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# ON SELECTIVE IT SOURCING: CHOICES IN APPLICATION DEVELOPMENT

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## Abstract

*This paper deals with the sourcing of IT activities, i.e. the issue of whether IT activities are kept in-house or if they are performed by to external or possibly semi-external providers. It does so by applying the perspectives of outsourcing, vertical integration and make-or-buy decisions. The focus is on application acquisition aspects, i.e. how new applications are sourced, rather than operational issues such as e.g. operations of existing applications or help desk activities. The framework developed in the paper suggests code development, project management, and application control and responsibility as important dimensions that can either be outsourced or kept in-house. Furthermore, it is argued that the last dimension is often neglected in existing outsourcing literature.*

## Introduction

The concept of sourcing strategies is quite a wide area. It basically deals with the issue of how to carry out the activities necessary for the company in focus to deliver its business proposition to the market. In “The Nature of the Firm” Coase (1937) asked two quite innocent questions: Why are firms created at all? If it is such a good idea, why isn’t there one firm doing everything? Coase’s own answer to these questions is that increased efficiency can be achieved by organizing activities in firms but there are also increasing coordination costs as the organization (or firm) grows. The second presupposition is that a market does not come for free, i.e. there is a cost of using the price mechanism of the market place. The answer to the two basic questions then simply is that the “equilibrium firm size” is where any increased (decreased) efficiency by increasing (decreasing) the size of the firm is exactly balanced by increased (decreased) coordination costs and decreased (increased) price mechanism costs.

Williamson later developed these arguments into the transaction cost theory (Williamson, 1975). This theory is commonly used as an underlying theory for outsourcing discussions (e.g. Lacity and Hirschheim, 1993; Scarbrough, 1998; Jurison, 1995) and also for make-or-buy decision (e.g. Walker and Weber, 1984). There is a danger that theories are brought in uncritically from other disciplines without taking current debates around the theory in its original discipline into account (Willcocks and Lacity, 1998, p. 10). It has in fact been argued that this has happened frequently with transaction cost theory (cf. Lacity and Willcocks, 1996).

This paper addresses IT sourcing with special attention paid to application development projects. The purpose is to provide a framework to describe how different aspects of such projects can be managed using either company internal resources or resources external to the company. This paper addresses this basic question from three different perspectives, each drawing on different (albeit related) bodies of literature, namely outsourcing, vertical integration, and make-or-buy decisions. By doing so, the paper aims at presenting a framework for selective IT sourcing.

## Outsourcing

### *Some Definitions*

Outsourcing is not a new concept. In 1963 Electronic Data Systems took care of data processing services for other companies (Lacity and Hirschheim, 1993). Since Eastman Kodak’s decision in 1989 to outsource its IT activities, the drivers for outsourcing have primarily been, cost-effectiveness, avoiding building in-house skills, and access to special functional capabilities (McFarlan and Nolan, 1995). Being the first major company to outsource its IT department, and being successful at that, created quite an interest in outsourcing.

Since then the outsourcing industry has grown tremendously and does now encompass all types of IT services. McFarlan and Nolan (1995) suggest two factors that have affected this growth; “acceptance of strategic alliances” and “IT’s changing environment”. By the strategic alliance factor they mean that companies need long term relationship with other organizations that have complementary set of skills. The second factor means that the rapid IT development has made outsourcing a viable way of getting access to current skills and to cope with technology shifts. Production cost advantages offered by vendors do also remain a very important impetus for outsourcing (Ang and Straub, 1998).

To exactly define outsourcing is no trivial matter. Lacity and Hirschheim (1993, p. 2) defines it as “*the use of external agents to perform one or more organizational activities.*” Willcocks et al (1995, p. 59) actually start their paper with “*In this paper IT outsourcing means handing over the management of some or all of an organization’s information technology (IT), systems (IS) and related services to a third party*”. Willcocks and Lacity (1998, p. 3) talk of a working definition as “*the handing over to third party management of IT/IS assets, resources and/or activities for required result*” (note the inclusion of result in the definition). Grover et al (1998, p. 80) defines outsourcing as “*the organizational decision to turn over part or all of an organization’s IS functions to external service provider(s)*”. The framework developed in this paper aims at analyzing how different activities can be sourced thus enabling a more nuanced view on outsourcing than traditional definitions.

