Single Sourcing versus Multisourcing: The Role of Effort Interdependence and Metric-Outcome Misalignment

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Practitioners and theorists have long recognized the importance of outsourcing business processes, activities, and functions for lowering costs and for improving efficiency, flexibility, and quality. Several studies (see, e.g., Dibbern et al. 2004) have demonstrated the potential value and challenges that arise from outsourcing processes and activities in the information technology (IT) domain. However, the results of such undertakings have been mixed (Aron et al. 2005). Although there are advantages to outsourcing the development of IT services, committing to a single vendor involves many risks: supplier lock-in, bad vendor selection, and limited domains of competence. Hence firms have increasingly sourced their IT activities to multiple firms; this has the advantages of a choice among “best of breed” vendors, lower costs resulting from vendor competition, and improved agility and adaptability to dynamic environments. Multisourcing has also been found as a determinant of quality and flexibility in response to a competitive environment (Levina and Su 2008) because it increases the firm’s options when responding to any change in their supply chain.

However, while multisourcing is a rapidly growing trend in practice, there are a number of pitfalls to this strategy; they stem from such issues as effort interdependence between parties, the formal incentive structure, and the alignment of metrics (in the contracts that govern these multisourcing relationships) with the client’s overall objectives. These issues make the management of such arrangements a challenging endeavor (Bapna et al. 2010). In contrast to single-sourcing environments—where the client encounters moral hazard issues with only one supplier—clients that multisource must coordinate (and properly incentivize) the actions of multiple vendors, many of whose tasks are performed across firm interfaces. And just as in the single-sourcing case, it may not be possible to write formal contracts based on project outcomes, which are often unverifiable. The client and vendors must therefore resort to incentive mechanisms based on objectively measurable metrics such as predefined service level agreements (SLAs).

In this paper, we develop a model of outsourcing the development of an information services project to either one vendor (single sourcing) or two vendors (multisourcing); both the client and the vendor(s) exert costly effort in the joint development process. The problem is modeled as a simultaneous-move game in the principal–agent framework, where the client is the principal. The success of such outsourcing partnerships requires optimal efforts by both client and vendor(s). Yet the endeavor is complicated by agency issues due to the decentralized decision making of self-interested firms. In the IT domain, it is extremely costly to monitor and coordinate efforts made by the vendor(s) (Bapna et al. 2010). Hence the client does not usually invest in observing efforts and
focuses instead on designing contracts based on verifiable SLAs. When efforts are unobservable, the simultaneous-move game may be rendered inefficient by the free-rider problem (Bhattacharyya and Lafontaine 1995). Furthermore, and contrary to assumptions in the contracting literature (Bhattacharyya and Lafontaine 1995), the outcomes of an IT development project are frequently not verifiable and may not be aligned with the SLAs designed by the client (Bapna et al. 2010). Finally, owing to effort interdependence — neither the outcome nor the verifiable metric may be separable in the efforts of the client vis-a-vis the vendor(s). In this case, only the total verifiable project metric is observed and not the contributions from each party. That is why, given the agency issues endemic to such cases, the design of optimal contracts is critical for effective governance of joint development partnerships.

Our objective is to find whether the environments that are better suited to single-sourcing (SS) or multisourcing (MS) strategies can be demarcated from the perspective of the principal (client). Specifically, we ask: (i) What is the impact of effort interdependence on the effectiveness of single-sourcing versus multisourcing strategies? (ii) What are the respective impacts when the project outcome and the verifiable metric are misaligned? (iii) When is each strategy preferable to the other?

Our findings, summarized in Figure 1, are presented in terms of two factors: the alignment (or not) between the project outcome and the verifiable project metric; and the interdependence (or not) of client and vendor efforts—that is, whether or not the verifiable metric is dependent on the client effort. On the one hand, if the outcome and the verifiable metric are aligned then single sourcing Pareto-dominates multisourcing. That is, from the client’s perspective: (i) the single-sourcing strategy performs as well as multisourcing if the verifiable metric is independent of the client’s effort; and (ii) single sourcing performs better than multisourcing if the client and vendor efforts are interdependent (inseparable). This result is counterintuitive because, a priori, one would expect aligning the unverifiable project outcome and the verifiable project metric to have advantages for multisourcing as well (owing perhaps to reduced distortion of effort). Nonetheless, we show that such benefits are more strongly associated with the single-sourcing strategy.

On the other hand, if the project outcome and the verifiable metric are not aligned, then multisourcing may perform better than single sourcing. Under such misalignment and the resulting effort distortion, it follows (again from the client’s perspective) that: (i) multisourcing always performs better than single sourcing if the verifiable metric is independent of the client’s effort; and (ii) if the client and vendor efforts are interdependent, then we show that multisourcing (resp., single sourcing) performs better when the extent of misalignment, or effort distortion, is high (resp., low).
These results yield important managerial insights given that, a priori, one would not be able to predict the interaction effects of misalignment and effort interdependence.

Figure 1  Summary of Model Findings.

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<thead>
<tr>
<th>Verifiable metric aligned to project outcome</th>
<th>Verifiable metric not aligned to project outcome</th>
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<tbody>
<tr>
<td><strong>Client task independent of vendor(s)</strong></td>
<td></td>
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<tr>
<td>SS=MS</td>
<td>SS&lt;MS</td>
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<tr>
<td><strong>Client task interdependent on vendor(s)</strong></td>
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<td>SS&gt;MS</td>
<td>SS&gt;MS (low metric-outcome misalignment)</td>
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<td></td>
<td>SS&lt;MS (high metric-outcome misalignment)</td>
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References


