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Strategic Sourcing

*Theory and Evidence
from Economics and
Business Management*

Ellen M. Pint, Laura H. Baldwin

Project AIR FORCE

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Preface

This report describes a review of the economics and business management literatures on issues related to outsourcing. It discusses recommendations regarding the selection of activities for outsourcing and, given the decision to outsource, how to structure contracts and manage buyer/seller relationships. It should be of interest to managers and analysts concerned with support matters in the Air Force, especially those involved with outsourcing and privatization, and to support services managers and contracting officials in the other military departments and in the Office of the Secretary of Defense.

This work represents one of several tasks in the "Improving Readiness Through Increased Access to Private Sources of Support" project, which is part of the Resource Management and System Acquisition Program of RAND's Project AIR FORCE. It was sponsored by the Deputy Chief of Staff for Logistics of the U.S. Air Force.

Project AIR FORCE

Project AIR FORCE, a division of RAND, is the Air Force federally funded research and development center (FFRDC) for studies and analyses. It provides the Air Force with independent analysis of policy alternatives affecting the development, employment, combat readiness, and support of current and future aerospace forces. Research is performed in three programs: Strategy and Doctrine, Force Modernization and Employment, and Resource Management and System Acquisition.

Please direct any questions about or reactions to the work presented here to Ellen Pint at (310) 393-0411, extension 7529, or pint@rand.org. For more information on outsourcing analysis in Project AIR FORCE, please contact the project leader, Dr. Frank Camm, at (202) 296-5000, extension 5261, or camm@rand.org.

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specificity is involved, it seems prudent that the Air Force should focus its outsourcing efforts on activities that neither are core competencies nor involve high degrees of asset specificity. However, the business management literature suggests that the Air Force could outsource activities involving asset specificity, such as the provision of complex services, if it develops longer-term partnerships with these suppliers rather than treating them as arm's-length vendors. Acquisition reform is encouraging greater use of information on contractor past performance in source selection, which could be extended to outsourcing efforts for complex support services. By rewarding good performers with future business, the use of past performance information could help develop longer-term relationships and encourage transaction-specific investments.

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We would like to thank our project leader, Frank Camm, and project members Mary Chenoweth, Armand Grassi, Christopher Hanks, Edward Keating, Nancy Moore, and Kenneth Reynolds for helpful comments and advice. David Finegold of the Center for Effective Organizations at the University of Southern California provided a thoughtful review that helped us improve this report. William Kovacic (George Mason University School of Law), François Melese (Naval Postgraduate School), Walter Hosey (SAF/FMCE), and Simon Webb (Minister for Defense Materiel, British Embassy) also provided useful comments. In addition, we thank conference participants from the Western Economic Association, RAND, and the Center for Naval Analyses for their comments and suggestions.

Abbreviations and Acronyms

AFMC	Air Force Materiel Command
CAD/CAM	Computer-Aided Design/Computer-Aided Manufacture
CNC	Computer Numerically Controlled
CPARS	Contractor Performance Assessment Report System
EMD	Engineering and Manufacturing Development
FAR	Federal Acquisition Regulations
GM	General Motors
GOCO	Government-Owned, Contractor-Operated
JACG	Joint Aeronautical Commander's Group
JIT	Just in Time
LH	Code Name for the Chrysler Concord, Eagle Vision, and Dodge Intrepid
NUMMI	New United Motor Manufacturing Inc.
PRAG	Performance Risk Analysis Group
QA	Quality Assurance
RFP	Request for Proposals
SCORE	Supplier Cost Reduction Effort
TCE	Transaction Cost Economics
TQC	Total Quality Control

1. Introduction

A large rectangular box with a thin black border and a shaded right edge. Inside the box, the title is centered in bold black text. At the bottom right of the box, there is a small number '1' followed by the word 'RAND' in bold black text.

Strategic Sourcing: Theory and Evidence from Economics and Business Management

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Strategic Sourcing: Theory and Evidence from Economics and Business Management

To assist the Air Force in developing a strategic sourcing policy, we have examined the economics and business management literatures to find theories and evidence regarding the “insourcing vs. outsourcing” or “make vs. buy” decision; and, given the decision to outsource, how best to conduct source selection, contracting, and post-contract management. This report, originally prepared as a briefing, synthesizes the results of our literature review and discusses implications for Air Force outsourcing policy.

Outline

- **Transaction Cost Economics (TCE)**
- **Evidence regarding transaction cost theory**
- **The business management approach to outsourcing**
- **Evidence from the business management literature**
- **Implications for the Air Force**

Outline

First, we will discuss the paradigm of Transaction Cost Economics (TCE), which suggests that transactions between providers and users of goods or services should be organized to maximize value net of production and transaction costs. Second, we describe the statistical evidence relating the characteristics of transactions to the most efficient forms of organization. In general, this evidence is consistent with the predictions of transaction cost theory. Third, we present the recommendations of the business management literature, which focuses on the process of outsourcing, including identifying activities to outsource, source selection, contract design, and post-contract management. Fourth, we discuss evidence from the business management literature on vertical integration, strategic alliances, and buyer/supplier relationships. Finally, we summarize the implications of the economics and business management literatures for the Air Force's outsourcing policy.

2. Transaction Cost Economics

Transactions Can Be Internal or External to an Organization

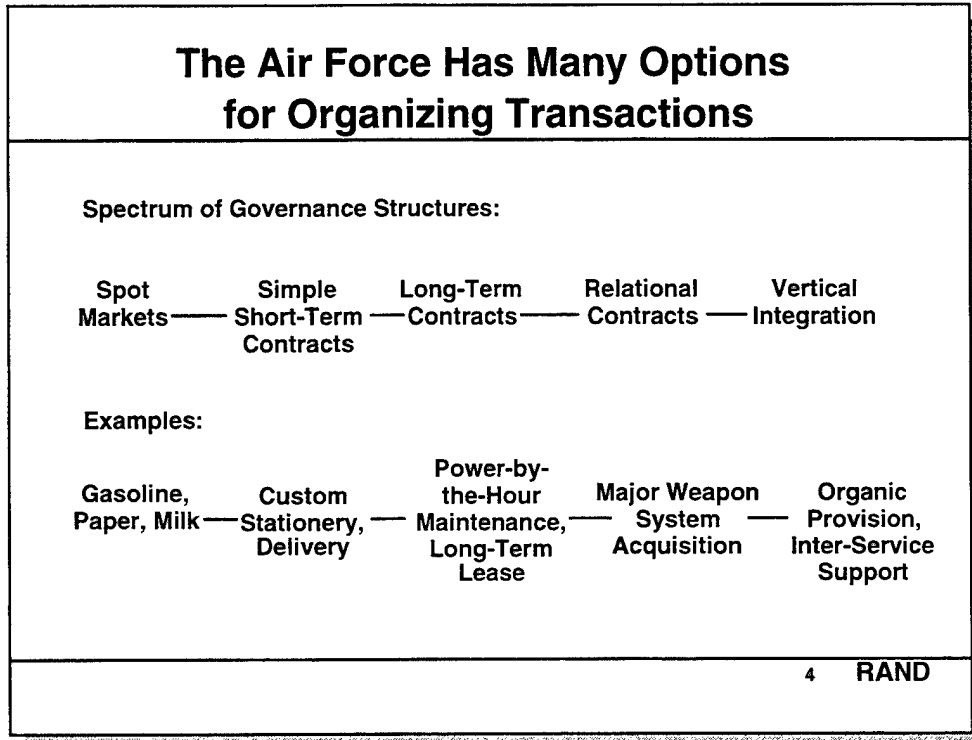
- **Transactions occur whenever a good or service is transferred from a provider to a user**
- **Transaction costs depend on how the transaction is organized, i.e., the governance structure**
 - **Within an organization, costs include managing and monitoring personnel and procuring inputs**
 - **When buying from an external provider, costs can include source selection, contract management, and performance monitoring**

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Transactions Can Be Internal or External to an Organization

Transaction Cost Economics focuses on the organization of transactions that occur whenever a good or service is transferred from a provider to a user across a technologically separable interface. When transactions occur within an organization, the transaction costs can include managing and monitoring personnel and procuring inputs and capital equipment. The transaction costs of buying the same good or service from an external provider can include the costs of source selection, contract management, performance measurement, and dispute resolution. Thus, the organization of transactions, or “governance structure,” affects transaction costs.¹

¹This discussion of transaction cost theory is based on Williamson [1989].



The Air Force Has Many Options for Organizing Transactions

Transactions can be organized under a spectrum of governance structures ranging from pure, anonymous spot markets—where the good or service is generic and identities of buyers and sellers are immaterial to the transaction—to fully integrated firms or organizations, where both the trading parties are under unified ownership and control, and the transaction can be modified by managerial fiat. Between the two poles of spot markets and vertical integration are contracts of increasing duration and complexity, which can include shared ownership of assets. Simple, short-term contracts involve customization that requires an exchange of information and terms of payment. For more complex customization, longer-term contracts may be required, including adjustment clauses to respond to contingencies over the life of the contract. When the goods or services cannot be well defined in advance, relational contracts may be used. These contracts focus on the terms of the relationship rather than the scope of work, which may be renegotiated as needed.

The Air Force and the Department of Defense (DoD) currently use a similar range of governance structures to organize transactions. At one end of the

spectrum are simple procurements of commodities such as office supplies, food, and fuel. Short-term contracts might be used for customized stationery or local delivery, and longer-term contracts for Federal Express service, power-by-the-hour maintenance, or leases. The arrangements through which major weapons systems are acquired under the Federal Acquisition Regulations (FAR) might be described as relational contracts.² Moving across the spectrum can involve contracts of increasing flexibility on price and performance, including government ownership of equipment and/or facilities. At the other end of the spectrum is organic provision of goods and services, such as depot maintenance and supply management at Air Logistics Centers or inter-service support agreements.

Within this context, outsourcing represents a move away from vertical integration (or organic provision) to one of the contracting options. As we discuss below, the optimal governance structure for a particular good or service, or how far one should move to the left of the spectrum, depends on the characteristics of the transactions involved.

²Under a power-by-the-hour maintenance contract, the buyer pays for support services based on hours of flight time, and the supplier is free to determine how to support the aircraft by positioning stocks of spare parts and maintenance personnel. The desired output can be fairly well defined in terms of aircraft availability. However, major weapon system acquisitions often cannot be well defined in terms of the performance of the aircraft being developed, particularly when new technologies are involved. Thus, the contract must cover a broader range of uncertainties.

Characteristics of Transactions Can Affect Transaction Costs

- **Investments in transaction-specific assets improve the efficiency of some transactions**
 - Site specificity
 - Specialized equipment or tooling
 - Specific skills or knowledge
 - Dedicated capacity
 - Brand name or reputation
- **If parties behave opportunistically, they can capture the value of investments made by others**
- **Bounded rationality limits the ability of both managers and contracts to control incentives**

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Characteristics of Transactions Can Affect Transaction Costs

Some goods and services can be produced more efficiently³ if one of the parties invests in “transaction-specific” assets that cannot easily be put to other uses if the buyer/seller relationship breaks down. Asset specificity can take a variety of forms, including:

- *site or location specificity*—a buyer or seller locates its facilities next to the other to economize on inventories or transportation costs;
- *physical asset specificity*—investments are made in specialized equipment or tooling designed for a particular customer;
- *human capital specificity*—one or both of the parties develop skills or knowledge specific to the buyer-seller relationship;

³As used here, production is defined to be efficient if it maximizes the value of items produced net of the full costs of production and transactions associated with these items.

- *dedicated capacity*—capacity is created to serve a customer who is large relative to market size, so that it would be difficult to find alternative customers; and
- *brand name capital*—the parties must maintain the reputation of a shared brand name; for example, in franchise relationships the reputation of the franchise depends on the behavior of the individual franchisees.

Since the value of the transaction-specific assets depends on the continued existence of the buyer/seller relationship, the party that has not invested may expropriate some of the value of the investment by threatening to walk away from the relationship. If the investor cannot be assured of realizing the full value of the transaction-specific investment, efficient investments that reduce the cost of production may not be made, resulting in higher costs to both parties.

Bounded rationality may also interfere with the efficient operation of transactions. Because of limited managerial time and span of control, organizations cannot effectively manage an unlimited number of transactions internally. In addition, bounded rationality limits the capability of markets and simple contracts to handle asset specificity, because the parties cannot foresee and contract for all possible contingencies.

Each Governance Structure Has Strengths and Weaknesses		
Governance Structure	Strengths	Weaknesses
Markets	Strong incentives to maximize net value	Can't protect transaction-specific investments
Contracts	Some protection for investments; market-like incentives	Can't contract for all possible contingencies
Vertical Integration	Internalizes value of transaction-specific investments	Can't control costs as well as markets

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Each Governance Structure Has Strengths and Weaknesses

For many types of transactions, markets are the preferred governance structure because they provide "high-powered incentives." That is, the supplier reaps the full benefits or bears the full costs of its own activities, and thus has a strong incentive to maximize value net of production costs, and to respond quickly to changes in the market prices of inputs or outputs. However, Transaction Cost Economics argues that markets have difficulty dealing with some transactions because of asset specificity, bounded rationality, and opportunistic behavior by the parties to the transaction. Since buyers and sellers can easily walk away from pure, spot-market transactions, they offer no protection against opportunism when transaction-specific assets are involved.

