

Devising a Corporate Facility Location Strategy to Maximize Shareholder Wealth

Chris Manning*
Mauricio Rodriguez**
Chinmoy Ghosh***

Abstract. Location decisions should consider all related impacts upon a firm's shareholder wealth. Overall, firm cost savings available at alternative locations need to be carefully examined in addition to a location's impact on corporate sales revenues. This article reviews relevant literature, discusses recent location decision considerations for several companies and empirically tests a model seeking to measure the impact corporate relocation decisions have upon shareholder wealth. In addition, a classification and listing of corporate location considerations is put forth to supplement the anecdotal illustrations discussed herein. Together these represent a "primer" for professionals and executives involved in corporate facility location decisions.

Introduction

Recently there has been much interest in the impact of corporate facility location decisions on shareholder wealth (Chan, Gau and Wang, 1995; Ghosh, Rodriguez and Sirmans, 1995; and Rodriguez and Sirmans, 1996). Corporate location decisions can have a major impact on future costs and revenues a firm will generate. While the goal of shareholder wealth maximization is well accepted, just how location decisions relate to this goal is often difficult to ascertain. Although "effective placement or replacement of facilities can dramatically improve bottom-line performance, few chief executives fully understand or appreciate the value added through effective location decisions," (Wilson, 1987).

This article focuses on factors influencing corporate location decisions and how they impact shareholder wealth. The next two sections report actual location decision considerations for several companies to illustrate the tremendous complexity of such considerations and their expected impact on firm profitability and shareholder wealth. This anecdotal evidence is introduced with a review of relevant literature. The anecdotal sections discuss first how overall operating cost factors projected into the future are related to corporate location decisions, followed by discussion of the many ways in which location choice can also impact firm revenues. Of equal usefulness to

*School of Business Administration, Loyola Marymount University, Los Angeles, CA 90045 or cmanning@lmumail.edu.

**Department of Finance, Texas Christian University, Fort Worth, TX 76129 or m.rodriguez@tcu.edu.

***Department of Finance, University of Connecticut, Storrs, CT 06269 or Chinmoy@sbaserv.sba.uconn.edu

people involved with corporate facility location decisions is the classification and listing of numerous facility location considerations presented in Exhibit 1. The fourth section presents a generic corporate location decision model accompanied by results from empirical tests on the impact corporate relocation decisions have on shareholder wealth. The fifth section is the conclusion.

Cost Factors Related to Corporate Location Decisions

Some corporate costs vary across geography. For example, wages, taxes, rental rates, utilities, raw materials, components and transportation costs can vary significantly. At first glance, one may assume that locating to a lower cost area will always enhance shareholder wealth. However, that is not always the case. Corporate profitability is affected by differences in sales volume and prices as well as cost differences across space. Furthermore, shareholder wealth is affected by differences in the timing of the cash flow and cash flow risk that varies among prospective sites.

This section discusses the indirect and direct cost savings associated with location choice. Direct cost savings are more readily quantified and include lowering expenses such as taxes, wages, utilities, other overhead expenses and transportation costs. Indirect cost benefits include improved educational levels, the work ethic of the labor force and improved communication within the firm. The impact of future technological advancement upon today's costs and operating processes needs to be considered in addition to focusing on current individual costs.

The site selection process has become a decision environment that benefits from the close collaboration of operating unit line managers and support staff, rather than adherence to the insulated real estate deal making approaches of the past. Following a review of relevant literature, the complexity associated with identifying the relevant cost considerations inherent in location decision making is illustrated with anecdotal examples throughout this section, and in greater detail later with The Travelers Corporation recent relocation, and Ernst & Young's adaptation of the "hoteling" concept, which is under consideration by many companies.

Research on Corporate Location Decisions Seeking Direct Cost Savings

Much of the research on the cost factors that influence corporate location decisions is inconclusive, and seemingly contradictory. Schmenner's survey (1982) of plant location decisions of Fortune 500 firms reports that high taxes and bad business climate were not often cited as reasons for locating to a new site. Schmenner, Huber and Cook (1987) also found that taxes were not significantly related to the location of Fortune 500 company plants. Carlton (1983) provides additional empirical support for the notion that business climate and taxes do not have a major effect on plant location decisions. Yet, Bartik (1985) by employing a logit model, found that the coefficients of the effective corporate income tax rate, wage rate and unionization variables did have a significant negative effect on the probability of branch plant location.

DEVISING A CORPORATE FACILITY LOCATION STRATEGY

Exhibit 1
Cost and Revenue Issues to Evaluate When Devising a Location Strategy to Maximize Shareholder Wealth

Operating Cost Issues	Operating Revenue Considerations	Real Estate Market & Site Issues	Govt., Tax & Accounting Issues	Strategic Issues
Effective rent per/sq. ft	Proximity to customers/ access to markets	Building efficiencies, amenities, and layout of functional space	Regulatory climate	Capital structure, future capital needs and cost of capital
Labor pool availability, wage rates & salaries	Impact on sales volume and variability (riskiness)	Facility access and infrastructure	Municipal concessions	Exposure to real estate market risk (buy/lease; alternative uses of capital, etc.)
Costs of raw material, components & local services	Impact on price per unit	Parking	Off balance sheet financing	Property specific risk (Environmental hazards, asbestos, etc.)
Utilities (power, communications, water, etc.)	Gain from real estate sales	Telecommunications and utility services	Foreign tax credits	Location exit strategy (Occupancy time horizon)
Other operating expenses	Critical mass market presence/economies of scale	Property management	Occupancy taxes	Growth prospects, expansion needs and flexibility*
Transportation costs	Agglomeration economies	Real estate market conditions, forecast and availability of alternative sites	Capital gains taxes/ losses	Effects on internal corporate relations, communications, and functional area integration
Relocation costs	Projected changes in product/service mix, units sold and price per unit	Housing market affordability	Property taxes	Future technological needs and substitution possibilities
Economies of scale & economies of scope		Business climate	Income tax rates	Competitor locations and comparative advantages
Externalities from agglomeration		Weather (climate)	Depreciation benefits	Decision support systems
Training costs		Room for growth	Accounting rules on foreign assets, income and liabilities	Geographic diversification
Workforce educational level		Quality of life for employees (e.g., cost of living, school system)		Exposure to exchange rate risk
Level of union control				
Time employees spend commuting				
Employee turnover & work ethic				
Trends in operating costs				
Changes in manufacturing (or service) processes				

