Hypothesis 3b: The lower the modularity of the outsourced task, the higher the IR.[9]

Relational Uncertainty and Information Requirements

IPV focuses on task uncertainty, but the uncertainty perceived by the user firm about its relationship with the provider is also an important antecedent of IR in the interorganizational context of BPO. We conceptualize relational uncertainty through the bargaining power and trustworthiness of the provider and relational interdependence. These factors define the "climate" of the BPO relationship [4] and, in turn, the behavioral uncertainty perceived by the user firm.

Provider's Bargaining Power

Bargaining power refers to "a bargainer's ability to favorably change the 'bargaining set,' to win accommodations from the other party, and to influence the outcome of a negotiation" [78]. We focus on alternatives available to the user firm in the context of outsourcing negotiations that are negatively related to the provider's bargaining power [27]. More alternatives afford the user firm the opportunity to exercise its best alternative to a negotiated agreement and prevent the provider from locking in the firm. This, in turn, reduces the provider's bargaining power, which is salient to the user firm's IR, because it is associated with increased likelihood of opportunistic behavior and the potential for inefficiency losses from costly bargaining and privately favorable distribution of ex post surplus. As a consequence, the user firm must process information to anticipate needs and costly contingencies in the exchange process and specify them ex ante. It must also expend information resources to monitor and manage opportunistic behavior against complex safeguards. The greater the relative bargaining power of the service provider, the greater is the information turnover in the relationship to address the uncertainty that stems from such bargaining power. Thus:

> *Hypothesis 4a: The higher the bargaining power of the service provider, the higher the IR.*

Provider Trustworthiness

Prior research [29, 80] has identified trust as an important relational dimension that addresses both appropriation and coordination concerns in economic transactions. Trustworthiness of the provider is associated with lower information asymmetry between participant firms, mitigation of problems of adverse selection, increase in the predictability of firm behavior, and greater "domain consensus" [44]. Consequently, user firms expend less information to monitor the provider's behavior and enforce contractual provisions. Given that provider trustworthiness often stems from prior cooperative association between the user firm and the provider [80], it involves greater knowledge of partner firm behavior, processes, and routines. Thus, coordination efforts and allied information required to manage the interface between participant firms, including developing shared understandings and integrating actions, are relatively lower. Hence:

> *Hypothesis 4b: The higher the perceived trustworthiness of the service provider, the lower the IR.*

Relational Interdependence

Interdependence exists "when actions taken by one referent system affect the actions or outcomes of another referent system" [49]. In the BPO relationship, interdependence between the user firm and the service provider introduces the need to gather, analyze, and distribute pertinent process information among organizational actors in

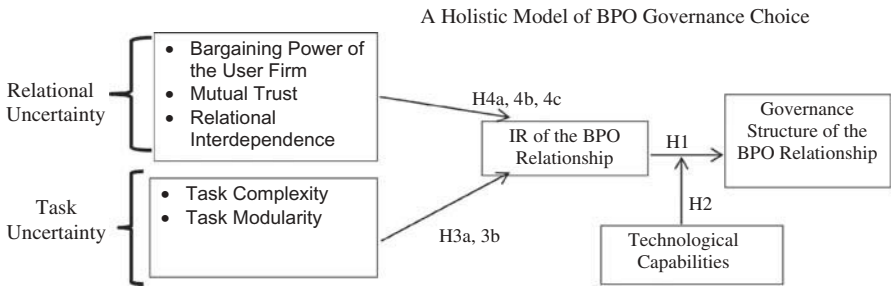

Figure 1. A Holistic Model of BPO Governance Choice

both firms. Such information is required to allocate task responsibilities, aid ongoing mutual adjustments in behavior, integrate effort to maximize process value, and facilitate timely communication and decisions. Furthermore, interdependencies in collaborative outsourcing relationships require investments in knowledge sharing and development of trust, social ties, and shared norms. Such investments to promote synergistic behavior directed toward collaboratively satisfying business objectives also result in an increase in IR. Interdependencies in the BPO relationship are also an indicator of specificity of relational investments and hence of potential opportunism costs. Thus, the user firm must collect and process information to anticipate and respond to contingencies in the BPO relationship. Therefore, we posit the following:

> *Hypothesis 4c: The higher the interdependence between the participant firms, the higher the IR.*

Our theoretical model and hypotheses are summarized in Figure 1.