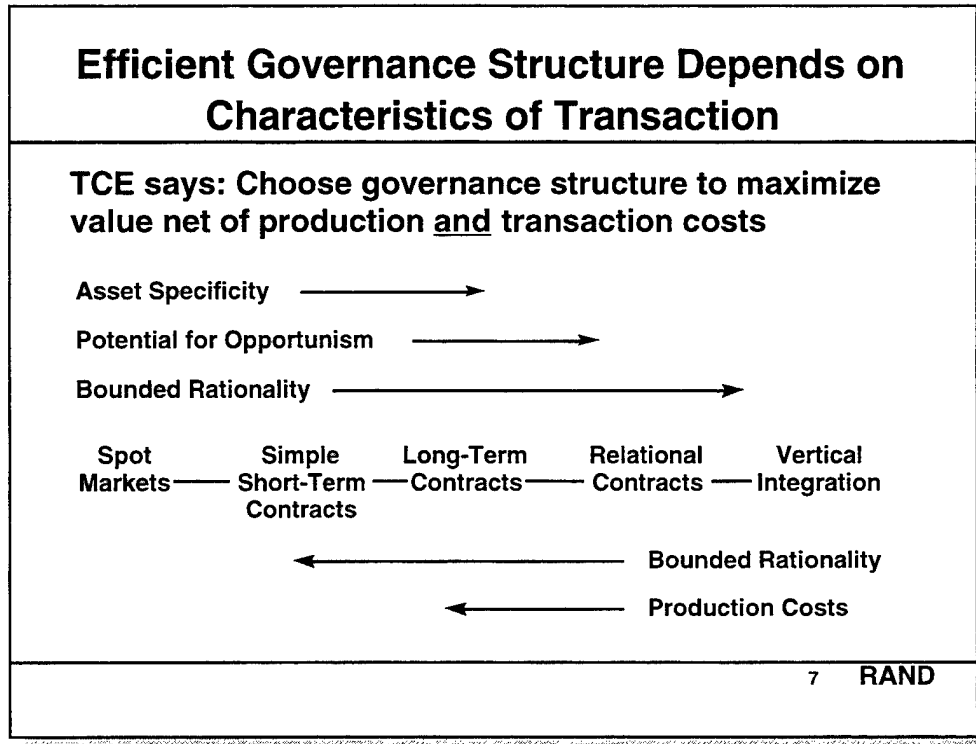
Contracts offer some protection for transaction-specific assets by tying the buyer and seller together for a specified period. However, bounded rationality precludes comprehensive ex ante contracting that specifies how the parties will behave in all possible circumstances. If contracts are inherently incomplete, parties may perceive potential gains from opportunistic behavior. As a result, attention must be focused on more complex (or internalized) governance

mechanisms to fill gaps in the contract, settle disputes, and adapt to new conditions. Contracting parties may also make ex ante efforts to screen counterparties in terms of reliability or reputation, and/or design ex post safeguards to protect transaction-specific investments.

When asset specificity, bounded rationality, and opportunism make contracting problems severe, vertical integration may be needed to ensure that the value of transaction-specific assets is internalized. It can also allow for flexible redeployment of assets and personnel when the conditions surrounding the transaction change. However, bounded rationality limits the span of effective managerial control. Lower-level managers and employees may engage in suboptimizing behavior, or they may have insufficient incentives to minimize production costs.

If it is feasible to have more than one source of supply, organizations can mitigate some of the negative effects of markets and vertical integration by maintaining both internal and external providers. Outsourcing part of the workload to an external provider or allowing internal customers the option to buy externally can create incentives for the internal provider to control costs and improve performance by exposing it to market pressures. Conversely, retaining some capability to produce in-house can allow organizations to maintain management competencies needed to make more effective sourcing decisions; retain some leverage over the external provider, particularly when there are only a few potential suppliers; and maintain surge capacity.⁴

⁴For example, Mohrman, Lawler, and McMahan [1996] cite many examples of combined internal and external sourcing of support services such as human resource management and information technology.



Efficient Governance Structure Depends on Characteristics of Transaction

Because markets provide stronger incentives to maximize value net of production costs, whereas vertical integration may be a more cost-effective governance structure for transactions involving asset specificity, the central recommendation of TCE is that the governance structure for a particular transaction should be chosen to maximize value net of both production and governance costs. Thus, in making outsourcing decisions, it is important to consider not only the internal and external costs of providing the good or service, but also the cost of managing the transaction internally and externally.

To summarize the predictions of TCE, market governance of transactions may impede efficient investment in transaction-specific assets because of the potential for opportunistic behavior. Contracts can protect transaction-specific investments to some extent, but bounded rationality prevents contracts from specifying all possible contingencies. As contracts become more flexible, they allow more potential for opportunism. Thus, asset specificity, combined with the potential for opportunism and bounded rationality, tends to move the efficient governance structure to the right on the spectrum. However, bounded

rationality also places a limit on the number of activities that can be controlled within a single organization, so firms should only internalize transactions that they can govern more effectively than through markets or contracts. Thus, the arrows in the diagram indicate that bounded rationality tends to preclude organizations based entirely on markets or on vertical integration. In addition, production costs are likely to be lower as one moves toward the market end of the spectrum because of market incentives to maximize value net of costs and because of the potential for greater economies of scale with an external provider that serves multiple customers. As we discuss in greater detail below, the business management literature indicates that external suppliers can also provide other benefits, such as improved performance because of greater specialization in their area of expertise.

3. Empirical Evidence on Transaction Cost Theory

Outline	
<ul style="list-style-type: none">• Transaction Cost Economics (TCE)• Evidence regarding transaction cost theory• The business management approach to outsourcing• Evidence from the business management literature• Implications for the Air Force	
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Outline

Next, we describe statistical tests of the predictions made by transaction cost theory regarding the relationship between governance structures and the characteristics of transactions. The empirical evidence related to outsourcing includes analysis of the "make vs. buy" decision, contract design, temporal specificity, and reputation effects. In general, the evidence is consistent with the predictions of transaction cost theory.

Empirical Evidence Is Consistent with the Predictions of TCE

- **Statistical tests of TCE relate governance structures to characteristics of transactions**
 - **Asset specificity, uncertainty, complexity**
- **Based on “survivor analysis”**
 - **Inefficient governance structures are weeded out by competitive pressures**
 - **Remaining structures should be efficient**
- **Since the Air Force doesn’t face the same kind of competitive pressure, it can learn from the experience of private firms**

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Empirical Evidence Is Consistent with the Predictions of TCE

The empirical literature on TCE tests the proposition that the efficient governance structure is a function of the properties of the transaction in question, such as asset specificity, uncertainty, complexity, and frequency. The governance structure can be a binary decision variable, such as “make” or “buy,” or a continuous variable, such as contract duration. The characteristics of the transactions are difficult to measure, and are often based on surveys or interviews of industry managers. For example, measures of asset specificity include engineering or research and development (R&D) expenditure on components (as measures of physical specificity), worker-specific knowledge, physical proximity of contracting firms, and contract quantities (as a proxy for dedicated assets).

Statistical tests of TCE are based on “survivor analysis,” i.e., the proposition that inefficient governance structures will be weeded out over time by competitive pressure. Organizations that choose the wrong governance structures for transactions will have higher costs for a given level of output than organizations that choose efficient governance structures, and will eventually be driven out of

the market. Managers can learn from the success or failure of other organizations and adapt governance structures accordingly. Therefore, the active governance structures observed by researchers should be efficient, assuming that the economy is close to a steady-state equilibrium.¹

Government entities (such as the Air Force) do not face the same types of competitive pressures that private industry does, although recent budget pressures may serve as a substitute to some extent. This lack of competitive pressure suggests that the Air Force may have chosen non-optimal governance structures for some transactions, and could learn from the experience of the private sector. For example, if the Air Force uses organic provision when contractor provision could increase the value of performance net of total production and governance costs, then outsourcing could correct some of these problems.

¹As we discuss in greater detail in Section 5 below, the empirical business management literature suggests that survivor analysis may not always reveal the most efficient industry structure. In particular, the vertical integration decisions of the U.S. automobile industry analyzed by Monteverde and Teece [1982a] and [1982b] and Masten, Meehan, and Snyder [1989] may have been a local optimum, but they were not a global optimum in comparison with the integration decisions made by the Japanese automobile industry. Even within the U.S. automobile industry, there is a great deal of variation in the degree of vertical integration, which in 1980 ranged from 30-35 percent of value added at Chrysler to 50 percent at Ford and 60-70 percent at General Motors. See Helper [1991b].

Asset Specificity Makes Outsourcing More Difficult

- **Vertical integration may be more efficient when transactions involve**
 - **Asset specificity**
 - **Uncertainty**
 - **Thin markets**

- **Outsourcing can still be feasible if buyer owns transaction-specific assets**
 - **Government ownership of facilities and tooling can reduce potential for opportunism**

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Asset Specificity Makes Outsourcing More Difficult

Statistical tests of the “make vs. buy” decision find that vertical integration is positively associated with site specificity (particularly when transportation costs are high), physical asset specificity, and human capital or “know-how” specific to the transaction. Uncertainty about demand does not increase integration by itself, but has an interactive effect with transaction-specific assets and with thin markets (small numbers of buyers and/or sellers). However, outsourcing may still be feasible if ownership of transaction-specific assets by the buyer can mitigate the potential for opportunism.

One group of empirical results in this area is based on mine/refinery (or electricity generator) relationships, where the need to tailor the plant to the quality of the ore and high transportation costs create asset specificity. For example, Joskow [1985] found that mine-mouth electricity generators were six times more likely to own the associated coal mine than non-mine-mouth plants. Aluminum refiners typically own their own bauxite mines because of high transportation costs and the specificity of refineries to ores, but tin refining is less likely to be vertically integrated because of lower transportation costs and the

ability of refineries to handle ores from different mines. (See Stuckey [1983] and Hennart [1988].)

Vertical integration decisions have also been studied extensively in the automobile industry. Klein, Crawford, and Alchian [1978] and Klein [1988] discuss General Motors' (GM's) 1926 decision to acquire Fisher Body. Factors that influenced the integration decision included the need for transaction-specific investments in stamping presses and dies after the transition from wooden bodies to closed metal bodies, friction over the price of sales exceeding the quantities covered in the contract, and the refusal of Fisher to locate its facilities closer to GM.

Monteverde and Teece [1982a] collected data on internal and external procurement of automobile components by GM and Ford. They found that component production was more likely to be vertically integrated if the component required a greater amount of design engineering, which served as a proxy for human capital specificity. Masten, Meehan, and Snyder [1989], using an independent sample of 118 automobile components procured by the Big Three, looked at the importance of physical-asset and site specificity in addition to engineering intensity. Although they found that engineering intensity was a significant determinant of vertical integration, physical and site specificity were not. The authors argued that buyer ownership of transaction-specific physical assets may be sufficient to reduce opportunism, whereas human capital assets are more difficult to monitor outside the firm.

This argument has been demonstrated by Monteverde and Teece [1982b], who found that automobile manufacturers were more likely to retain title to tooling used by suppliers the more specialized and expensive it was. Similar evidence was found in rail freight contracting (see Palay [1984]), where shippers rather than carriers owned more-specialized rail cars and internal racks to secure specific parts. Masten [1984] also found that the government retained title to specialized tooling and test equipment in the aerospace industry except in a few cases that involved proprietary technology or equipment with a high alternative-use value or short useful life.

Contracts Can Be Tailored to Fit the Characteristics of Transactions

- **Increasing contract length reduces potential for opportunism, but limits adjustments to changing circumstances**
 - **Contract length increases with asset specificity, but decreases with uncertainty**
- **Other contract provisions can be used to manage opportunism and uncertainty**
 - **Minimum purchase requirements**
 - **Price adjustment provisions**
 - **Opportunities for renegotiation**

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Contracts Can Be Tailored to Fit the Characteristics of Transactions

To induce the contracting parties to make transaction-specific investments, the buyer/seller relationship must last long enough to realize a positive return on the investment. The ability to engage in opportunistic behavior can be reduced by long-term contracts that limit the parties' ability to renegotiate. As expected, the empirical literature on contract duration finds that contract length increases with greater site specificity, physical asset specificity, and the value of dedicated assets. However, if circumstances are changing rapidly, long-term contracts that reduce opportunities for renegotiation may lock the parties into an agreement that is no longer appropriate. Thus, these studies also find that contract length decreases with greater uncertainty, because of the increased need to adapt to changing conditions.

Joskow [1987] examined the relationship between contract duration and asset specificity using evidence from long-term contracts between U.S. coal mines and electric utilities. He found that coal contracts in the West, where coal is of variable quality and mines are large and geographically dispersed, are 11 years longer on average than in the East, where a large number of small mines produce

coal of relatively uniform quality. Contracts with mine-mouth plants are 12 years longer on average, and contract length increases by 13 years for each additional million tons of coal contracted for delivery (which reflects the size of the investment in transaction-specific assets).²

Crocker and Masten [1988] addressed the effects of uncertainty on contract duration using data on long-term natural gas contracts. They found that price regulation of natural gas reduced the ability of the contracting parties to adapt long-term contracts to reflect changing circumstances, and reduced contract length by an average of 14 years. Uncertainty caused by the 1973 Arab oil embargo further reduced contract length by three years.

Other contract features include "take-or-pay" provisions or other penalties for refusing to buy, to protect the seller's investment. For example, Goldberg and Erickson [1987] examined long-term contracts between petroleum coke refiners and their customers. Because of high storage costs, a buyer's failure to take delivery can disrupt operations at the refinery and impose costs on the seller. Furthermore, high transportation costs encourage customers to locate near suppliers and limit the possibility for sales to alternative customers. As a result, contracts tend to be long-term, with minimum purchase requirements and substantial financial penalties for non-removal by buyers. Many contracts also provided for price flexibility by using indices tied to the price of crude oil or allowing negotiation within minimum and maximum prices.

Masten and Crocker [1985] interpret take-or-pay provisions (requiring minimum payments even if delivery is not accepted) in natural gas contracts as damages for breach of contract by the buyer. Breach of contract is efficient if the buyer gains more than the seller loses, which will be the case if the minimum payment compensates the seller for the difference between the contract price and its next-best sale opportunity. The authors found that the size of take-or-pay requirements were negatively correlated with the number of pipelines serving the field (reflecting alternative sales opportunities), and positively correlated with the number of sellers in the field (which reduces the value of retaining gas in the ground for future sales, since the sellers are drawing on a common pool of gas).

Price adjustment provisions can facilitate the use of long-term contracts by mitigating the effects of price uncertainty. Although fixed-price contracts are

²The sample of 205 contracts accounted for more than 30 percent of contract coal deliveries in 1979. Contracts ranged in length from one to 50 years. Approximately 17 percent of contracts covered 5 years or less, 12 percent covered 6-10 years, 37 percent covered 11-20 years, 17 percent covered 21-30 years, and 17 percent covered more than 30 years.

easier to administer and are associated with better pre-contract information and less opportunism, Goldberg [1985] argued that they can result in an excessive pre-contract search for information about future prices and costs, and in poor performance and post-agreement jockeying to force a renegotiation if they are used in circumstances where prices are uncertain. There are also trade-offs involved with the choice of price adjustment mechanisms, which can be based on market price indices or allow for some degree of renegotiation. Less formulaic price adjustment mechanisms are more flexible, but they also allow for greater opportunism during renegotiation.