The directional aspect is very salient in the different definitions: some activity is performed within the organization and is then outsourced, or moved, to an outside party. Within the outsourcing strand of research the reversal of outsourcing is also discussed, albeit without the same coherence in vocabulary.

Lacity and Hirschheim (1995, p. 6) deal with the concept of *insourcing*, which they define as “*an outsourcing evaluation outcome which results in the selection of the internal IS department’s bid over external vendor bids.*” Insourcing in other words means that the activity *stays* within the organization, but only after having been compared to outside alternatives. Lacity and Willcocks (2001, p. 320) later introduce the concept of *backsourcing* in a discussion on future sourcing. Backsourcing “*involves taking back in-house what was previously outsourced*”, i.e. backsourcing is the reversal of outsourcing. Based on a survey performed 1999-2000 they found that almost one third of outsourcing contracts that were cancelled were brought in-house, i.e. *backsourced*.

### ***Deciding on What to Outsource***

A common adage concerning outsourcing is “Keep the core competences in-house and outsource the rest!” On one level it seems like a natural thing to do. A competence, or knowledge, perspective is also commonly applied to outsourcing issues, especially in studies focusing on the decision process of whether to outsource or not, and if so what to outsource. Scarbrough (1998) actually provides one approach of extending Williamson’s transaction cost theory with a knowledge perspective. Quinn and Hilmer (1994, p. 43) focus on core competencies, which should be kept in-house, and other activities, “*for which the firm has neither a critical strategic need nor special capabilities*”.

Lacity and Willcocks (2001, p. 186) argue against the adage “outsource commodity, keep strategic in-house”. First, what is a commodity and what is strategic is not self-evident. They claim that what may seem like a commodity, e.g. a payroll system, very well can be a strategic application for some companies. Secondly, if IT activities are not salient, top management may be led to believe that there are no strategic IT activities in the company. Scrutinizing the two arguments it is possible to make the counter-argument that the adage is still true but making the distinction is much harder than one might think.

By taking into account that the world is not black or white, Lacity et al (1996) introduce the concept of *selective sourcing* in their categorization of sourcing decisions.

- *Total outsourcing*: At least 80% of the IT budget is outsourced.
- *Total insourcing*: At least 80% of the IT budget is insourced (according to the definition above).
- *Selective outsourcing*: Some IT functions are outsourced and some are insourced but neither stands for 80% of the budget.
- *De facto insourcing*: Internal IT department is used without evaluating outsourcing alternatives.

Later also the concept of *transitional outsourcing* has been introduced, meaning “*the practice of temporarily outsourcing during a major transition to a new technology*” (Willcocks and Lacity, 1998, p. 22). This is however troublesome since companies are usually lacking the ability to negotiate sound contracts and also to evaluate the vendor’s performance (ibid.).

A different take on selectivity is presented by Lacity and Hirschheim (1993) who present three different types of outsourcing.

- *Body shop* means that short term demand is met by hiring contract programmers managed by company personnel.
- *Project management* is the outsourcing of a specific project or portion of work. The difference from the body shop is that the vendor is responsible for completing the work.

- *Total outsourcing* is used rather as a quantitative measure as it relates to cases where a *significant piece* of IS work is outsourced.

A common thread in most literature is the sound scepticism towards total outsourcing (see Willcocks and Lacity, 1998, pp. 24-25 for a list of renegotiated or terminated contracts). Instead the same authors find in general positive effects of selective and transitional outsourcing (Lacity and Willcocks, 2001, pp. 5-11) despite their earlier scepticism to companies' ability to negotiate good contracts for new and partially unknown technologies (see above). They find that most companies are successful with selective outsourcing strategies and that infrastructure and support activities are most often outsourced (and in general successfully so).

Body shop and project management differ in what is bought from the outside vendor; is it man hours or is it results? Willcocks and Lacity (1998) emphasize the purchasing focus, which can be on resources or result, coinciding closely with the body shop vs. project management distinction. They also look at purchasing style, which can be transaction or relationship oriented providing four external sourcing options. Buy-in means a transaction based acquisition of resources while preferred supplier mean a longer term relationship with an external provider of resources. The same transaction vs. long term relationship distinction can be made when buying results rather than resources giving the contract-out and preferred contractor alternatives.