Empirical Analysis

Data Collection

The data for this study were obtained through a survey of senior executives responsible for the management of outsourced business processes in their respective firms. A structured questionnaire was developed based on comprehensive reviews of the literature and initial interviews with twenty BPO experts.[10] These exploratory interviews were conducted with the underlying objective of assessing the applicability of our theoretical model to governance choice in BPO relationships and obtaining more clarity of perspective on desirable sample characteristics. They also influenced questionnaire design and component items, especially those that were being adapted to the BPO context. Consequent to these exploratory interviews, we developed a structured questionnaire that was pretested with a total of thirty medium to large organizations, market research firms, and academicians. The instrument was tested for clarity of content,

scope, and purpose. A seven-point Likert scale was used for most questions; however, some questions involved binary choices.

Our list of respondents came from several active compilations of outsourcing firms, industry association referrals, and outsourcing advisory referrals. A technique deployed in related research in surveying executives is "to define populations and response rates based on those who will pre-commit to respond" [59]. The normative response rates based on precommitted samples are as high as 40 percent [59]. We solicited completion precommitments from nearly 4,000 individuals based on active compilations of outsourcing firms, industry association referrals, and outsourcing advisory referrals. Of these, 600 responded that they would complete the survey. Of the 600 precommitted surveys mailed, we received a total of 145 valid responses, of which 130 were complete in all respects. This response rate of approximately 24 percent was lower than expected and was likely due to the lengthy and extensive nature of the questionnaire. However, it is consistent with the rate found in other studies [53]. The final sample was representative of a range of outsourcing objectives for which there was sufficient variance in relational and process attributes. Over 50 percent of the firms had revenue greater than $100 million and were outsourcing administrative tasks, processing services, customer care, or finance and accounting. A majority of the respondents were owners of the firm, C-level executives, directors, or vice presidents.

We checked for potential biases in self-reported data. We sought to minimize response bias by assuring respondents of the confidentiality of their responses, addressing privacy concerns, and distributing the questions measuring each construct across the survey. In support, we found no significant difference between early respondents and late respondents or nonrespondents. We also checked for common methods bias through Harman's single-factor test [59]. All variables in our study were simultaneously subject to an exploratory factor analysis, and the results of the unrotated factor solution were examined. The absence of a single factor that explained significant variance in the data suggests that common methods bias did not likely impact survey responses.

Finally, a section of the raw data was also randomly subject to independent cross-validation exercises. We randomly requested twenty-five respondent firms to identify the outsourcing vendor for the purpose of a brief interview. Ten firms obliged, and we interviewed the vendors to obtain relevant process information. The two information sets in the client-vendor dyad were mutually consistent.

Measures

Construct measurement details are shown in Table 1. In the case of variables that have been used in prior research settings, we adopted their measures after testing for reliability and content validity. For variables that were unique to our theoretical model, we developed measures based on operationalization of similar variables and

discussions with different groups of BPO stakeholders. The measurement items were tested for content validity through interactions with outsourcing practitioners and service providers. Reliability of all multiple-item scales used in the study were satisfactory with Cronbach alpha values greater than 0.70.

Among the variables studied, new measures were created for IR of the BPO relationship. We developed the construct's operationalization based on Keller's [37] measurement of information processing by project groups. Two items measure the amounts of information communicated within the user firm and with the service provider. Two other items ask about the use of external agencies such as law firms and consulting firms and the different stages of the outsourcing process in which these agencies were used (for example, contract negotiation, vendor evaluation). Prior studies from which measures of key constructs in our study were adapted are detailed in Table 2.

Our theoretical model of governance choice also includes controls for environmental uncertainty, firm size, and strategic importance of the outsourced business process. We measure environmental uncertainty in terms of the rate of change in product or service technologies and innovations, rate of change in customers' demands or buying habits, stability in industry sales, diversity in customers' demands or buying habits, diversity in products or services, and concentration of sales. We measure firm size as the firm's average domestic sales over a three-year period. Strategic importance of the outsourced process is the extent to which the process contributes to brand distinctiveness and perceived customer benefits of organizational products or services. It also includes contribution of the outsourced function to strategic value creation, such as enabling the development of new products and services or providing information for executive management to develop strategies.