Joskow [1988] and [1990] examined how well price adjustment mechanisms related to production costs in long-term coal contracts reflect market prices over time. He found that these mechanisms worked well in the 1970s, but diverged from the 1980s market price of coal, which fell while production costs continued to rise. However, relatively few of these contracts were renegotiated, possibly because of threat of legal sanctions. There may also have been less competitive pressure for regulated or local-government-owned electric utilities to minimize costs.

However, in many cases, there is no relevant market price or index that can serve as a guideline for price adjustment mechanisms. Crocker and Masten's [1991] study of natural gas contracts found a trade-off between very precise agreements that constrain opportunism and loose agreements that permit adjustment to changing economic circumstances. More-flexible price renegotiation was associated with longer contract duration and greater price uncertainty, as well as larger minimum payment provisions. This suggests that quantity guarantees are a substitute for stricter price adjustment mechanisms.

There is also evidence that the Air Force has tailored price adjustment mechanisms to reflect transaction costs. Crocker and Reynolds [1993] analyzed jet engine contracts for the F-15 and F-16 with Pratt and Whitney and General Electric over the period from 1970 to 1991. Price adjustment mechanisms varied from firm fixed price (no adjustment) through formulaic adjustment mechanisms to incentive contracts allowing relatively open-ended renegotiation. They found that more-open-ended contracts were associated with greater uncertainty about costs or technology, longer contract duration, and lower potential for contractor opportunism (as measured by the contractor's litigation history and the presence of alternative suppliers). The authors concluded that the degree of contract completeness is an optimizing decision by the parties that reflects a trade-off between ex ante contract design costs and ex post potential for opportunism.

Timing and Reputation Can Influence Outsourcing Decisions

- **If timing is crucial, vertical integration may allow more flexible and responsive scheduling**
 - **Temporal specificity may be an issue in meeting surge requirements**

- **Reputation effects are important for both buyers and sellers**
 - **Using reputation in source selection can reduce opportunism by sellers**
 - **Opportunism by buyers can drive potential sellers away**

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Timing and Reputation Can Influence Outsourcing Decisions

Even when asset specificity is not a strong factor, the importance of timing in deliveries or in the use of assets can be associated with more integrated governance structures. Thus, temporal specificity may be an important issue for Air Force activities that have a role in meeting surge requirements. For example, Masten, Meehan, and Snyder's [1991] study of subcontracting practices in naval construction found that the probability of integration increased with the importance of scheduling the component in construction. This occurs because interruptions at an early stage in the construction process can disrupt all subsequent operations, giving subcontractors an incentive to delay in order to elicit price concessions.

Pirrong [1994] found that in ocean shipping, spot markets, medium- and long-term contracts and vertical integration are all used, depending upon the difficulty of arranging alternative shipping services for the commodity at short notice. The duration of shipping contracts and the incidence of vertical integration were positively correlated with the thinness of the market and the need for specialized ships in bulk shipping markets for 14 different commodities.

In some circumstances, the reputation of buyers and sellers can be an enforcement mechanism for informal, or not legally enforceable, agreements. Short-term gains from opportunism can be offset by long-term losses from a damaged reputation in the industry community if other buyers and sellers then refuse to deal with a party who has a reputation for breaking agreements. Reputation effects can be important for both buyers and sellers in cases where either has the potential to engage in opportunistic behavior. In particular, government entities must commit not to expropriate assets from contractors or regulated firms, to get them to invest in transaction-specific assets.

For example, Wilson's [1980] study of the New England fresh fish market and Acheson's [1985] study of the Maine lobster market found that reputation in the local market is an important enforcement mechanism to support long-term, informal relationships. Given a price for a catch, buyers or sellers could act opportunistically by sorting out high-quality or low-quality fish. To ensure quality, the parties would incur monitoring costs that would lower the total value of the relationship to both parties. Reputation-based agreements avoided these additional costs, and were supported by interdependencies arising from the sharing of scarce resources, such as market information, fuel, and bait.

Grandy [1989] studied the effect of opportunistic behavior by 19th century railroad regulators in New Jersey. He found that railroads were willing to make large, specialized investments only when they were protected by "special corporation charters" that limited state actions against them. Levy and Spiller's [1994] international comparison of telecommunications regulation showed that private investment is forthcoming only when regulators can commit not to pursue arbitrary administrative actions that expropriate the value of assets. In either case, if regulators were not able to commit not to set arbitrarily low prices, regulated firms were unwilling to make infrastructure investments because they might not be able to recover the value of their investments.

Thus, on the whole the results of the empirical literature on transaction cost economics are consistent with the theoretical predictions. Higher degrees of asset specificity are associated with greater vertical integration, longer-term contracts, and other contract clauses that help adjust to changing circumstances and protect transaction-specific assets. New insights, such as the importance of temporal specificity and the reputations of buyers and sellers, also emerge from the empirical literature.

4. The Business Management Literature

Outline
<ul style="list-style-type: none">• Transaction Cost Economics (TCE)• Evidence regarding transaction cost theory• The business management approach to outsourcing• Evidence from the business management literature• Implications for the Air Force
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Outline

Next, we examine the business management literature's approach to outsourcing. In contrast to the transaction cost literature, the business management literature makes a presumption that outsourcing should be preferred to vertical integration except for activities that are core competencies, and focuses on how to determine which activities should be outsourced, make source selection decisions, structure the buyer/supplier relationship, and monitor supplier performance. Its conclusions tend to be based on anecdotal evidence (such as descriptive case studies of outsourcing activities at specific firms) and informal surveys rather than rigorous statistical methods. However, the literature seems to make a consistent set of recommendations regarding the choice of activities to outsource and how to select and manage outside providers.

Identify the Organization's Core Competencies

- **Organizations have limited financial resources and managerial time to invest in activities**
- **Need to identify "core competencies" and focus resources on achieving world-class performance**
 - **Two or three activities that are most critical to the organization's future success**
 - **Organizational skills and knowledge that are difficult to duplicate and create unique sources of value**
- **Gain expertise from other organizations in areas that are not core competencies**

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Identify the Organization's Core Competencies

In the 1990s, the business management literature began to emphasize that a single organization has limited senior managerial time and financial resources to invest in maintaining world-class competitive status. Prahalad and Hamel [1990] developed the concept of "core competence," which has been widely adopted in the literature as the recommended strategic focus for organizations. They describe core competencies as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies." Excellence in a few core competencies is the source of the organization's competitive advantage. Examples include Sony's competence in miniaturization, 3M's competence in adhesives, and Black & Decker's competence in small electric motors. Some suppliers assume responsibility for the buyer's inventory as one of their core competencies. Suppliers may manage the buyer's inventory of items purchased from their companies, or take over the management of the buyer's internal flow of materials and assembly-line supplies from multiple suppliers. (See Sheridan [1997a] and Lima [1997].)

Core competencies should be limited to the two or three activities most critical to the organization's future success, activities in which it must maintain absolute

preeminence. They should be narrowly defined at a high organizational level, so that sub-units of the organization do not define their own activities as core competencies when they should be considered for outsourcing. Additional activities may be retained internally to keep existing or potential competitors from learning, taking over, eroding, or bypassing the organization's core competencies. By focusing resources in a small number of activities, the organization's preeminence in selected fields becomes increasingly difficult for competitors to overtake.

Quinn and Hilmer [1994] note several characteristics of core competencies:

- Sets of skills or knowledge that cut across traditional functions and allow the organization to consistently perform an activity better than its competitors, such as product or service design, technology creation, customer service, or logistics;
- Flexible, long-term platforms (rather than specific products) that are capable of adaptation or evolution to meet customers' needs over time;
- Unique sources of value that are difficult to duplicate and in which investments in intellectual resources will have the highest payoff;
- Activities in which the organization is a market leader and can focus its managerial and financial resources to maintain leadership;
- Elements that relate directly to understanding and serving customers, which the organization can provide at lower cost or more effectively; and
- Activities that are embedded in the organization's values, structures, and management systems—not dependent on a few talented individuals.

Because senior managers may not be able to devote as much attention to non-core activities, internal service and support activities often act as monopolies, with little incentive to improve their productivity or achieve world-class performance standards. (See Blumberg and Blumberg [1994].) This creates a presumption in favor of outsourcing (or introducing external competition) for activities that are not core competencies, particularly if the organization can gain access to world-class performance from an outside specialist provider.

Reducing Costs Should Not Be the Only Objective of Outsourcing

Benefits of outsourcing include:

- **Improving business focus**
- **Gaining access to world-class capabilities**
- **Accelerating re-engineering efforts to reduce cycle times and improve quality**
- **Sharing risks**
- **Reducing operating costs**
- **Converting capital investment in non-core functions into operating expense**
- **Gaining better control over a function**

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Reducing Costs Should Not Be the Only Objective of Outsourcing

Having identified the set of non-core activities that are potential candidates for outsourcing, the organization must then determine what it hopes to achieve by outsourcing. Many authors emphasize that lower costs should not be the primary or the only goal of outsourcing. For example, Corbett [1995] lists the following goals (in order of importance):

- Improving business focus by reducing management resources and attention spent on non-core activities and freeing them for use in core areas;
- Gaining access to the world-class capabilities (including investments in technology, methodologies, and people) of firms whose core competency is to provide the outsourced activity;
- Accelerating re-engineering efforts to reduce cycle times and improve quality by having a provider that is already re-engineered to world-class standards take over the process;
- Sharing risks by pooling investment costs in the outsourced technology made by the provider on behalf of multiple clients;

- Reducing operating costs by contracting with a provider that can achieve economies of scale or other cost advantages based on specialization;
- Converting capital investment in non-core business functions into operating expenses, and targeting capital funds on core areas; and
- Gaining better control over a function currently being provided in-house that is not meeting performance goals or customer expectations.

The goals and priorities of the organization making the outsourcing decision will determine the most important criteria for source selection, contract design, and performance monitoring.

Forming Strategic Alliances with Suppliers Can Enhance the Benefits of Outsourcing

- **Changes in the market environment favor alliances**
 - Rapidly changing technology
 - Increasing capital requirements for new projects
 - Pressure for smaller, more frequent deliveries
 - Improved computer power and communications
- **Alliances benefit buyers and suppliers**
 - Opportunity to access partner's complementary strengths
 - Ability to share risks and costs
 - Enhanced capacity to develop new products, services, and technologies
 - Willingness to make long-term investments in the relationship

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Forming Strategic Alliances with Suppliers Can Enhance the Benefits of Outsourcing

Buyers of complex or customized products or services can often get better performance at lower cost by forming partnerships with their suppliers rather than treating them as arm's-length vendors of standardized products or services. The business management literature refers to these arrangements as partnerships or strategic alliances. Strategic alliances often involve more formal connections between firms, which Badaracco [1991] describes as

[O]rganizational arrangements and operating policies through which separate organizations share administrative authority, form social links, and accept joint ownership, and in which looser, more open-ended contractual arrangements replace highly specific, arm's-length contracts. Such arrangements blur the boundaries of firms . . . [p. 4]

Harrigan [1987] proposes that recent changes in markets and the environments in which organizations operate have created opportunities for them to benefit from strategic alliances. First, rapid technological change is decreasing the useful lives of products and technologies. Organizations must innovate to keep up with new technologies, but shorter product life spans increase the risk of being unable to

recover the cost of investment in each new generation of technology. Second, capital costs associated with development of new generations of products and services have increased, requiring a broader customer base or higher prices to recover development costs. These two changes have made it more difficult for organizations to improve their products and services on their own. Third, adoption of lean production techniques requires closer cooperation with suppliers to improve quality and make smaller, more frequent deliveries. And fourth, advances in computer power and communications systems facilitate transfer of knowledge and coordination of activities between organizations. Thus, alliances are becoming necessary for sharing costs and risks at the same time that they are becoming more feasible.

Buyers and suppliers benefit in numerous ways from sharing resources through strategic alliances. Harrigan and Newman [1990] suggest that alliances allow an organization to gain access to resources that it would not develop on its own because of the proprietary nature of the resources, the amount of time needed, the cost, or the associated risk. These resources can range from physical inputs and skills to knowledge of new technologies or processes. (See also Badaracco [1991].) Lima [1997] describes an alliance between Volkswagen and its suppliers at a truck and bus plant in Resende, Brazil. Each supplier-partner occupies a section of the plant and takes full responsibility for assembling the components it provides into vehicles on the Volkswagen production line. Volkswagen invested \$250 million in the basic plant infrastructure, and each partner invested \$50 million in its production module. The close interchange of information allows for enhanced flexibility in solving problems, in customizing products based on demand, and in designing and developing new products.¹

Alliances allow organizations to share the risks and costs associated with development of new products, services, and technologies, which can lead to more new products and services with shorter development times than if organizations worked alone. (See Harrigan [1986] and [1987] and Badaracco [1991].) In addition, organizations that form long-term strategic alliances are more willing to make investments in the relationship than they would be under arm's-length contracts. For example, Dyer's [1996] comparison of the U.S. and Japanese automobile industries indicates that suppliers in long-term relationships locate closer to the buyer, participate in more employee exchanges

¹Another example of a buyer/supplier alliance is the relationship between Motoman, a leading supplier of industrial robotic systems, and Stillwater Technologies, a contract tooling and machining company. The two companies occupy office and manufacturing space in the same facility, which allows them to synchronize production of components and delivery to the final assembly line. Employees can share ideas on improving quality and reducing costs. (See Sheridan [1997b].)

and face-to-face contact, and invest a higher fraction of their total capital in assets that could not be redeployed to other customers.

There are many types of strategic alliances, ranging from simple cooperation to full equity ownership, representing trade-offs between flexibility and long-term commitment. (See Harrigan [1986] and [1988] and Harrigan and Newman [1990].) Cooperative agreements provide more flexibility, but they also may yield fewer benefits because of the reduced levels of effort and resources invested. There are several types of cooperative agreements—two, in particular, are relevant to buyer/supplier relationships. First, organizations use cross-licensing agreements to learn about technologies that were developed for similar products or services. For example, Eli Lilly and Genentech had such an agreement for insulin. Second, organizations can use R&D partnerships to accelerate technological innovation. (See Harrigan [1986] for a more complete description of cooperative agreements.)