Ang (1994) also subscribes to the notion of outsourcing meaning moving something across the boundaries of the organization. She does however distinguish between three different criteria for determining these boundaries: geographical, legal ownership, and control boundary. *Geographical* occurs when activity is performed away (spatially) from the organization. *Legal* occurs when the focal organization does not have legal ownership of physical assets used or employs the people involved. *Control* occurs when the focal organization relinquishes behavioral control

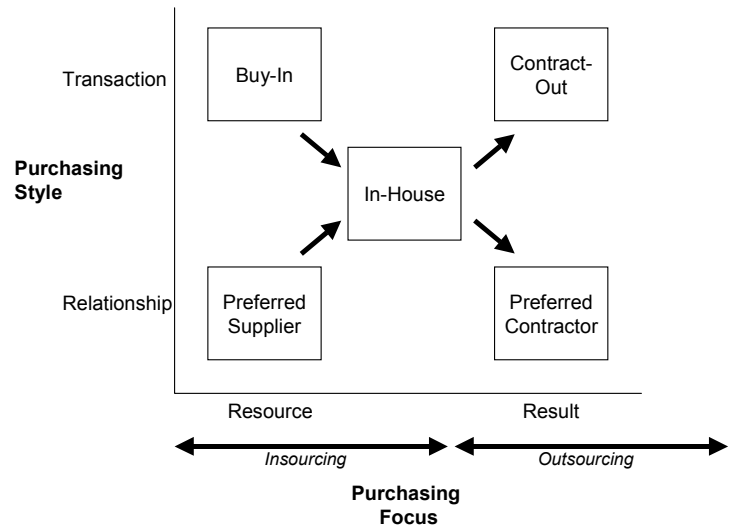


Figure 1. Sourcing Options (Willcocks and Lacity, 1998, p. 4)

## Vertical Integration: Variation on a Theme

The basic question of what should be done in-house and what should be contracted out has also been discussed from a vertical integration perspective for quite some time (for an extensive discussion on vertical integration see Porter, 1980, Chapter 14). Vertical integration is defined as “*the combination of technologically distinct production, distribution, selling, and/or other economic processes within the confines of a single firm*” (ibid, p. 300). Application development and IT operations are in this context considered activities contributing to the company’s ability to produce its market offering, if not part of the offering itself. The perspective in vertical integration discussions is usually the opposite compared to the outsourcing literature, i.e. the question is what activities currently being performed by others could be brought in-house? Of course some research include the possibility of vertical *deintegration*, as suggested by Williamson (1981).

Motives for vertical integration include cost reductions and increased control of the environment (Scherer, 1980, p. 78). The importance of both these motives is increased if there is no competitive market for the service or good (Anderson and Weitz, 1986). In fact the failure of a market is maybe the most important reason to integrate vertically (Stuckey and White, 1993). From an outsourcing perspective, a competitive market would make it more attractive to outsource an activity. Other potential benefits of integrating vertically include increased familiarity with technologies (Porter, 1980, p. 305).

There are drawbacks with vertical integration such as e.g. entry costs and reduced flexibility (cf. Porter, 1980, pp. 309-315). Actually Stuckey and White’s recommendation is “*Do not vertically integrate unless absolutely necessary*. This strategy is too expensive, risky, and difficult to reverse.” [emphasis in original] (1993, p. 76). They identify two reasons for what they consider to be “excessive integration” (ibid, p. 76). First, decisions are based on weak or even invalid reasons, such as e.g. reducing cyclicity and assuring market access. Second, managers fail to consider different forms of quasi integration, such as e.g. strategic alliances, long-term contracts.

## Make-or-Buy Decisions

Yet another approach to the basic question of what to do in-house and what to have others to do, is to focus on a specific acquisition, e.g. the development of a new application of some sort. This approach is very closely related to the vertical integration approach; in fact in many cases it is nothing but a rephrasing of the question of vertical integration as indicated by article titles such as “Make-or-Buy Decisions: Vertical Integration and Marketing Productivity” (Anderson and Weitz, 1986). The basic difference however is that the make-or-buy approach focuses on new efforts and is not overly concerned with the going concern. The issue of make or buy becomes interesting in software acquisition situations, partly because the production resource (mainly programmers) needed to “make” instead of “buy” is quite flexible.