Data Analysis

Ordinary least squares (OLS) estimates were used to test the hypothesized effects of process and relational uncertainty on IR of the BPO relationship. The results of this estimation are presented as Model 1 in Table 3. In testing our model of governance choice, the use of OLS estimates is inefficient because the dependent variable, governance type, is ordinal. Thus, we used an ordered logistic specification to test these hypotheses: $Gov = f(x'\beta) + \bar{u}$.

The specification was estimated using maximum likelihood, and the results are shown in Table 3. The explanatory variables in our baseline transaction cost model of governance choice, presented as Model 2 in Table 3, consist of sources of relational uncertainty alone. Models 3–5 test the effect of overall IR on governance choice. Model 3 includes both dimensions of uncertainty as explanatory variables. Model 4 tests the impact of IR on governance choice, and Model 5 tests the impact IR while controlling for the influence of both dimensions of uncertainty. The

Table 2. Operationalization of Key Constructs

Construct	References	Description/ Measurement
Governance structure	[29]	Choice of governance structure for the outsourced business process in increasing order of hierarchical control: 1. Short-term contract 2. Long-term or open-ended contract 3. Minority equity investment 4. Joint venture / majority equity strategic alliance
Information requirements	[37]	Amount of information communicated (a) within the organization, (b) with the service provider during the outsourcing process (scale: 1 = minimal, 7 = very high) In addition, firms were asked to list the following: (d) Number of external support organizations used in the outsourcing process (market research / analyst firms, technology consulting firms, management consulting firms, law firms, advisory firms, solutions integrators, or any other) (e) Number of different purposes for which the above support services were used (contract negotiation and development, vendor evaluation and relationship management, risk management, etc.)
Relational uncertainty		
Bargaining power	[23]	Presence of other competing service providers that possess the expertise to execute the outsourced function (scale: 1 = significant competition, 7 = no competition)
Provider trustworthiness	[60, 80]	Extent to which the user firm trusts the vendor to (a) uphold all IP agreements in the contract and not use proprietary process information to its own advantage, and (b) treat the firm fairly (scale: 1 = strongly disagree, 7 = strongly agree); also includes (c) presence of prior cooperative association
Relational interdependence	[4, 65]	Extent to which the outsourced function requires equal sharing between the user firm and service provider of risks, responsibilities for problem solving, and contribution of time and effort (scale: 1 = vendor has more of the share, 7 = user firm has more of the share)
Task uncertainty		

Task complexity	[1, 13, 56]	Extent to which (a) a clearly defined body of knowledge guides the effective functioning of the task, (b) process managers and workers come across difficult problems during the course of their work that they don't know how to solve immediately, (c) the activities or methods followed in the task are about the same for dealing with different classes of inputs (e.g., categories of cases, claims, or clients), and (d) process workers, in doing their job from day to day, have to adopt different methods or procedures
Task modularity	[7, 11, 19]	Extent to which the task (a) is shared among business units/functions, (b) maintains interfaces with other organizational processes, and (c) can be executed and managed independently of other organizational processes
Technological capabilities	[4, 76]	1. Percentage of transactions with the service provider that are electronically transmitted (scale: 1 = <5%, 7 = >80%) 2. Extent to which IT is extensively used in the following (scale: 1 = strongly disagree, 7 = strongly agree): a. Outsourced process conception, preparation, and execution b. Outsourced process support c. Auxiliary functions of the outsourced process d. Core functions of the outsourced process 3. Extent to which process information is exchanged and updated in real time.

Table 3. Antecedents of Governance Choice in BPO Relationships

Variable	Model 1 IR	Model 2 Governance	Model 3 Governance	Model 4 Governance	Model 5 Governance	Model 6 Governance	Model 7 Governance
Relational uncertainty							
Bargaining power	0.283***	0.400***	0.380***		0.270**	0.293**	0.302**
	(0.083)	(0.116)	(0.116)		(0.121)	(0.116)	(0.118)
Provider trustworthiness	–0.224***	–0.305***	–0.319**		–0.216	–0.203	–0.232
	(0.081)	(0.116)	(0.156)		(0.156)	(0.156)	(0.167)
Relational interdependence	0.156*	0.375***	0.304**		0.254*	0.251*	0.222
	(0.090)	(0.122)	(0.141)		(0.134)	(0.136)	(0.136)
Task uncertainty							
Task complexity	0.202**		0.325**		0.273*	0.288*	0.245
	(0.095)		(0.152)		(0.147)	(0.149)	(0.152)
Task modularity	–0.168**		0.005		0.100	0.103	0.119
	(0.083)		(0.141)		(0.136)	(0.138)	(0.142)
IR				0.659***	0.496***	0.540***	0.507***
				(0.122)	(0.130)	(0.130)	(0.134)
Technological capabilities						–0.146	–0.189
						(0.124)	(0.127)
IR×Technological capabilities							0.241*
							(0.144)