Closer alliances are often cemented by equity investments. In a minority investment arrangement, one organization invests in the other, but no new entity is formed. For example, IBM made such an investment in Intel. Minority investments often support an innovative organization whose products have not yet been widely accepted. In a joint venture, partners form a new organization in which they share equity, risks, returns, and decisionmaking responsibility. Examples include New United Motor Manufacturing Inc. (NUMMI, a joint venture between GM and Toyota), Dow Corning, and Tri-Star Pictures. Some organizations prefer to form a "spider's web" of joint ventures in which a central partner forms alliances with several different partners. The central partner is thus able to increase its chances that one of its partners will be at the leading edge of the industry in the future.²

²See also Ernst and French [1996] for a description of alliances in service industries.

Strategic Alliances May Not Be Appropriate in Some Circumstances

- **Supply of simple products or services may not require a close partnership**
- **Alliances can be costly**
 - Coordination between organizations
 - Opportunity costs
 - Loss of strategic flexibility
- **Collaboration can involve risks**
 - Opportunism
 - Knowledge leaks
- **Perceptions of fairness may limit the government's ability to enter into exclusive long-term alliances**

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Strategic Alliances May Not Be Appropriate in Some Circumstances

Despite the potential benefits, strategic alliances may not be appropriate for all suppliers. The closeness of a buyer/supplier partnership should depend on the complexity of the product or service and the degree of integration that is needed with the buyer's internal processes. The closest partnerships should be reserved for suppliers that provide technological capabilities and know-how that are superior to those of the buyer, and whose products are complex or customized enough that they are not readily available in arm's-length markets. Kamath and Liker [1994] report that in the Japanese automobile industry, buyers limit the number of suppliers they deal with directly by organizing them into tiers. First-tier suppliers coordinate the activities of the second tier and so on down the hierarchy. Among 100-200 first-tier suppliers, only about a dozen with outstanding technology, sophisticated management, and global reach have full-blown partnerships with the buyer.

The number of close partnerships that a buyer or supplier can enter into is limited by the cost and potential risk to the organizations involved. Information exchanges and coordination of activities between partners require both time and

money. Ernst and French [1996] suggest that each partner spends twice as much time managing an alliance as it would operating an independent venture.³ In addition to the direct costs associated with alliances, there are opportunity costs. Each organization forgoes other potential projects and other uses of resources when it commits to the alliance. Finally, strategic alliances limit an organization's ability to respond to changes in its environment and to enter into alliances with others. For example, an organization that forms an alliance as part of a spider's web may be bound to the center organization for the strategic activity involved. (See Harrigan and Newman [1990].)

The business management literature, like the transaction cost literature, highlights the potential for one party in a transaction to try to capture the value of transaction-specific investments made by the other party. Badaracco [1991] argues that unless the buyer and supplier are mutually interdependent, they place themselves at risk of opportunistic behavior by their partners. GM learned this lesson the hard way through NUMMI. Toyota allowed GM to sell only the 4-door version of the Nova, NUMMI's first car, and Toyota preserved its own engineering and production expertise and enjoyed scale economies by producing the main components in its own facility.

Both Badaracco [1991] and Harrigan and Newman [1990] discuss the potential for knowledge leaks when organizations work closely together. An organization should be wary of entering into alliances that could expose knowledge associated with its core competencies, which provide the source of its competitive advantage. In the 1960s, Honeywell used NEC to sell computers and supply basic components to Japan. Honeywell was the partner with the established technology. Over time, NEC learned these capabilities from Honeywell and ultimately became the primary hardware supplier to a three-way joint venture with Honeywell and France's Group Bull. Prahalad and Hamel [1990] argue that such problems can be avoided if the organization's goals for its core competencies guide its alliance or sourcing strategy. Alliances should be used to develop competencies the organization needs but currently lacks.

Legal factors can also limit potential gains from strategic alliances. Badaracco [1991] notes that in the commercial world, antitrust laws can place limits on allowed coordination between firms—especially firms that operate in the same

³Thus, there is a trade-off between the number of suppliers and the depth of buyer/supplier relationships. Each partnership requires more time to manage, but the buyer maintains relationships with far fewer individual suppliers. Once partnerships are established, they may require less total manpower than arm's-length relationships with many suppliers, since partnerships help the buyer cut back on purchasing personnel, quality inspection of incoming components, and design engineering staff.

market. Similarly, rules of fairness place restrictions on the kinds of relationships government organizations are allowed to have with suppliers and contractors. Long-term partnerships may reduce opportunities to bring contracts up for recompetition and reduce the ability of other contractors to bid for follow-on work. We discuss these issues in greater detail in Section 6 below.

Source Selection Should Fit Strategic Needs

Prior to entering an agreement, the buyer should

- Evaluate its current and desired capabilities
- Consider the costs and risks of collaboration
- Tailor the buyer/supplier relationship to the product or service being outsourced
- Consider supplier characteristics in addition to cost
 - Complementary knowledge and skills
 - Breadth and depth of experience; past performance
 - Financial strength
 - Commitment to technological innovation, quality improvement, and customer satisfaction

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Source Selection Should Fit Strategic Needs

Much of the business management literature on buyer/supplier relationships and strategic alliances is devoted to the study of how organizations can increase the chance of accomplishing their outsourcing goals. These recommendations can be divided into (1) actions organizations should take prior to entering into an agreement or an alliance and (2) actions managers should take once a relationship is formed. We start with the former.

Badaracco [1991] recommends that organizations consider several issues prior to entering into outsourcing relationships. First, the buyer should have a clear strategic understanding of both its current capabilities and the capabilities that it will need to remain viable in the future. Only after such introspection can it decide what it hopes to gain from a decision to outsource a product or service. Next, the buyer should carefully evaluate the risks and costs associated with outsourcing. Are the benefits substantial enough to warrant proceeding?⁴ If so, then the buyer must decide what form of relationship with a supplier is

⁴Harrigan and Newman [1990] add that the urgency of the organization's need for the product or service should also be taken into account.

appropriate for the product or service being outsourced. Is an arm's-length contract adequate? Should the buyer invest equity in a partnership or rely on less risky and constraining forms of cooperative agreements? Finally, the buyer must choose the appropriate supplier.

Badaracco [1991] and Blumberg and Blumberg [1994] recommend the following criteria for choosing suppliers:

- Knowledge and skills that the buyer values;⁵
- Breadth and depth of experience, including a proven track record in the field, skilled and experienced personnel, and unique service capabilities;
- Financial solvency, to ensure that the supplier can provide the desired service over the length of the outsourcing relationship;
- Commitment to technological innovation, quality improvement, and customer satisfaction;
- Good reputation, including a willingness to offer customer references and performance guarantees; and
- Commitment to working with the buyer to help the relationship succeed.

By broadening the source selection criteria rather than focusing solely on bid price, the buyer can winnow out suppliers that are unqualified or have submitted extremely low bids. Accepting unusually low bids can result in renegotiation after the contract has been awarded, frequent contract disputes, or contractor default. The buyer should have some idea about the personnel requirements, experience levels, technical capabilities, and physical assets that will be needed to provide the required product or service to ensure that the supplier is capable of providing it. Many outsourcing relationships fail when suppliers cannot deliver what is promised because they lack experience or cannot provide the full array of services needed. Innovative firms such as Chrysler often "presource" their suppliers—choosing them before subcomponents are designed and virtually eliminating competitive bidding for particular parts.⁶ (See Kamath and Liker [1994].)

To define its outsourcing goals and source selection criteria, Sterling [1994] suggests that the buyer organization should put together a team of experts who

⁵See also Bleeke and Ernst [1995].

⁶When suppliers are involved in the design process, they must be selected early, rather than bidding to produce a predesigned component. In some cases, more than one supplier participates in the early design stages, and the winning supplier is chosen based on the strength of its input to the design process, as well as its past performance on design, quality, and cost.

are knowledgeable in all of the areas or functions that will be responsible for, or affected by, the outsourcing relationship. This will also help ensure acceptance of the outsourcing and source selection decisions across many areas of the organization, and give more individuals a personal stake in the success of the venture.

Good Management Can Increase the Likelihood of Successful Long-Term Relationships

- **Carefully define the buyer/supplier relationship**
 - **Goals, scope of activities, performance measures, conflict resolution mechanisms**
- **Build trust between buyer and supplier**
 - **Begin with small projects that are likely to succeed**
 - **Share both positive and negative information**
 - **Limit turnover of key personnel**
- **Make organizational and cultural changes to benefit from the relationship**
- **Accommodate changes in environment and needs**

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Good Management Can Increase the Likelihood of Successful Long-Term Relationships

Once a buyer and supplier have decided to enter into an outsourcing relationship, managers can take actions that increase the chances of success. Sterling [1994] emphasizes that contract design and post-contract management of the relationship should reflect the goal of establishing a mutually beneficial, long-term relationship.

First, the buyer/supplier relationship should be carefully defined. Badaracco [1991] and Sterling [1994] suggest that the buyer and supplier should agree on the overall goals of the relationship, scope of the products or services to be provided, performance measures, and expectations. There also should be a formal mechanism for resolving conflicts. (See Bleeke and Ernst [1995] and Ernst and French [1996] for related discussions of conflict resolution.)

Peisch et al. [1995] points out that an agreement that clearly spells out what constitutes acceptable performance and describes procedures for dealing with sub-par performance can help ward off problems. The buyer should also hold regular, formal meetings with the supplier to review performance against

expectations, discuss issues, clarify roles, share information about new services or technology, etc. If, despite ongoing discussions, the supplier is unable to meet performance requirements, a clearly specified agreement provides a firmer legal foundation for ending the relationship.

Second, partners must learn to trust one another. Badaracco [1991] notes that it can be difficult for organizations to communicate the knowledge and skills that are required to achieve the goals of the relationship. These capabilities are often part of an organization's internal practices and culture; thus, they can be effectively communicated only through an open working relationship based on trust. The desired level of trust may be especially difficult to achieve between government agencies and contractors because of a past history of mistrust, congressional limitations on the use of long-term contracts, and the government's emphasis on full and open competition. (See Kelman [1990].) Methods of building trust include working with suppliers on small projects that are likely to be successful, establishing integrated product teams with shared membership, and joint training and facilitation. Sterling [1994] adds that the buyer and supplier should discuss both good and bad aspects of their relationship so that problems can be resolved before they turn into crises. Furthermore, both buyer and supplier should limit personnel turnover in important positions in order to build personal relationships that provide continuity over time.

Speh et al. [1993] suggest that the formal contract defining a buyer/supplier relationship should be thought of as a framework for less-formal interactions between the two organizations. The parties need to establish a working relationship based on trust and information-sharing. If they reach the point of consulting the contract, this implies that the working relationship has broken down. The authors' survey of contract warehousing for the Warehousing Research Center found that contracts are not standardized and depend on the relationship between the buyer and supplier, including which functions are outsourced.

Third, the buyer and supplier should be willing to make changes to their organizational forms that will enhance the benefits of their relationship. Prahalad and Hamel [1990] argue that learning within an alliance requires a positive commitment of resources, such as travel, a pool of dedicated employees, test-bed facilities, and time to internalize and test what has been learned. Badaracco [1991] relates that during GM's alliance with Isuzu and Suzuki, GM had marketing and manufacturing personnel, engineering consultants, planners, procurement and distribution managers, and industry analysts in Tokyo to facilitate dealings between Chevrolet and its Asian partners. Similarly, approximately two thirds of GM's Japanese suppliers maintained sales offices in

the United States. Their representatives could visit GM divisions and obtain engineering support from either the United States or Japan.

Cultural changes may also be needed for buyers and suppliers to fully benefit from outsourcing relationships. Sometimes the buyer's employees are not receptive to partners. This may be linked to a "not-invented-here" syndrome, or it could stem from a feeling that the outsourcing decision is a result of some failure on their part. These problems must be overcome for the outsourcing relationship to be successful. (See Badaracco [1991].) In addition to organizational and cultural changes, Harrigan [1987] recommends that managers develop liaison skills to help overcome the conflicting loyalties and goals that often arise in buyer/supplier relationships. (See also Ellis [1996].)

A firm may receive fewer benefits than expected from an outsourcing relationship if its employees do not make an active effort to communicate with and learn from supplier personnel. Badaracco [1991] notes that GM did not take full advantage of the potential benefits from NUMMI, its alliance with Toyota. Although the NUMMI factory in Fremont, California approaches the productivity levels of Japanese-owned factories in Japan, GM has not been able to transfer these gains to other facilities.⁷ GM relied on plant tours, videos, and manuals to diffuse knowledge from Toyota about better business practices. It failed to invest the people, time, and money needed to gain an in-depth understanding of the skills that Toyota brought to the alliance.

Fourth, buyers and suppliers should be willing to adapt to changes that affect their relationship. Harrigan and Newman [1990] suggest that it is inevitable that many factors relevant to the relationship will change over time. For example, a change in the needs of the buyer may result from the availability of a new technology or a change in the price of raw materials. Such changes can affect the importance of the outsourcing relationship to the buyer. Therefore, partners should be prepared to modify the relationship when the underlying conditions change. (See also Bleeke and Ernst [1994] and Doz, Prahalad, and Hamel [1990].)

⁷For more information on NUMMI, see Adler and Cole [1993] and [1994]; Berggren [1994]; Wilms, Hardcastle, and Zell [1994]; and Henne, Levine, Usery, and Fishgold [1986].

Full Costs and Benefits of Outsourcing Are Difficult to Measure

- **In addition to direct costs, outsourcing influences:**
 - **Management and monitoring costs**
 - **Long-term investment needs**
 - **Strategic focus of the organization**
- **Need to weigh changes in performance against changes in cost**
- **Risk due to loss of direct management can be counterbalanced by risk due to poor internal performance**

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Full Costs and Benefits of Outsourcing Are Difficult to Measure

Because outsourcing influences management and monitoring costs, long-term investment needs, and the strategic focus of the organization in addition to the short-term direct costs, its overall costs and benefits must be carefully evaluated. (See Quinn and Hilmer [1994].) The development of long-term partnerships between the organization and its suppliers does not require more personnel or more time than managing large numbers of arm's-length relationships, but is likely to require a more professional and highly trained purchasing and contracting staff, as well as better information systems to track and evaluate suppliers. A well-designed information system can provide enhanced monitoring of both internal processes and those of suppliers. Contracting and monitoring activities may need to be elevated to higher strategic levels in the organization to ensure that outsourcing relationships are managed effectively. In the aerospace industry, for example, outsourced components account for 50-70 percent of total value-added, so it pays to invest more of top management's strategic effort on these relationships. (See Sabbagh [1996].)