After performing a literature review, Rands (1993) drew the conclusion that there was not much research on the topic of software make-or-buy. He identified two areas showing a distinct lack of research; models for determining software make or buy policies, and studies of the procedures managers use in approaching the decision. However, when Rands moved on to create a framework for managing software make or buy, drawing on Walker (1988), Rands (quite tacitly) shifts to a sourcing perspective. The key aspects are the skills of the company relative to others and the strategic importance of the application.

Company’s Skills Relative to Best External Source

		Low	Equal	High
Strategic Importance	Low	Buy	Make or buy	Tend to Make
	High	Strategic Alliances	Tend to Make	Make

**Figure 2. Different Strategies for IT Sourcing (Rands, 1993)**

Make or buy in his framework relates to whether “a firm should provide its own software development resources, or use external sources” (Rands, 1993, p. 279). External resources in this context mean that “suppliers may market specialized software packages for the area concerned [...] or undertake bespoke applications projects” (ibid, p. 280). It is important to note that no distinction is made between software packages and bespoke application projects as external resources, i.e. the focus is on the location of the resource rather than its type.

## Discussion

As has been shown above different strands of research ask the same fundamental question in different ways. The discussion in the literature on make-or-buy often focuses on where the resources belong. The buy (alt. outsourcing) scenario includes both buying a standard application package and choosing a tailor-made application but have it developed by an external vendor. Make-or-buy is in that sense comparable to internal-or-external. In an IT setting a more fundamental issue for the business activities of the company is whether the application should be bought as a standard application package or developed as a tailor-made application.

**Table 1. Summary of Different Research Perspectives**

Body of literature	Perspective	Question
Outsourcing	Move activities out of organization	Should we really be doing this? Isn't someone else better suited to do it?
Vertical integration	Integrate outside activities	Should we extend the boundaries of our organization to include more parts of the value chain?
Make-or-buy	Specific occasion or effort	Given that we have to acquire this [application, product etc], should we build ourselves or should we buy it from someone?

In the case where a tailor made solution is chosen, important issues regarding the sourcing of coding and project management arise. From a practical perspective the difference between outsourcing project management and development efforts are significant. Lacity and Hirschheim (1993) distinguish between body shop outsourcing and project management outsourcing. By extending Ang’s (1994) notion of the possible outsourcing of control from the original organizational aspect to the control of the application, a more extensive framework can be constructed. Important to bear in mind is that the control of an application is very tightly linked to the responsibility for that application. Another perspective on this issue would be application ownership or intellectual property rights. This leads up to the following framework distinguishing between four types of development solutions,

where the three first are variations on tailor made solutions. In practice the types are not likely to be as clear-cut as presented below since for example many projects use both in-house developers and external consultants.

**Table 2. Framework for Selective Sourcing**

Type of Solution	Code Development	Project Management	Control and Responsibility
In-house solution	In-house	In-house	In-house
Outside developers	External	In-house	In-house
Turn-key solution	External	External	In-house
Standard package	External	External	External

*In-house solution* means that everything is done in-house with no use of external resources. *Outside developers* means that the company make use of outside developers but retain the project management and responsibility for the project, i.e. resources and not results are acquired. *Turn-key solution* means that the company acquires a tailor made application from an external party which delivers a result (the application) rather than resources (e.g. man hours). *Standard package* means that the company buys a standard package from a software provider that retains the control and responsibility for the application.

The important distinction between rows three and four (turn-key solution and standard package) is that a company buying a turn-key solution from e.g. a major consultancy company still owns and controls the solution. For example they have the right to sell it to others or turn to others to maintain the application. In the standard package case the company buys a license for the package and controls its use of the application but not the application itself. Normally, the buyer in such relationships has no right to sell the application to a third party.

## Concluding Remarks

As has been discussed above, the proposed framework extends the traditional discussion on outsourcing and make-or-buy decisions by adding the control and responsibility aspect. This aspect makes the distinction between standard packages and turn-key solutions apparent and emphasizes the difference between the two alternatives.

The proposed framework can be applied in different situations such as, e.g., when planning traditional application development efforts. It can also be applied for analyzing situations more closely related to vertical integration such as, e.g., different strategies for spinning of software companies based on internally controlled applications. Hopefully, the framework will help structure discussions and thus possibly increase companies' ability to source their IT efforts selectively.

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