Firm size		0.313***	0.266**	0.219**	0.199*	0.185*	0.185*
		(0.105)	(0.107)	(0.106)	(0.104)	(0.108)	(0.109)
Strategic importance		0.178*	0.161	0.193*	0.200*	0.223*	0.233*
		(0.102)	(0.107)	(0.103)	(0.110)	(0.115)	(0.120)
Environmental uncertainty	0.212***	0.133	0.092	–0.004	–0.004	0.020	0.021
	(0.081)	(0.103)	(0.110)	(0.108)	(0.114)	(0.116)	(0.118)
R^2/Likelihood ratio index	0.35	0.14	0.17	0.16	0.21	0.22	0.23

Notes:

1. Model 1 tests the impact of various dimensions of uncertainty on IR. Model 2 tests the theoretical premise of TCE. Models 3–5 test the mediating effect of IR on governance structure, and Models 6 and 7 test the moderating effect of technological capabilities on governance structure.
2. In the ordered probit models, positive coefficients indicate higher degree of hierarchical control in the governing contract as the value of the associated variable increases, and negative coefficients suggest the converse.
3. The pseudo-*R*-squared in the ordered probit model tends to underestimate the proportion of variance explained.
4. Numbers in parentheses below coefficients are standard errors that are adjusted for correlations at the individual level and are robust to arbitrary heteroskedasticity. *** significant at 1 percent, ** at 5 percent, and * at 10 percent, respectively.

principal versions of the Sobel test [64] indicated a significant indirect effect of process and relational uncertainty on governance choice via IR.

Models 6 and 7 test whether the technological capabilities of the BPO relationship moderate the impact of IR on governance choice by regressing the interaction between technological capabilities and IR on governance choice. Firms self-select the observed technological capabilities based on their own analyses of the outsourcing context, which also motivates choice of hierarchical control. Failure to correct for unobserved firm- and transaction-level factors that simultaneously influence the choice of technological capabilities and hierarchical control will result in biased and inconsistent estimates. To account for possibly endogenous choices of technological capabilities, we use a switching regression model [31] to estimate moderation effects.

Because our specification requires that the dependent variable be continuous, we transformed the ordinal hierarchical control variable into a standardized *z*-score. This is consistent with prior research [22], which, in following a similar process, finds that such transformation does not distort regression results. Thus, the switching regression allows us to systematically discern the influence of IR across both levels of technological capabilities. Our analysis uses robust (Hubert-White) standard errors to calculate *t*-statistics for all regressions.

Results

Table 3 presents the analyses of IR and governance choice in our sample. Model 1 in Table 3 presents the results of our analyses of determinants of IR. Potential multicollinearity problems were investigated by examining tolerance (TOL), variance inflation factors (VIFs), and condition indices for the predictor variables. An analysis of these measures suggested that none of the coefficients was biased by multicollinearity. The coefficients of predictors in Model 1 indicate that in information-intensive outsourcing relationships, information is processed to address uncertainty in the outsourced task (H3a and H3b), relationship with the provider (H4a, H4b, and H4c), and business environment. Thus, in extending IPV to the study of interorganizational adaptation, the additional dimensions of relational uncertainty must be considered.

Effect of Information Requirements on Governance Choice

Model 2 in Table 3 provides a baseline TCE specification that includes only sources of relational uncertainty. All three sources are significant predictors of governance choice in line with the TCE perspective. Model 3 introduces process uncertainty as an additional antecedent of governance choice. Although the impact of task modularity is insignificant, task complexity emerges as a significant predictor of governance choice. The result is consistent with research [29] suggesting that both appropriation concerns resulting from relational uncertainty and coordination

concerns arising from process uncertainty are important considerations for the design of hierarchical control in vertical relationships. The significant improvement in the *F*-test for the model and the likelihood ratio index confirms the value of incorporating task complexity in our analysis.