A good cost analysis of outsourcing vs. internal provision requires a well-articulated comparison that includes the effects of a decision on all parts of the organization. Since there may be trade-offs between lower costs and better performance, it is important for the organization to be able to evaluate the benefits of improved performance. These can include better strategic focus on core activities as well as improvements in the function being considered for outsourcing. A failure to consider performance gains could cause the organization to focus on the short-term cost savings from choosing the lowest-cost provider, which could be outweighed by the long-term costs of poor performance.

An organization considering outsourcing should also consider the potential for strategic risks, such as the loss of critical skills or loss of control over a supplier. These risks can be mitigated by careful source selection and effective management of the outsourcing relationship. The organization should also consider the potential risks of not outsourcing. Internal providers may fail to perform to expectations, and may require management and monitoring resources to improve performance. The organization may find it more difficult to enforce performance goals for internal providers than for external suppliers, since internal providers do not face the threat of contract termination. Furthermore, the organization may fall further behind industry best practices if internal support activities are not world-class providers. (See Blumberg and Blumberg [1994].) Allowing for competition between internal and external providers may help to mitigate both types of risk when the cost structure of the activity makes multiple sourcing feasible.

5. Evidence from the Business Management Literature

Outline	
<ul style="list-style-type: none">• Transaction Cost Economics (TCE)• Evidence regarding transaction cost theory• The business management approach to outsourcing• Evidence from the business management literature• Implications for the Air Force	
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Outline

We next describe empirical evidence from the business management literature regarding outsourcing and other types of vertical relationships.

Business Case Studies Are Consistent with Economic and Business Management Theories

- **Relevant areas of empirical evidence:**
 - **Vertical Integration**
 - **Strategic Alliances**
 - **Buyer/Supplier Relationships**
- **Based mainly on generalizations from case studies or surveys, relatively less statistical evidence**
- **Consistent with many of the predictions of both transaction cost and business management theory**

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Business Case Studies Tend to Confirm Economic and Business Management Theories

Three areas of the empirical business management literature seem to be the most relevant to outsourcing decisions. First, studies of vertical integration provide some comparisons and contrasts with the findings of the TCE literature regarding the conditions under which firms decide to perform activities or produce inputs internally rather than buying goods or services from other firms. Second, the empirical literature on strategic alliances focuses on how demand and customer characteristics influence the structure of an alliance. Third, analyses of buyer/supplier relationships describe the management of suppliers of complex subcomponents and services, particularly in manufacturing industries.

The importance of buyer/supplier relationships was made clear in Womack, Jones, and Roos' [1990] seminal study of lean production. Reductions in inventories, cycle times, and costs and improvements in quality associated with lean production depend on close relationships between buyers and suppliers. In contrast to transaction cost theory, Womack et al. showed that in the automobile industry, these relationships are not only a substitute for, but an improvement

over vertical integration as a means of organizing complex transactions. Many firms seeking to gain the benefits of lean production have adopted these types of buyer/supplier relationships. The literature we discuss below is largely an outgrowth of Womack et al.'s study.

Much of the empirical evidence discussed in the business management literature is based on generalizations from groups of case studies or descriptions of individual cases. Some evidence comes from surveys, but authors typically do not discuss the representativeness of their samples, and the analysis is usually based on simple descriptive statistics. (See, for example, Helper [1991a] and [1994], and Helper and Sako [1995].) Thus, the empirical business management literature relies on less sophisticated statistical techniques than those used in the empirical economics literature on transaction costs.

For the most part, the conclusions of the empirical business management literature are consistent with the predictions of both transaction cost theory and the recommendations of the business management literature on outsourcing. In particular, vertical integration avoids the costs associated with market transactions and can protect valued assets, but it tends to result in higher production costs. Long-term partnerships or alliances between buyers and suppliers promote higher investment in transaction-specific assets, and thus can be a substitute for vertical integration in some circumstances. As uncertainty increases or technological change becomes more rapid, organizations should reduce vertical integration and increase the flexibility of alliances.

Vertical Integration Is Used to Retain Core Competencies and Lower Transaction Costs

- **Firms internalize their most important tasks and personnel to**
 - **Ensure access to scarce inputs**
 - **Control quality and production**
 - **Understand product complexity and technology**
- **Integration can reduce costs associated with market transactions and common administrative functions**
- **However, integration can increase internal coordination costs and reduce market incentives to maximize value**

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Vertical Integration Is Used to Retain Core Competencies and Lower Transaction Costs

The empirical literature on vertical integration echoes some of the themes of transaction cost and business management theories of vertical integration. Firms often use vertical integration to gain control over functions that are crucial to maintaining core competencies or competitive advantage. The costs and benefits of vertical integration depend on the trade-off between transaction costs and production costs under different governance structures.

Harrigan [1983] documents and analyzes the vertical integration strategies of 192 firms in 16 different industries beginning prior to 1960 and continuing through 1981. She relates these strategies to characteristics of firms' markets, firms' positions in those markets, and firms' objectives. She finds that vertical integration allows firms to internalize the activities and resources that are most important to their products, i.e., that contribute to their core competencies or their competitive advantage. For example, whiskey distillers began making their own barrels when a federal price ceiling drastically reduced supply. Pharmaceutical firms used their own medically trained sales forces to protect their patents and increase sales. Computer firms manufactured the logic chips

for their product but purchased the common components. Finally, when demand was strong enough, pharmaceutical firms internalized production of fine chemicals, bulk pharmaceuticals, and dosage-form operations.

D'Aveni and Ravenscraft [1994] note that vertical integration can reduce total costs by avoiding the costs associated with market transactions, combining administrative functions previously performed separately, and providing better information about costs of downstream and upstream activities. However, vertical integration can increase coordination and production costs. The additional coordination of activities required in integrated organizations may increase overhead. Production costs may increase because of the lack of market pressure to improve the efficiency of internal suppliers, lower economies of scale, or failure to innovate. These costs increase with market uncertainty because of the need to monitor market information, plan production activities, and manage inventories.

D'Aveni and Ravenscraft use regression analysis to determine whether the benefits of vertical integration outweigh the costs.¹ Dependent variables include ratios of cost (advertising, other selling expenses, R&D, production, and overhead) to sales and of profit to sales. Independent variables include measures of the degree of integration and controls for economies of scope and scale and for demand stability.² The authors' analysis indicates that integration leads to economies associated with overhead, other selling costs, advertising, and R&D. These economies are slightly offset by increases in production costs that are likely to result from the lack of competitive pressure.

¹The model is estimated in two ways: across all industries with fixed industry effects and within each industry. The data for the analysis are from the Federal Trade Commission line-of-business database during 1975-1977.

²The authors use a measure of market share constructed from the Federal Trade Commission line-of-business database to control for economies of scale and a Herfindahl index of diversification to control for economies of scope. These controls ensure that estimated changes in costs associated with integration strategies are relative to market costs.

More Uncertainty or Bargaining Power Implies Less Vertical Integration

- **Uncertainty reduces vertical integration because organizations need to be flexible to deal with**
 - **Fluctuating demand or uncertain costs**
 - **Rapid changes in technology**
- **Organizations with bargaining power do not need to integrate to gain additional control over suppliers, distributors, or customers**
- **Vertical integration may still be adopted if it increases economies of scale or scope, or helps capture high value-added activities**

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More Uncertainty or Bargaining Power Implies Less Vertical Integration

The empirical literature on vertical integration introduces some new themes that are not emphasized by transaction cost or business management theories. Greater uncertainty about demand, costs, or technology is associated with less vertical integration, because integration limits the firm's ability to respond to rapid changes.³ Firms with bargaining power over suppliers, distributors, or customers have less need for vertical integration to reduce input or distribution costs. However, firms may use vertical integration to achieve economies of scale or scope, or to capture the profits associated with high-value-added activities.

Harrigan [1983] finds that early in an industry's development, when capital costs and risks are high relative to demand, firms generally operate with low degrees of vertical integration.⁴ For example, in the earliest days of the automobile

³The empirical transaction cost literature finds that uncertainty increases vertical integration, but only when transaction-specific assets are also involved. The empirical business management literature emphasizes that uncertainty by itself actually reduces vertical integration.

⁴Harrigan's result contrasts with Stigler's [1951] hypothesis that firms integrate early in industry development to achieve a competitive advantage.

industry (roughly 1899-1909), assemblers were highly dependent on outside suppliers, which tended to be stable firms established to serve older industries. They were also an important source of innovation in components such as engines, carburetors, and roller bearings. With the rapid growth of the industry, automakers and suppliers began to make investments specific to automobile production. As the assemblers gained capital, they began to buy out suppliers and produce components in-house in order to capture the gains from higher investment in specialized assets. (See Helper [1990] and [1991b].) Young industries sometimes use vertical integration when firms need to work with others to share risks and to create markets for their products. Harrigan [1983] cites the coal gasification industry, in which high capital costs and risks made it necessary for firms to work with natural gas distributors and others to commercialize their product. Residential solar heating firms needed air conditioning and ventilation firms to market their product because of the high cost associated with selling to a fragmented market. As an industry matures, firms tend to engage in higher degrees of vertical integration. For example, as the computer industry grew and technology stabilized, firms began to make more components such as microprocessors and memory chips internally. As an industry declines, firms move away from integration strategies. As sales declined in the whiskey industry, distillers moved away from barrel-making, ownership of grain elevators, and wholesaling activities.

High levels of vertical integration are risky for firms in industries with excess capacity, rapidly changing technology, or fluctuating demand. More generally, integration limits firms' abilities to respond quickly to industry changes. Eccles [1981] suggests that in the construction industry, general contractors use subcontracting rather than employing people with a variety of construction-related skills because of the uncertainty associated with the skill mix needed for future construction projects.

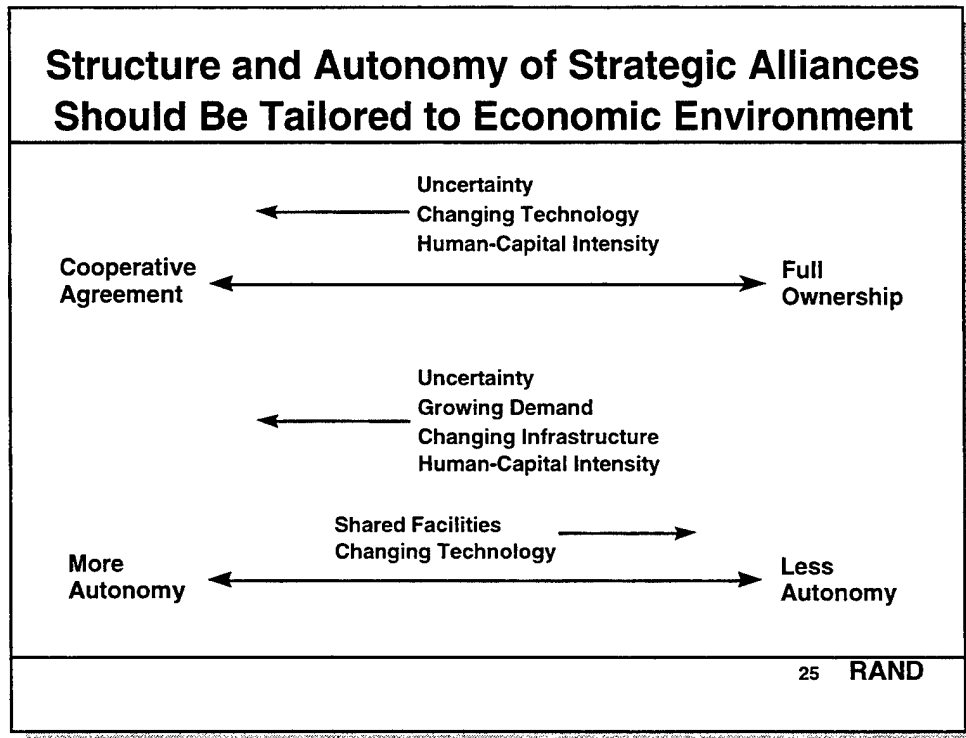
Harrigan [1983] also finds that firms with bargaining power over suppliers, distributors, and customers can reduce input prices by squeezing supplier profit margins, can reach desired customers, and can avoid having to provide special services without internalizing upstream or downstream activities.⁵ Conversely, firms with less bargaining power are more likely to have high levels of vertical integration. For example, in the late 1970s, when the personal computer industry was developing, manufacturers who initially sold their products through retailers began selling their own products because of the poor quality of the sales

⁵However, there is an inherent tension between using bargaining power to squeeze suppliers and developing long-term partnerships with suppliers to maximize value, as we discuss in greater detail below.

force provided by retailers. However, firms with bargaining power may still want to perform important activities in-house. Petroleum refiners had the power to set their own prices for crude oil inputs, but they used backward integration to guarantee access to supplies when they were needed.

Sometimes firms will have higher degrees of vertical integration than predicted by market or industry characteristics because of internal synergies between vertically related activities. Such synergies include economies of scale and scope that can help firms achieve cost, market share, or technology leadership. Firms also integrate to protect high-value-added activities. For example, some pharmaceutical firms perform toxicology studies in-house to provide additional activities for research personnel who help sustain the firm's competitive advantage. When the computer industry was young, Tandy/Radio Shack, IBM, and Digital Equipment used forward integration to educate customers about computers and to understand customer needs.

Harrigan's analysis suffers from some of the same weaknesses as the empirical transaction cost studies because it implicitly assumes that the vertical integration strategies observed in the market are "optimal" in some sense. This may be a particular weakness for an analysis based on 1960s and 1970s case studies because vertical integration and diversification were popular management strategies during this time period. Some of the highly integrated firms formed through mergers during that period have since been unbundled. Thus, market conditions may have changed such that these strategies are no longer optimal, or they may never have been optimal.



Structure and Autonomy of Strategic Alliances Should Be Tailored to Economic Environment

Many of the same factors that influence vertical integration also influence the structure and autonomy of strategic alliances. Structural issues include the closeness of the alliance and the amount of equity investment by the partners, whereas autonomy refers to the degree of independence that the alliance (which may be a separate entity) has from the parent firms. Uncertainty and human-capital intensity (i.e., the degree of reliance on employees' talent, creativity, and knowledge) are associated with alliances that are less structured and more independent of their parent firms. However, shared facilities or changing technology may require the alliance to be more closely integrated with one or both of the parent firms.