Model 4 introduces IR as a predictor of governance choice. The results confirm that hierarchical control in information-intensive outsourcing relationships such as BPO is a response to IR of the relationship. Model 5 indicates that after controlling for the influence of all previously regressed variables, including those pertaining to relational uncertainty, IR is still a significant predictor of choice of hierarchical control, thereby providing support for H1. A comparison of Models 3 and 5 indicates that the significance of sources of relational uncertainty and task complexity reduces on addition of IR. The results of Models 3–5 in conjunction with those of Model 1 suggest that IR of the relationship partially mediate the effect of relational uncertainty and task complexity on choice of hierarchical control.

However, an analysis of mediation effects through a test of significance of coefficients neither tests the significance of the indirect effect nor considers probable suppressed relationships. We use the Sobel test [64] to calculate the significance of the indirect effect of uncertainty on governance choice. We multiply the coefficient for the pertinent dimension of uncertainty predicting IR in Model 1 by that of the partial regression effect for IR predicting governance choice in Model 2.

$$\text{Model 1: IR} = \alpha_o + \alpha_1 \text{Rel\_Uncer} + \alpha_2 \text{Task\_Uncer} + \varepsilon$$

$$\text{Model 2: Gov} = \beta_0 + \beta_1 \text{Rel\_Uncer} + \beta_2 \text{Task\_Uncer} + \beta_3 \text{IR} + \varepsilon$$

The mediation model was supported for all sources of uncertainty ($p < 0.05$), confirming the mediating effect of IR on governance choice.

The results for the controls used in our analyses are largely consistent with prior research. Strategic importance of the outsourced process is a significant predictor of hierarchical control in almost all specifications. Strategic BPO relationships are characterized by high payoffs and thus are frequently long term and involve a sustained, focused, and complex pattern of interaction between and within each of the participant firms [21]. These integrative patterns of cooperation and coordination embodied in a strategic BPO relationship necessitate greater hierarchical control. The significantly positive coefficient of firm size is consistent with findings that larger firms often have the "superior financial and human resource endowments" [44] required for hierarchical control.

Effect of Technological Capabilities of the BPO Relationship

Model 6 in Table 3 introduces technological capabilities of the BPO relationship as a predictor of governance choice, and Model 7 introduces the interaction between IR and technological capabilities as a predictor of governance choice while controlling for the individual effects of these variables. The significance of the interaction term

provides initial evidence of the moderating effect of technological capabilities. However, given the need to control for self-selection of technological capabilities or firm- and transaction-level heterogeneity that impact the choice of technological capabilities and hierarchical governance, we use a switching regression model [31].

The intuition behind the switching regression model in the current study is that estimates for technological capabilities in the model of governance choice need to be corrected by controlling for the propensity of the firm to choose a certain level of technological capabilities. We conceptualized two levels of technological capabilities —high (defined as 1) and low (defined as 0). We defined the threshold value for high technological capabilities as the response value of 5. We tested for and found no loss of information in the recoding process. As proposed by Heckman [31], the first step in the switching regression is the estimation of the following probit model:

$$\Pr(Y_i = 1) = \Pr(Tech\_Capabilities_i > 4) = \Phi(\beta' X_i) \tag{1}$$

To account for possibly endogenous choices of technological capabilities, we constructed the inverse Mills' ratio, λ_{ji}, using the predicted probabilities from the preceding probit model as follows:

$\lambda_{1i} = \varphi(\beta' X_i) / (\phi(\beta' X_i))$ for transactions with high technological capabilities (i.e., $j = 1$) and $\lambda_{0i} = -\varphi(\beta' X_i) / ([1 - \phi(\beta' X_i)])$ for transactions with low technological capabilities (i.e., $j = 0$)

The inverse Mills' ratio, λ_{ji}, is then included as a control variable in the second-stage model of choice of hierarchical control to provide consistent and unbiased estimates. The errors in the model of hierarchical control are assumed to be distributed normally and independently, with mean zero and constant variance. The coefficients of the inverse mills ratios capture the correlation of the "unobservables" of the selection equation above, Equation (1), with the "unobservables" of the hierarchical control equations $j = 0$ and $j = 1$ respectively; a test of whether the coefficients of the inverse Mills' ratios are statistically different from zero measures the endogeneity of selection of technological capabilities. A test of significance of coefficients of IR across the two regimes of technological capabilities provides a test of the moderating impact of the latter.

Given that the results of the first-stage probit model are primarily used to formulate the inverse Mills' ratio, we do not report or discuss these results at length. The identifying instrument used in these analyses, technological resources, is a significant predictor of technological capabilities. We measure technological resources as the natural log of the IT budget [59]. Strategic importance of the outsourced process is significant and is consistent with the notion that technology plays a pivotal role in managing the sets of information exchanged between a firm and its customers and in maximizing information as the key strategic asset [25].

Table 4 provides results of the regressions of hierarchical governance across both subsamples of technological capabilities. We find no evidence of sample selection bias—the inverse Mills' ratio was insignificant in the governance choice regressions in both samples. While controlling for technological capabilities, IR is a positive and

Table 4. Switching Regression Estimates of Hierarchical Controls for Different Technological Capabilities

Variable	Hierarchical control (high-tech capabilities)	Hierarchical control (low-tech capabilities)
IR	0.543***	0.275
	(0.158)	(0.144)
Relational uncertainty		
Relative bargaining power	0.263**	0.377***
	(0.128)	(0.117)
Provider trustworthiness	–0.092	–0.230
	(0.127)	(0.149)
Relational interdependence	0.281*	0.100
	(0.148)	(0.115)
Task uncertainty		
Task complexity	0.089	0.228*
	(0.202)	(0.125)
Task modularity	0.037	0.178
	(0.151)	(0.115)
Firm size	–0.125	0.153
	(0.127)	(0.098)
Strategic importance	–0.073	0.388**
	(0.114)	(0.150)
Environmental uncertainty	0.099	0.155
	(0.150)	(0.118)
Correction for self-selection (λ)	–0.002	0.331
	(0.207)	(0.204)
Adjusted *R*-squared	0.40	0.29
N	80	51

Note: Numbers in parentheses below coefficients are standard errors that are adjusted for correlations at the individual level and are robust to arbitrary heteroskedasticity.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ in a two-tailed test.

significant predictor when technological capabilities are high but insignificant when capabilities are low. This result confirms the enabling role of IT capabilities in the relationship between IR and governance choice (H2).

From Table 4, we note that the strategic importance of the outsourced process is associated with more hierarchical governance structures only in settings with low technological capabilities. This is likely because with low IT capabilities, a more hierarchical governance structure, which involves higher levels of communication, coordination, and collaboration, may not be easy to implement and will therefore be chosen only if the outsourcing task is strategically important. By contrast, high technological capabilities render it feasible to respond to increasing IR with a more hierarchical governance structure regardless of the strategic importance of the outsourced task.

In brief, our results confirm that IR of the BPO relationship constitute an important predictor of the level of hierarchical governance employed in the relationship, with IT capabilities enabling this choice of hierarchical governance in response to increasing IR.

Conclusion

Outsourcing of value chain functions has gained significant momentum as organizations increasingly externalize information-intensive business processes such as human resources, finance and accounting, supply chain management, and customer care to achieve diverse strategic objectives. The findings in this study shed light on how user firms in these BPO initiatives choose governance structures to formalize their relationship with the provider. We posit that modern BPO settings are characterized not only by opportunism concerns as outlined by TCE but also by increased IR resulting from coordination needs of the outsourced task. Even after incentives have been aligned according to TCE prescriptions, there is still the need to achieve synchronization in the exchange, which is difficult due to cognitive limits of participant firms and their lack of familiarity with each other's work routines and processes. We extend the intraorganizational focus of IPV to interorganizational exchanges to focus on how task uncertainty impacts firms' shared understanding of the outsourced task, allocation of work, and ongoing task coordination between the firms.

Our theoretical model also incorporates opportunism concerns associated with relational uncertainty perceived by the user firm. We find that IR mediates the impacts of uncertainty in the outsourced task and the BPO relationship on governance choice. Indeed, an important feature of our study is the indirect manner in which opportunism concerns perceived by the user firm about the service provider affect governance choice. We propose, test, and validate that relational uncertainty also necessitates higher levels of ongoing information processing in the BPO relationship and calls for more hierarchical governance because of its impact on IR.