Harrigan [1988] analyzes a sample of 895 strategic alliances to provide a framework for choosing among alliance options. Her analysis suggests that organizations operating in environments with uncertainty should avoid formal venture agreements and instead form several less-structured cooperative agreements or spider's web alliances. Such arrangements allow firms to reduce the risk of not being able to satisfy growing demand when customers have

greater power over the direction of the market. In Harrigan's data, cooperative agreements were overrepresented (46 percent) in environments with uncertainty about demand growth, relative to the entire sample (37 percent).

Other sources of uncertainty are market fragmentation, high exit barriers with excess capacity, and frequent technological changes. In these environments, organizations are less willing to risk investing equity in alliances. An organization will be especially reluctant to enter into alliances when the resources that are the source of its competitive advantage are likely to be appropriable by potential partners. However, when the alliance activity is important to an organization's core activities, the organization may be willing to enter into cooperative agreements or form a spider's web of alliances.

In human-capital-intensive industries, organizations are usually less willing to enter into shared-equity alliances. The difficulty of protecting important human-capital assets make shorter-duration, cooperative agreements more likely. In her analysis, Harrigan [1988] found that a more than proportionate percentage of alliances in human-capital-intensive industries did not involve any equity (48 percent vs. 37 percent for the whole sample) and that most ventures in these industries lasted less than four years.⁶

When demand is growing slowly (or declining) and uncertainty is low, organizations should favor participating in fewer, but larger, horizontal ventures with shared equity that can help the industry better align capacity with demand. For example, prior to the availability of cheap overseas sources of iron ore, steel firms formed mining alliances to ensure a stable supply of raw materials. Once overseas sources became available, steel firms delayed abandoning these alliances until they became exit barriers. By 1984, horizontal firms formed joint ventures to disintegrate the mining alliances. Similarly, U.S. farm equipment firms used joint ventures to consolidate excess capacity after a reduction in demand.

In many circumstances, alliances need autonomy from their parent organizations to respond to uncertainty. When demand is growing in the alliance's market, it needs to be able to take actions quickly to satisfy customers. Alliances need to be free to adopt new product standards, implement better processes, and work with new suppliers while industry infrastructure is still developing. When more-formal ventures are formed in human-capital-intensive industries, they tend to

⁶As we note below, the length of formal contracts does not necessarily reflect the length of relationships between firms. For example, Japanese firms tend to have short formal contracts but stable long-term relationships between buyers and suppliers. See Helper and Sako [1995].

have autonomy from the parent organizations. This independence helps preserve the morale and creativity of personnel in the venture.

Parent organizations will desire close coordination with their alliances when resources such as facilities and personnel are shared. Coordination will also be desirable when technology is changing rapidly. For example, even when the cable TV programming industry was young, the ventures needed help from the owners in modifying products and incorporating technologies.

Buyer/Supplier Relationships Can Be “Exit” or “Voice”

- **Buyers with market power can influence the structure and behavior of the supplier industry**
- **Nature of relationship depends on how buyer reacts when problems arise with supplier**
 - **Exit Strategy: Find a new supplier**
 - **Voice Strategy: Work with existing supplier to correct problems**
- **Trade-off between short-term price reductions from suppliers (exit) and long-term, continuous improvement of supply chain (voice)**

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Buyer/Supplier Relationships Can Be “Exit” or “Voice”

Helper’s [1990] and [1991b] studies of the historical development of the U.S. and Japanese automobile industries suggest that in markets for complex products and services, the behavior of buyers with market power can have a strong influence on the structure and behavior of the supplier industry. Suppliers tailor their investments and develop expertise to fit the tasks that are delegated to them by buyers.

In comparing the U.S. and Japanese approaches to buyer/supplier relationships, Helper adapts a framework developed by Hirschman [1970]. Helper divides buyer/supplier relationships into two categories based on the buyer’s response when problems arise in the relationship. One is “exit,” where the buyer’s response is to sever the relationship and find a new supplier; and the other is “voice,” where the customer works with the supplier until the problem is corrected. Until the 1980s, U.S. automobile manufacturers typically had exit relationships with their suppliers, whereas Japanese automobile producers used voice relationships.

The buyer's choice between these two supplier strategies affects the buyer's and supplier's relative bargaining power and their incentives to make long-term investments in the buyer/supplier relationship. By making a credible threat to sever the relationship if the supplier does not comply with its demands, the buyer increases its bargaining power and is able to reduce the price it pays the supplier in the short term. However, suppliers will not be willing to invest in innovative activity or in coordinating their processes with the buyer's if all the gains are likely to be appropriated by the buyer through lower prices. Therefore, although buyers give up some bargaining power with suppliers by using a voice strategy, over the long term, voice relationships promote greater technological innovation by suppliers, higher investment in transaction-specific assets, and greater coordination along the supply chain.⁷ This suggests that long-term relationships with suppliers can substitute to some extent for vertical integration of activities involving transaction-specific investments, while still preserving some market incentives to reduce cost and improve performance.

Helper [1990] argues that as a result of voice relationships with suppliers, Japanese automobile producers were eventually able to gain an advantage in terms of technology, quality, and cost over U.S. producers using the exit strategy. In response, some U.S. automakers have attempted to adopt voice relationships with suppliers in order to improve their performance. In a comparison of responses to similar surveys conducted in 1989 and 1993, Helper and Sako [1995] find that there has been an overall trend toward convergence in U.S. and Japanese buyer/supplier relationships, with U.S. suppliers moving toward closer partnerships.

Although many of the case studies and surveys regarding buyer/supplier relationships are based on procurement of subcomponents in the automobile industry, many other types of manufacturing corporations are developing closer buyer/supplier relationships as part of broader efforts to adopt lean production techniques. Examples discussed in Burt [1989] include Xerox, Polaroid, GE Appliance, and Hewlett-Packard. Boeing adopted close supplier partnerships to speed the development and cut the costs of its 777 jet. (See Sabbagh [1996].) Close buyer/supplier relationships can also improve performance of complex support services that must be integrated with the buyer's operations. Facilities maintenance contractors such as Fluor Daniel's Facility and Plant Services division and Morrison Knudsen's Operations and Maintenance division emphasize close partnerships with their customers in their corporate literature.

⁷These types of buyer/supplier relationships might also be considered "strategic alliances," since they are intermediate between full ownership and arm's-length relationships.

Air Force Currently Uses Exit Strategy with Support Services Contractors

- **Buyer specifies tasks delegated to suppliers**
- **Suppliers chosen by competitive bidding**
 - Little recognition of past performance
 - Frequent recompetition
- **Buyer can make a credible threat to exit if its demands aren't met**
 - Short-term contracts
 - Access to many interchangeable suppliers
 - Ability to revert to in-house production
- **Buyer uses bargaining power to limit supplier profits**

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Air Force Currently Uses Exit Strategy with Support Services Contractors

The Air Force's current relationships with support services contractors have much in common with descriptions of exit strategies in the empirical business management literature. Contracts specify in detail the tasks to be performed, rather than defining the level of service with performance metrics. Contracts are subject to frequent recompetition and awarded to the lowest bidder, with little attention to past quality or responsiveness. For many support services, the Air Force maintains a credible threat to exit the relationship by recompeting the contract among multiple potential suppliers or by taking the service back in-house. Acquisition and contracting regulations, as well as competition from other suppliers, limit the profits that suppliers could gain by investing in improved processes.

In the U.S. automobile industry, buyers maintained a competitive supplier industry and kept the components relatively simple so that they could be transferred easily from one supplier to another. Helper [1990 and 1991b] argues that Ford and GM created a fiercely competitive components industry by keeping complex functions such as engineering and R&D almost completely in-

house, and dividing parts into small, easy-to-produce pieces. They made huge investments in engineering and management staffs to simplify the tasks delegated to suppliers, thereby reducing barriers to entry for supplier industries. Task simplification included supplying blueprints so that suppliers had no need for design capability, and coordination of subassembly so that each supplier provided a small number of relatively simple parts. Growth and consolidation in the U.S. automobile industry also allowed the dominant automakers to buy out suppliers of more complex components and to expand internal capacity to design, produce, and subassemble parts.

Under an exit strategy, each part was subject to annual competitive bidding on detailed blueprints provided by the buyer, in which the winner was usually the lowest bidder. The supplier's track record for performance and quality was relatively unimportant in the source selection decision. The U.S. automakers employed six to eight competing suppliers for each part, and required suppliers to license major innovations. In the 1970s, this mode accounted for about 99 percent of supplier firms and about two thirds of the dollar volume of outside sourcing. Exit strategies were used primarily with suppliers of easy-to-make parts. The U.S. automakers did maintain longer-term relationships with a few suppliers of more complex parts, but often "cheated" on these voice relationships by bringing production in-house before suppliers could recover their investments in technology and production facilities.

After establishing a competitive supplier industry with many interchangeable suppliers, the U.S. automakers maintained a credible threat to sever the relationship if their demands were not met.⁸ This threat was based on short-term contracts (typically lasting one year), access to many interchangeable suppliers, and/or the ability to tool up quickly for in-house production. This system was intended to prevent suppliers from developing expertise, so that the automakers could capture more of the supply chain profits.

There is some evidence that U.S. automakers were successful in capturing supplier profits. Crandall [1968] estimated that automakers' peacetime rates of return over the period from 1930 to 1961 averaged 23.8 percent, whereas suppliers averaged 8.2 percent. Based on 1947-1965 data, he found that the auto and truck assemblers' average rate of return of 20.2 percent was significantly greater than the 13.2 percent average for all manufacturing, whereas the 13.8 percent average for automotive suppliers was not.

⁸Until the 1980s, buyer demands usually involved supplier price reductions. More recently, at least one U.S. automaker seems to have adopted an "intensified exit" strategy in which it also requires suppliers to provide more detailed process information, improve quality, and make just-in-time (JIT) deliveries without the security of a long-term relationship. See Helper [1991a].

The primary drawback of an exit strategy is that it reduces incentives for innovation. Intense competition leads to supplier industries dominated by tiny firms lacking both organizational and physical capital. In the U.S. automobile supplier industry, firms were so small that diffusion of capital-intensive technologies was sometimes blocked by lack of investment capital. Exit strategies also slowed down and increased the cost of the new product development process. Dyer's [1996] description of Chrysler's development process under an exit strategy indicates that the firm devoted 12 to 18 months to sending out bids for quotations, analyzing bids, rebidding, and negotiating contracts with suppliers. Work on hard tools began before the first prototype was produced, so when problems were discovered with the prototype, changes had to be made in hard tools that had already been ordered. Often suppliers did not know whether they had won the business until 75 to 100 weeks before volume production, so had relatively little time to work out production and integration problems. The separation between component design and production led to a lack of accountability. When suppliers had problems producing a component at the required cost or quality, they would often blame the design. Since adopting voice relationships with its suppliers, Chrysler has reduced the time and cost of developing new vehicles and reduced incompatibilities among components.

Voice Relationships Promote Investment and Improved Performance

- **Greater investment in transaction-specific assets**
 - Suppliers locate closer to buyers, enabling more frequent deliveries or better service
 - Customized investments in information systems, equipment, and flexible manufacturing or repair systems
 - Employee transfers between buyer and supplier
- **Higher quality at a lower cost**
 - Easier to detect and correct quality problems
 - Smaller inventories for buyer and supplier
 - Fewer purchasing managers
- **Faster and less costly development of new products and services**

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Voice Relationships Promote Investment and Improved Performance

Surveys and descriptive studies of the U.S. and Japanese automobile industries indicate that voice relationships can improve the buyer's performance. Voice relationships promote investment in transaction-specific assets and help both buyers and suppliers provide higher quality products or services at a lower cost. In addition, involving suppliers in the design of new products or services allows them to be developed more quickly and at lower cost, and improves the manufacturability of the design. Similar benefits could potentially be gained by the Air Force if it adopted longer-term relationships with the suppliers of complex support services, as it already does to some extent with suppliers of weapons systems.

Customized investments made by buyers and suppliers may involve site specificity, physical asset specificity, or human capital specificity. In the automobile industry, voice relationships support investments such as building supplier plants close to customer plants, installing specialized equipment, customizing information systems, and temporary or permanent transfers of employees between buyer and supplier firms. Dyer [1994] reports that

customized investments in information systems, plants, and flexible manufacturing systems were important to the success of Toyota's just-in-time (JIT) system. A survey of Toyota suppliers found that the distance from supplier plants to the Toyota assembly plant averaged 30 miles for affiliated suppliers and 87 miles for independent suppliers, allowing all suppliers to make an average of eight deliveries a day. In contrast, the distance from supplier plants to GM assembly plants is 350 miles for internal parts divisions and 427 miles for independent suppliers, and they deliver an average of 1.5 times per day.

Voice relationships can be a substitute for buyer ownership of transaction-specific assets. Japanese suppliers typically invest their own funds in customized tools and equipment. In contrast, U.S. automakers often own the customized tooling used by their suppliers, eliminating the need for suppliers to invest in transaction-specific assets. Dyer and Ouchi's [1993] survey of U.S. and Japanese suppliers found that 31 percent of the capital investments made by Japanese suppliers could not be redeployed to other products, whereas only 15 percent of investments made by U.S. suppliers could not be redeployed.

In response to competition from the Japanese automobile industry, U.S. automakers are beginning to adopt voice relationships with suppliers. For example, Chrysler has reduced its supplier base, increased contract length, and involved suppliers in the development of new vehicles. According to Dyer [1996], suppliers have responded to Chrysler's adoption of voice relationships by increasing their investments in dedicated assets. Nearly all suppliers have purchased Catia, Chrysler's preferred computer-aided design/computer-aided manufacture (CAD/CAM) software, and the average distance between Chrysler's assembly plants and its suppliers' facilities has been decreasing. Textron built a plant dedicated to producing interior trim parts for the LH model⁹ and located a new design facility less than two miles from the Chrysler Technology Center. Other U.S. firms, such as Boeing, Xerox, Polaroid, and Hewlett-Packard, are also adopting voice relationships with suppliers as part of their efforts to implement lean production techniques. (See Burt [1989] and Sabbagh [1996].)

Surveys of U.S. and Japanese automotive industry suppliers by Helper [1991a] and [1994] and Helper and Sako [1995] in 1989 and 1993 found positive correlations between high-technology investments and indicators of voice-based

⁹LH is the code name for the development program for the Chrysler Concord, Eagle Vision, and Dodge Intrepid (intended to compete with the popular Ford Taurus).

relationships.¹⁰ About 36 percent of firms with contracts of one year or less had no computer numerically controlled (CNC) machinery (which makes it easier to customize parts), whereas only 21 percent of the firms with longer contracts did not have CNC machinery. Similar results were found for robots and programmable logic controllers. Median lot sizes for both production and delivery were significantly smaller, and the gap between production and delivery batch sizes was smaller for suppliers that had voice relationships.