Our results emphasize that the governance structure in modern outsourcing relationships is not just a contractual mechanism that addresses incentive conflict and considerations of holdup, but also an important mode of organization of information that addresses cognitive conflict between participant firms to coordinate actions between them. User firms in information-intensive outsourcing initiatives will tend to adopt governance structures that facilitate an enhanced informational response to diverse contingencies and reduce the information states that decision makers have to contend with in the relationship. Concerns of information processing have yet to be examined in the literature on governance of interfirm relationships, in general, and vertical relationships, in particular. Given that an understanding of IR is important for efficient governance choices in BPO relationships, it may also well influence the fundamental choice of firm boundaries and could be examined in future research as an important basis for why firms exist.

We theorize and find support for the simultaneous influence of two important dimensions of uncertainty on IR: (1) the characteristics of the BPO relationship and (2) the outsourced task. An important contribution of this study is the development of a theoretical framework that captures the comparative and cumulative influence of these two factors on the organization of BPO. Our results emphasize that the joint assessment of these dimensions is necessary to enhance the explanatory power of extant theories of organization. Whereas neoinstitutional economics emphasizes the moral hazard risks, holdup concerns, and adverse selection problems that stem from relational uncertainty, our finding for the mediation of the impact of these sources by IR suggests that information overload is an important, albeit relatively unexamined, consequence of relational uncertainty.

Our finding that technological capabilities moderate the impact of IR on governance choice suggests that sophisticated IT in information-intensive outsourcing relationships is increasingly used to enhance interactions and coordination rather than just provide transaction-processing services. Our results for the predictors of hierarchical control across both high and low levels of technological capabilities support this viewpoint. Given the expansive and intensive use of technologies in the BPO task environment, hierarchical governance is largely a response to the need to coordinate process information across firm boundaries and manage interdependencies between firms. For lower levels of technological capabilities, the results suggest that a hierarchical structure is primarily used for better control and monitoring of flows and processes between the firms to address appropriation concerns. The relatively lower significance of bargaining power with high technological capabilities is also consistent with the greater emphasis on coordination in such cases.

This study is subject to several limitations. One assumption of IPV is that interaction effects of IR and capabilities dominate the main effects of these variables [18]. Thus, capabilities choice is not a constant. Likewise, IR and its antecedents may also change during learning processes in a continuous feedback system wherein requirements and capabilities adapt to each other [63]. This may give rise to an endogeneity issue, which results in inconsistent OLS estimates. However, absent endogeneity, OLS estimation is consistent and more efficient than the instrumental variables method. We used the Hausman's specification test for endogeneity in our model, finding that OLS produces consistent and efficient estimates. Given that learning effects [9, 73] develop over continuous periods of time, it is likely that endogeneity is a long-term issue and therefore does not affect our results. A multiperiod model will address this issue theoretically and introduce a dynamic perspective not considered in structural contingency frameworks.

Another limitation of our study is that we do not empirically distinguish between the opportunism concerns and coordination issues arising from task uncertainty. Prior research (e.g., [55]) posits that exchange hazards are especially pronounced when task performance is difficult to measure, the task requires specific investments, and the task is characterized by changing requirements. These categories of exchange hazards may be correlated with task complexity and interdependence, resulting in overlaps between opportunism and coordination concerns. Although

we were unable to empirically separate these two impacts, after controlling for the behavioral uncertainty perceived by the user firm, we found that task uncertainty significantly influences IR of the BPO relationship and, in turn, governance choice. Thus, our study demonstrates the distinct role of both opportunism and coordination concerns in guiding the choice of governance structure in BPO relationships.

In our study, the BPO governance structures are ordered along a market-hierarchy continuum. However, these structures may also be distinguished in terms of incentives (time and materials versus fixed-price contracts), extent of outsourcing (total versus selective outsourcing), or tenure (short-, medium-, or long-term contracts). Our distinction is significantly correlated with these classifications; however, future research could examine the drivers and performance impact of governance choices separated by these factors.