The same surveys found that voice relationships were associated with lower costs and higher quality. U.S. firms with voice relationships won 28 percent more quality awards from automakers, had market share growth between 1989 and 1993 that was 1.5 percentage points higher, and were 10 percent more likely to adopt JIT delivery without a cost increase than firms that did not meet the criteria. In Japan, suppliers with voice relationships received 18 percent more quality awards from customers, and were 50 percent more likely to adopt JIT without a cost increase. Voice suppliers are also able to deliver more frequently (which reduces buyer inventory costs) and to produce in smaller batches (which reduces supplier inventory costs) than nonvoice suppliers.

Cole and Yakushiji [1984] estimated that voice-based supplier relationships gave the Japanese industry a \$300-\$600 per car cost advantage in the early 1980s. A similar study reported in *Fortune* found that in 1985, U.S. automakers spent an average of \$3350 on parts, materials, and services for small cars, compared with \$2750 for Japanese automakers, attributed mainly to more efficient vendor relations. Japanese-owned plants in the United States enjoyed a \$700 per vehicle cost advantage over U.S.-owned plants in the late 1980s.¹¹

Both production and transaction costs can be reduced by dealing with a smaller number of suppliers. Focusing business on a small number of suppliers can reduce supplier production costs by helping suppliers move down the learning curve more quickly. The buyer's production costs can also be reduced, because when fewer suppliers are used for a given part, variation decreases and reliability goes up. Dyer and Ouchi [1993] report that a 1985 Bain & Company study found that Toyota had two suppliers of electrical wiring harnesses, whereas a U.S. firm had more than 20 suppliers. The transaction costs associated with managing 20 suppliers were substantially higher, and tracking quality

¹⁰Suppliers were defined as having a voice relationship with the buyer if they provided the buyer with a detailed breakdown of their process steps, buyers offered a contract longer than one year, and both pledged to alter their agreement if unexpected events occurred.

¹¹These results contradict the assumption of the empirical transaction cost literature that observed industry structures are optimal, particularly for studies of vertical integration decisions in the U.S. automobile industry (see Monteverde and Teece [1982a] and [1982b]).

problems was difficult. In 1986, GM employed 3000 purchasing personnel, and produced 2000 cars per buyer. Toyota employed 340 buyers and produced 10,590 cars per buyer. Thus, GM's procurement costs were approximately five times higher than Toyota's, even though GM was more vertically integrated. A GM executive explained that most activities were geared to making sure that they weren't stung by an unscrupulous supplier.

Dyer [1996] reports that since 1988, Chrysler has reduced its number of buyers by 30 percent and increased the dollar value of goods procured by each buyer. These changes were made possible by reducing the number of suppliers and preselecting suppliers based on quality and performance, thus eliminating the competitive bidding system. In November 1994, Chrysler requested that its suppliers eliminate sales representatives and shift those resources to engineering. Adopting voice relationships with suppliers has contributed to Chrysler's increased share of the U.S. car market, which has risen from 12.2 percent in 1987 to 14.7 percent in 1994. Its return on assets has been the highest among U.S. automakers since 1992, and its profit per vehicle has increased from approximately \$250 on average in 1985-1989 to \$2110 in 1994.

According to Burt [1989], Xerox reduced its supplier base from over 5000 companies to 400, and developed closer relationships with the remaining suppliers. From 1981 to 1984, net product costs were reduced by nearly 10 percent per year, and rejects of incoming materials were reduced by 93 percent. In 1982, Polaroid began to develop supplier partnerships as part of a comprehensive program called Zero Base Pricing, which tracked not only the acquisition price but also all the costs involved in getting a component into the finished product, including costs resulting from the product's failure to function in the field. Over the following six years, Polaroid documented cost reductions and cost avoidance averaging \$20 million per year, as well as reduced scrap, rework, and field failure.

In the Japanese system, suppliers are an integral part of the development process: they are involved early, assume significant responsibility, and communicate extensively with product and process engineers. As a result, Japanese automakers develop new vehicles about 30 percent faster than U.S. automakers. Dyer [1996] reports that after adopting voice relationships, Chrysler reduced the amount of time it takes to develop a new vehicle from an average of 234 weeks in the 1980s to 183 weeks for the LH program. It has already developed and introduced six new vehicles since 1990, compared with four new vehicles between 1980 and 1989, without increasing the size of its engineering staff. Suppliers become involved at the conceptual stage, about 180 weeks before volume production, so they have an extra 18 to 24 months to prepare. Hard tools

can be purchased later in development, after problems with the first prototype have been corrected, which results in lower investment costs and fewer changes in those tools. The overall costs of developing a new vehicle have been falling. Following the LH model, the Dodge Ram truck cost \$1.3 billion, the Neon \$1.2 billion, and the Cirrus/Stratus less than \$1 billion. This compares favorably with GM's Saturn (\$3.5 billion), Ford's Escort (\$2.5 billion), and Ford's Mondeo/Contour (\$6 billion).

Converting to Voice Relationships Requires Long-Term Commitments with Suppliers

Voice relationships are based on

- **Intensive and regular sharing of cost and technical information**
- **Extensive face-to-face communication between buyer and supplier**
- **Flexible legal contracts, not always explicitly long-term**
- **Partial ownership or financial support**
- **Reciprocal dependence between buyer and supplier**

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Converting to Voice Relationships Requires Long-Term Commitments to Suppliers

To improve their relationships with suppliers, many firms are adopting the characteristics of voice relationships. These relationships rely on a high degree of mutual commitment, i.e., the buyer's and supplier's degree of certainty that the relationship will continue for some length of time. Long-term commitment is needed to establish trust when exchanging proprietary information and to induce both buyers and suppliers to make investments that benefit the relationship. Long-term commitment also benefits the parties because it is costly to establish close relationships with multiple partners.

In the automobile industry, Helper [1991a] associates voice relationships with extensive information sharing. For example, suppliers may provide a breakdown of process steps (sometimes including the cost of each step), production scheduling information, and statistical process control charts. Imai's [1986] case study of Ricoh (a Japanese producer of office equipment and copying machines) indicates that Ricoh engineers often visit suppliers and ask them to write out production processes or show them the tools and molds they would use if they got a particular order. Every year, Ricoh holds a companywide

purchasing managers' convention to share information and to present awards to outstanding suppliers. Dyer [1996] reports that as part of Chrysler's effort to transform its relationships with suppliers, it created a shared e-mail system with its suppliers, established an advisory board with representatives from its top 14 suppliers, holds an annual meeting with its top 150 suppliers, and holds quarterly meetings with each supplier to discuss performance and review priorities for the coming year. Many buyers convey information to suppliers through supplier rating systems and award programs for top suppliers. For example, Hewlett-Packard rates its suppliers on technology, quality, responsiveness, dependability, and costs. Ratings are done quarterly, semiannually, or annually, depending on the sensitivity of the component, and suppliers are given their ratings relative to their competitors.¹² (See Burt [1989].)

Open communication is a crucial part of just-in-time delivery systems. At the end of each month, Ricoh places a firm order for the following month, except specially designated "kanban" parts. Kanban parts are ordered daily for delivery at a specified hour three days hence. Ricoh also tells suppliers what it expects to order during the first, second, and third ten-day periods of the next month, as well as estimates for the following two months, so that suppliers can plan their production schedules.

Information sharing is facilitated by extensive face-to-face contact between buyer and supplier personnel. Dyer and Ouchi's [1993] study of the Japanese automobile industry indicates that suppliers often send guest engineers to work on the automakers' design teams, and may work at the parent firm's facility for two to three years. These transfers help to build trust and to transfer knowledge about how to optimize the efficiency of the value chain. In addition to employee transfers, suppliers and buyers encourage a tremendous amount of face-to-face contact between their salespeople, engineers, and purchasing agents. Japanese suppliers had an average of 7235 employee-days per year of direct contact with automakers, compared with 1129 employee-days for U.S. suppliers. Managers' career paths often include temporary or permanent transfers between partner firms. Dyer and Ouchi's study indicated that almost 30 percent of the top management teams at Nissan's core group of suppliers are former Nissan employees. Cusumano [1985] found that employee transfers usually precede other forms of cooperation, including technical assistance, loans, and transaction-specific investments.

¹²Developing an improved supplier rating system could help the Air Force to make better use of information on past performance in its source selection decisions, and to defend itself against legal challenges from suppliers who do not win contracts.

Long-term relationships may be reinforced by long-term contracts or by less formal agreements. To improve its relationships with suppliers, Chrysler has increased its contract length from an average of 2.1 years in 1989 to an average of 4.4 years on the LH program in 1994. Excruciatingly detailed contracts have been replaced by a greater reliance on oral agreements. (See Dyer [1996].) However, Japanese voice relationships often do not involve long-term contracts. Helper and Sako [1995] found that two-thirds of Japanese suppliers had no product-specific contracts. Basic contracts are usually renewed annually, but include ambitious continuous improvement goals to ensure that the supplier remains cost-competitive with the market. However, over half of Japanese suppliers had served the same buyer for 20 years or longer, and 87 percent thought their customer's commitment would last more than four years.

Minority investments in partner firms can be used to cement long-term relationships. In Japan, stock swaps or minority ownership of suppliers by the parent firm help to underpin the sharing of gains between buyers and suppliers. Dyer and Ouchi [1993] report that Nissan owns an average of 33 percent of the shares of its major supplier partners.

As a result of voice relationships, Japanese automakers are reciprocally dependent on their suppliers. The suppliers have significantly more knowledge than the automaker about the design and manufacture of their parts. Because parts are customized to a specific model, the automaker would have difficulty shifting its business immediately to another supplier.¹³ Some suppliers claim that when they submit their design drawings for approval, they intentionally leave out important details such as tolerances, which make it difficult for the automaker to switch suppliers. Thus, both buyer and supplier have an incentive to maintain their long-term relationship.

¹³However, as we discuss below, Japanese automakers typically maintain at least two active suppliers for each component, although each may be supplying a different model. See Dyer and Ouchi [1993].

Source Selection Should Focus on Long-Term Relationships with High-Quality Suppliers

- **Small number of suppliers**
 - **Pre-qualified based on quality, cost, and technological capability**
 - **Two-vendor policy preserves competition**
- **Suppliers participate in both design and production of products or services**
- **New suppliers go through an initial trial period with close performance monitoring**
- **Suppliers will not lose business unless they fail to cooperate with improvement efforts**

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Source Selection Should Focus on Long-Term Relationships with High-Quality Suppliers

Converting to voice relationships also involves a different approach to source selection. Buyers typically limit the number of suppliers they deal with, based on a prequalification process involving the supplier's quality, cost, and technological capability. However, they usually work with two or more suppliers of each component or service to maintain competition. Suppliers become involved in the design of the product or service, rather than simply being asked to bid to perform defined tasks. New suppliers may have to go through an initial trial period with strict quality inspections until they have established a reputation for good service. Once accepted, suppliers will keep the buyer's business unless they fail to meet performance requirements.

Womack, Jones, and Roos [1990] report that Japanese automakers involve fewer than 300 suppliers in each project, compared with 1000 to 2500 by U.S. and European automakers. Whole subsystems are assigned to first-tier suppliers who often supply the same components for other models and are long-term partners of the producer. The first-tier suppliers in turn work with teams of second-tier suppliers who are manufacturing specialists. The system may extend to a third

or fourth tier. In contrast, Western automakers often contract directly with suppliers of subcomponents and with multiple suppliers of the same parts.

Before converting to voice relationships, Chrysler had often split responsibility for component design, prototyping, and volume production among separate companies (or among internal and external sources), resulting in a lack of accountability. Under its new supplier relations system, the purchasing department gives each project's cross-functional development team a prequalified list of suppliers considered to have the most advanced engineering and manufacturing capabilities. Suppliers are "presourced," or chosen early in the vehicle's concept development stage. In addition to having responsibility for design, presourced suppliers build prototypes during development and then manufacture the part when it goes into production. As prime contractors, they take total responsibility for the cost, quality, and on-time delivery of their systems.¹⁴ (See Dyer [1996].)

However, voice relationships do not necessarily involve sole-sourcing or cozy relationships. Dyer and Ouchi [1993] report that Japanese firms usually employ a two-vendor policy to motivate suppliers to continue to innovate and improve performance. Although the Japanese automakers typically buy a specific part for each car model from a single source, they maintain at least two active suppliers of the generic component to bid for each new model. The proportion of components sole-sourced by Japanese automakers in Japan was 12.1 percent in 1990, compared with 69.3 percent for U.S. automakers (largely because of vertical integration). Under the two-vendor policy, one supplier's ability to generate cost or quality improvements provides an incentive for the other supplier to keep up. The automaker invites guest engineers from both suppliers to work on the design team for a new model. The supplier with the superior design and cost becomes the major supplier for the model. The other may become a secondary supplier for that model, or may have an opportunity to develop a design for another model. The buyer may make the price paid or the volume given to each supplier dependent on relative performance.¹⁵

However, the buyer does not abandon a weak supplier, but works with it to help it compete with the stronger supplier. Both Toyota and Nissan have large

¹⁴Shifting responsibility for design to suppliers may be helpful for the Air Force. Traditional buyer responsibility for and ownership of design sometimes give suppliers an excuse when quality problems arise, enabling them to claim that they were building to the design they were given.

¹⁵Similarly, the Air Force may not have enough production volume to use dual sources for a particular weapons contract, but it has an interest in maintaining more than one active supplier of each major type of system to preserve competition to build future versions. When volume is sufficient to use more than one supplier, there is a trade-off between economies of scale gained through single sourcing and enhanced competition and greater scope for innovation through dual sourcing.

supplier-assistance consulting groups who work with suppliers to improve production techniques. These groups employ at least one consultant for each four to six suppliers. If a supplier does not respond to their recommendations and make changes, the consultants may recommend that the buyer reduce its business with that supplier. This puts tremendous pressure on suppliers to improve. They refer to the process of working and negotiating with Toyota as *Toyota jigoku* (Toyota "hell"), but the result is that Toyota and its suppliers make 50 percent higher profits than their U.S. competitors.