Our study also does not theorize who owns or controls the technological capabilities in the BPO relationship. Yet, in a different context involving digitization of business, it was noted that the success of a firm's technology initiatives depends on the ability of its business partners to adopt similar initiatives [2]. Although we incorporate the role of technological capabilities in governance choice, an analysis of incentives for ownership and deployment of these capabilities is outside the scope of this study and constitutes a fruitful avenue for future research. Future research could also use longitudinal data to examine alternative selection models underlying the relationship between hierarchical governance and technological capabilities. The current study assumes that technological capabilities moderate the impact of IR on governance choice. However, it is likely that IR drives governance choice, which in turn drives technological capabilities, or IR interacts with governance choice to drive technology choices in the relationship.[11] The choice of technological capabilities is not the focus of the current study, but future research could examine these selection models in greater detail.

Finally, although this study presents the view that effective information processing is a strategic goal of governance in information-intensive outsourcing relationships, we do not examine the impact of such governance on exchange performance. Future research could relate the alignment between IR and governance choice to exchange performance and ultimately to firm competitiveness.

Despite these shortcomings, we believe this study makes important contributions to the literature on organization of outsourcing relationships. Comprehensive data on transaction and relational characteristics of a range of BPO relationships allow us to take the first step toward explaining the variety of relational structures that user firms and service providers build together to organize the outsourced activity. In doing so, we complement and extend the rich literature on firm boundaries. Our results emphasize that as business processes become more information intensive and as their externalization matures to being a collaborative process that is increasingly strategic in its impact, the organization of these processes must consider information-processing requirements that stem from traditional considerations of holdup as well as issues of work design and task coordination. This is consistent with our belief that hierarchical control, in addition to attention to controlling opportunism,

enables participant firms to define and coordinate process tasks and responsibilities so as to meet outsourcing objectives and create strategic value.

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NOTES

1. In contrast to contract manufacturing, which refers to the outsourcing of business processes that involve the manipulation of physical objects, BPO refers to the outsourcing of business processes that involve the manipulation of informational objects. Thus, in this study, business processes comprise a series of interrelated activities that manipulate information to create value. In turn, IT is integral to process execution and management in BPO. Yet, there are important distinctions between BPO and IT outsourcing (ITO), namely, the objectives driving the outsourcing decision. Prior research [42, 77] and industry surveys [79] have attributed the adoption of ITO to two primary factors—a *focus on core competencies* and *reduction of IT costs.* However, BPO involves significant diversity in outsourcing objectives, ranging from *reduction in operating costs* to *innovation* and *business transformation* [45]. This range of objectives in BPO reflects significant heterogeneity in the nature and strategic context of outsourced business processes.

2. According to IDC, by 2008, the use of external technology and business process services accounted for 20 percent of total costs. Forecast growth rates for BPO are 10–15 percent per annum. The specific case of offshoring trends is analyzed in [20].

3. This logic was originally examined in the case of the decision to outsource. However, it has since been extended to study the choice of governance structure once firms decide to outsource or form an alliance [29].

4. See [70], for example, for an early empirical study with a TCE foundation.

5. Vlaar et al. [71] discussed similar concerns in the context of onsite and offshore vendor teams.

6. A different point of view is offered by Cao et al. [8], who found that contractual and relational governance structures can be in conflict with each other. Huber et al. [33] developed a process model to demonstrate when the two governance forms are complementary or substitutive.

7. Prashanth Konakanchi, "Merrill Lynch's IT Initiatives," ICFAI Center for Management Research Case Collection, 2003; and Todd Datz, "Merrill Lynch's Billion Dollar Bet," *CIO Magazine,* September 15, 2003.

8. The research question pertaining to H2 involves whether higher technological capabilities help select a more hierarchical governance structure in situations of high IR. Although there are additional issues regarding who initiated the IT investment or whether there are incentives to develop IT capabilities, such questions are outside the scope of this study.

9. Consistent with the literature (e.g., [66, 65]), we conceptualize modularity as an exogenous construct. In principle, the modularity of a task can be endogenous when modeled as a decision. However, such a treatment is outside the scope of the current study.

10. The subject experts comprised directors of strategic outsourcing practices in Fortune 100 firms (in financial services, healthcare, retail, and high tech), outsourcing advisory consultants, leading service providers, and academicians.

11. We thank an anonymous reviewer for this suggestion. In our first-stage probit model of choice of technological capabilities, we found that governance choice has an insignificant impact on technology choice and that IR, along with technological resource constraints of the firm, influences choice of technological capabilities. However, future research could explore this relationship using longitudinal data.

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