The closeness of the relationship between buyers and suppliers often depends on how long they have been working together. Imai [1986] discusses three stages in manufacturer/supplier relations. In the first stage, the buyer performs quality checks on the entire lot delivered by the supplier. In the second stage, the buyer sample checks. In the third stage, the buyer accepts everything without checking the quality; i.e., responsibility for quality checks is delegated to the supplier. Only in the third stage is a truly worthwhile relationship established. At Ricoh's Atsugi plant, suppliers are divided into "designated" and "nondesignated" suppliers. Once a year, Ricoh reviews the performance of all suppliers. Those that have reliable product quality and delivery are eligible to become "designated" suppliers. Designated suppliers enjoy first priority on Ricoh orders, and are entitled to special incentives and favorable payment terms. Ricoh has about 70 designated suppliers, which make up the majority of its suppliers. When a Japanese supplier wins a contract, it is essentially guaranteed four years of business over the lifetime of a model. Dyer and Ouchi [1993] found that, historically, Japanese suppliers have a more than 90 percent probability of winning the next contract when the model changes. One supplier indicated that the business was theirs unless they didn't perform. These practices encourage long-term investments and development of ideas for future models. In contrast, U.S. automakers have repeatedly disrupted their relationships with external suppliers by splitting their business among many suppliers and rotating them frequently. According to Dyer and Ouchi's survey (conducted in the early 1990s), U.S. suppliers typically had only a 69 percent chance of keeping their business after a model change.¹⁶ This uncertainty results in fewer long-term relationships with automaker engineers, and less long-term planning and

¹⁶This figure may conceal considerable variation among U.S. automakers. Helper and Sako [1995] see three different strategies being pursued by U.S. automakers: consistent voice relationships, steady transition from exit to voice, and an intensified exit strategy. Furthermore, a firm could have sole-sourcing relationships with its vertically integrated internal suppliers, but have exit relationships with its external suppliers.

investment. Persistent uncertainty about buyer demand can also result in higher supplier costs. For example, plant capacity utilization averages 77 percent for U.S. suppliers, compared with 88 percent for Japanese suppliers.

Gain-Sharing Motivates Suppliers to Invest in Process Improvement

- **Supplier designs products or services to meet target costs**
- **Buyer works with supplier to enhance performance**
 - **Focus on total cost and quality throughout the supply chain**
 - **Transfer of technology and process improvement techniques**
- **Gains from process improvement are shared between buyer and supplier**
 - **Price reductions tied to cost reductions by supplier**

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Gain-Sharing Motivates Suppliers to Invest in Process Improvement

Gain-sharing increases the incentives for suppliers to improve performance and reduce costs over time. This approach begins at the design stage, when suppliers are asked to design products or services to meet target costs rather than to bid on pre-designated tasks. As the work is carried out, the buyer and supplier exchange ideas on how to improve integration of activities, reduce costs, and improve quality. This may involve transferring technology or process improvement techniques from buyer to supplier, or vice versa, depending on areas of expertise. As performance improves, gains are shared between the buyer and supplier. Supplier profit margins are maintained by tying price reductions to supplier cost reductions, in contrast to exit strategies, in which supplier profit margins are intentionally squeezed.

Japanese automakers using voice strategies do not rely on competitive bidding to establish the price of components. Instead, they use target costing during the design phase, which involves determining what price the end customer will pay for the vehicle, and then working backward to calculate the allowable costs for systems, subsystems, and components. Historically, Chrysler had put pressure

on suppliers to reduce price, regardless of whether they were able to reduce costs. When Chrysler adopted voice relationships, it did not have a good idea of what target costs should be, so it negotiated with suppliers about performance and cost targets. With experience, it has been able to set better targets at the outset of the program. The focus on cost instead of price creates a win-win situation with suppliers, because the company works with suppliers to meet common cost and functional objectives. (See Dyer [1996].)

The goal of a voice relationship is to create a "see-through" value chain where both parties' costs and problems are visible. Both parties then work jointly to solve the problems and expand the pie rather than fight over how to split it. According to Imai [1986], integrating suppliers into process improvement efforts is a top priority of managers in Japan. Purchasing agents constantly work to improve their relations with suppliers and to find ways to reduce the costs that the buyer imposes on its suppliers, including

- establishing better criteria to measure optimum inventory levels;
- improving how orders are placed;
- improving the quality of information provided to suppliers;
- establishing better physical distribution systems; and
- understanding the suppliers' internal requirements better.

Japanese manufacturers have made considerable efforts in such areas as assisting suppliers to initiate Total Quality Control (TQC) programs, suggestion systems, small group activities, and better communication on product quality, quantity, and delivery schedules. These efforts have led to such achievements as improved yields, better identification of new materials, and lower break-even points. Honda meets with suppliers every month to study subjects such as employee education, new materials, physical distribution systems, improved production lines, and better Quality Assurance (QA) systems. Manufacturers and suppliers also form joint project teams to work on new product development, resource savings, and energy conservation. Ricoh invites technical personnel from its designated suppliers to work on solving problems with Ricoh technicians. It also sends its technical experts to suppliers to help them implement process improvement activities.

Dyer [1996] reports that Chrysler started the Supplier Cost Reduction Effort (SCORE) in 1989 to increase the flow of ideas with its suppliers. The purpose of SCORE is to help suppliers and Chrysler reduce systemwide costs without hurting suppliers' profits. Chrysler keeps detailed records of the number of proposals each supplier makes and the dollar savings they generate, and uses

those records (along with the supplier's record on price, quality, delivery, and technology) to grade the supplier's performance. When Chrysler accepts a SCORE idea, the supplier has two choices: it can claim half of the savings or it can share more of the savings with Chrysler and boost its performance rating. As of December 1995, the SCORE program as a whole had resulted in the implementation of 5300 ideas that generated more than \$1.7 billion in annual savings.

According to Dyer and Ouchi's [1993] study of Japanese buyer/supplier relationships, prices are usually renegotiated every six to twelve months based on how much suppliers have been able to reduce their costs. Thus, gains are shared between buyer and supplier, and supplier profit margins are maintained. Suppliers may also work independently of buyer assistance programs to reduce internal costs. Toyota suppliers often set up a *jishuken* (cooperation and assistance group) to share ideas on how to reduce costs or improve quality. Improvements realized through *jishuken* activities accrue primarily to the supplier in the short term, but are shared with the buyer over the long term.

6. Implications for the Air Force

Outline	
<ul style="list-style-type: none">• Transaction Cost Economics (TCE)• Evidence regarding transaction cost theory• The business management approach to outsourcing• Evidence from the business management literature	
<ul style="list-style-type: none">• Implications for the Air Force	
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Outline

In the final section of this report, we summarize the implications of the economics and business management literatures for the Air Force's outsourcing policy. Although the two literatures do not provide identical views on outsourcing, their approaches appear to be complementary rather than contradictory.

Core Competencies and Asset Specificity Influence Sourcing Decisions

- **The number of activities that an organization can manage effectively is limited**
 - TCE focuses on asset specificity
 - Management literature focuses on core competencies

- **Both concepts can be used by the Air Force**
 - Identify core competencies
 - If non-core activities involve transaction-specific investments, outsourcing is more difficult

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Core Competencies and Asset Specificity Influence Sourcing Decisions

The two literatures agree that there is a limit to the number of activities that the senior management of a single organization can manage effectively. The transaction cost literature recommends that governance structures should be chosen to maximize value net of production and governance costs. Therefore, the activities that should be governed internally are those that involve transaction-specific investments, particularly in the presence of uncertainty and thin markets. The business management literature suggests that the limits on managerial time and resources should be handled by focusing on the organization's "core competencies." Core competencies are defined as activities that are central to the organization's customers and mission, in which it has unique capabilities and can meet world-class performance standards.

Both asset specificity and core competencies seem to be important concepts for the Air Force to consider in its outsourcing decisions. The Air Force needs to focus its resources to ensure that it is a world-class provider of its core competencies, and to use outsourcing to gain access to world-class performers of less central activities. If non-core activities require the use of transaction-specific

assets, the potential for opportunism may make contracting with outside providers difficult. Non-core activities using relatively generalized assets are likely to be the best candidates for outsourcing. However, the business management literature suggests that it may be feasible to outsource activities involving transaction-specific assets if the Air Force can develop long-term partnerships with its suppliers.

Good Source Selection and Contract Design Can Improve Performance

- **Sourcing decisions should not be based solely on direct costs; other factors include**
 - Value of better performance
 - Management and monitoring costs
 - Reputation of supplier
- **Contracts should be tailored to manage the buyer-seller relationship**
 - Defining measures of performance, conflict resolution procedures, and provisions for gain sharing can create a solid framework for a long-term relationship
 - Long-term contracts, adjustment provisions, and GOCOs can reduce potential for opportunism

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Good Source Selection and Contract Design Can Improve Performance

The business management literature focuses more directly on the processes involved in outsourcing than does the transaction cost literature. It emphasizes that the primary goal of outsourcing should be getting better value for money rather than simply reducing direct costs. Outsourcing can also improve the organization's strategic focus; create access to world-class capabilities, continuous improvement, and innovation through the supplier; accelerate re-engineering; and allow the organization to share risks with external providers. Both literatures emphasize that the organization must consider management and monitoring costs as well as production costs in evaluating outsourcing options. The organization's goals for outsourcing should be reflected in its source selection criteria, which should include the breadth and depth of the supplier's experience; its financial solvency; its commitment to customer satisfaction, quality improvement, and technological innovation; and its reputation and willingness to offer performance guarantees.

According to the business management literature, the outsourcing contract should serve as a framework for a long-term relationship between the buyer and

supplier. It is important to specify mutually agreed-upon measures of performance, informal conflict-resolution procedures, conditions under which the contract can be modified or terminated, and provisions for sharing gains from continuous improvement efforts or new technology. In addition, good communication links are essential to maintaining a long-term relationship and resolving problems before they become crises. Good source selection, contract design, performance monitoring, and communication can help mitigate the risks associated with the loss of direct control over an activity.

The transaction cost literature also provides advice on contract design to address the problems of asset specificity and opportunism. When transaction-specific investments are not important, simpler fixed-price contracts will suffice. However, as assets become more specific to the transaction, the buyer needs to develop a more complex relationship with the supplier, based on a longer-term, more flexible contract. The degree of asset specificity and uncertainty should influence contract duration and price adjustment mechanisms. In some cases, buyer ownership of transaction-specific facilities (such as government-owned, contractor-operated [GOCO] facilities) or equipment can reduce the potential for opportunism while still allowing access to lower-cost, external providers.

Treat Suppliers of Complex Services as Partners, Not Arm's-Length Vendors

- **Involve suppliers in the design of services**
- **Work with suppliers to integrate processes and maximize the value chain**
- **Share gains of continuous process improvement**
- **Long-term partnerships can provide better performance at lower cost**
 - **Promote transaction-specific investments**
 - **Preserve market incentives**

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Treat Suppliers of Complex Services as Partners, Not Arm's-Length Vendors

The business management literature on strategic alliances and buyer/supplier relationships suggests that long-term partnerships are more effective in improving performance and reducing costs than short-term attempts to squeeze supplier profit margins by frequent recompetitions that award contracts to the lowest bidder. Buyers should be open to suggestions from suppliers about how to design the service, integrate the activities of the buyer and supplier, and make continuous improvements to jointly related processes. To maintain supplier incentives for continuous improvement, the gains from better integration should be shared. Comparisons between U.S. and Japanese buyer/supplier relationships indicate that long-term partnerships can serve as a substitute for vertical integration by protecting investments in transaction-specific assets, while at the same time preserving market incentives to maximize value net of costs.

Kelman [1990] argues that the traditional government procurement system has three goals:

- Equity—to provide fair access to bidders in competing for government business;
- Integrity—to reduce the chances for corruption in the procurement process; and
- Economy and efficiency—to procure goods or services of the quality desired at the lowest possible price.

The traditional procurement culture adopted “full and open competition” as the best means of achieving these goals. However, the practices of developing rigid, detailed Requests for Proposals (RFPs) with minimal input from suppliers and excluding information on the supplier’s past performance have had detrimental effects on the quality of goods and services procured by the government. In particular, the government’s failure to use information on past performance encourages suppliers to make unrealistic promises in their proposals, and discourages incumbent suppliers from making transaction-specific investments in their relationship with the government.

Recent efforts in acquisition reform have attempted to include greater information on past performance in the source selection process. For example, the Air Force’s Contractor Performance Assessment Report System (CPARS) requires annual assessments of contractor performance on current systems acquisitions greater than \$5 million.¹ This information can then be used by performance risk analysis groups (PRAGs) when assessing contractor risk or by source selection authorities when making source selection decisions. PRAGs are encouraged to use information outside of the offerors’ proposals to assess past performance, including CPARS, questionnaires or telephone interviews of contracting officers and program managers associated with similar contracts, and/or commercial references and data sources.²

Extending the use of CPARS and PRAGs to complex support services being considered for outsourcing should help the Air Force get better value from its contractors by rewarding good performance, developing longer-term relationships with good performers, and encouraging transaction-specific investments. As the defense industry consolidates, the Air Force has an added

¹A systems contract is defined as a contractual effort for concept demonstration and validation, engineering and manufacturing development (EMD), production and deployment, modifications, or programmed depot maintenance. Replenishment spare parts contracts, base operating support contracts, and service contracts for operation and maintenance efforts are not included. See AFMC, *Instruction 64-107, CPARS*, 1996.

²PRAGs can be appointed by source selection authorities to assess potential contractors’ performance risk. They assign ratings of high, moderate, or low risk, or a neutral rating if the contractor has no significant performance record. See Joint Aeronautical Commander’s Group (JACG), *Performance Risk Assessment Group (PRAG) Desk Guide*, Version 1.3, 1996.

incentive to develop partnerships with remaining firms, since it becomes more difficult to conduct full and open competition as the number of potential suppliers shrinks.

However, it may not be as easy for the Air Force to develop long-term relationships with suppliers as it is for commercial firms. The procurement culture tends to discourage change and risk-taking on the part of contracting officers, who fear that source selection decisions may be challenged in the courts if they are based on subjective information about past performance. The government must overcome its history of mistrust and exit relationships, and suppliers must be convinced of the government's commitment to long-term relationships. The traditional emphasis on full and open competition is also difficult to reconcile with the longer-term relationships and negotiated procurements sometimes used in the private sector.

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