In regard to employment growth, Plaut and Pluta (1983) found adverse business climate and high overall state tax efforts in a state tend to slow manufacturing growth. Newman (1983) reported that state corporate tax rates are negatively related to employment growth in capital intensive manufacturing industries. Benson and Johnson (1986) found that higher state taxes adversely impacted investment in plant and equipment. And finally, Wasylenko and McGuire (1985) reported that wages, energy prices and per capita income had important effects on employment growth.¹ In summary, Bartik's (1985) work, along with research on the determinants of employment growth (Newman, 1983; Plaut and Pluta, 1983; Wasylenko and McGuire, 1985; and Benson and Johnson, 1986), do suggest that state and local taxes, wage rates and business climate are important cost considerations in business location decisions.

Research on corporate relocation decisions sheds a little more light on how business location decisions are impacted by spatial operating cost differences.² Evans (1973) and Burns (1974) view the relocation decision as a problem of minimizing total transportation and communication costs.³ Burns finds firms relocating their headquarters vertically (moves from central cities to suburbs) were motivated by different factors than firms moving horizontally (moves between central cities). Vertical movers were found to be attracted by lower rents and taxes, while horizontal movers were more influenced by factors reflecting access to consultants, laboratories, capital sources and cultural facilities.

Tradeoffs among Site Space, Direct Labor Costs, Indirect Labor Benefits and Technology

In addition to being inconclusive, much of the research on factors influencing corporate location decisions is limited to looking at current out-of-pocket costs that influence decisions. Research does not address the complexity of corporate facility location decision making that management face. To provide this perspective, eight corporate real estate executives were interviewed by telephone, in order to gather insights into the issues these executives were analyzing when choosing sites for both new and relocated facilities. The executives were selected by reputation within Industrial Development Research Council (IDRC) as innovative leaders in both site selection and managing company's corporate real estate portfolio.

The telephone interviews revealed that the executives consider some of their biggest costs of doing business are wages, salary and space expenditures. These costs are impacted in numerous ways by the site selected. In seeking to reduce both salary overhead and space needs, there is sometimes a tradeoff between lowering total salaries and lowering rent. Yet, at other times, decisions that yield cost savings in both areas are also complementary to overall business efficiency, business unit profitability and other benefits for shareholders.

Not only can the wage rate and availability of a particular skill vary from one area to another, but the work ethic, education, productivity and stability of prospective employees also varies. Where some companies have found it advantageous to locate

along the Mexican-United States border to take advantage of that area's large quantity of low cost, unskilled labor, others find it necessary to locate facilities (*e.g.*, R & D) near universities in suburban areas close to major urban areas such as Boston, MA, and San Jose, CA. Furthermore, by locating corporate activities more systematically in relation to their markets and/or other business units, it is possible to not only reduce space needs, transportation expenses and labor costs, but to also strengthen working relationships by physical proximity.

Top management at one national bank has been working collaboratively with its business divisions to review staff deployment nationwide against their array of leased and owned space. They expect to reduce their obligation for rentable space throughout the U.S. from \$286 million in 100 buildings down to \$219 million in 81 buildings. Additional cost reductions are expected by eliminating duplicative services for mail distribution, housekeeping, security and maintenance (Joroff, 1992).

Some corporate real estate executives (*i.e.*, at Eastman Kodak, Dunn & Bradstreet and The Travelers Cos.) have identified additional innovative ways of reducing salary overhead and space expenditures. These companies have changed employee job descriptions, taken advantage of operating unit reorganizations, consolidated some employee support services and reduced employee turnover and training costs, to not only further cut labor and "rent" overhead, but also to improve worker productivity and job satisfaction. Their saving innovations have been enabled by (1) taking advantage of new labor saving technologies; (2) identifying more productive and stable labor pools; (3) relocating leased space to less expensive geographic areas with lower rent cost per square foot; and (4) reducing the number of employees that need their own space, the amount of space each employee needs and using existing leased space more efficiently (*e.g.*, doubling up employee use of space where permitted by different work schedules).

A number of companies like Eastman Kodak, Chase Manhattan Bank and The Travelers Cos. have recently sought economies-of-scale savings through consolidating a number of back-office operations around the country into a single, or just a few, larger operations located in less dense smaller urban areas. These plant sites are being selected, not only because of lower labor costs and rents, but also for the labor pools that are expected to be more productive for the same wage rate due to a stronger work ethic, a more highly-educated population and less competition from alternative employment opportunities. A closer look at some of The Travelers Cos. recent relocation decisions illustrates the increasing importance companies are giving to indirect cost considerations as well as forecasted changes in out-of-pocket operating costs, many of which are brought about by technological advances.

The Travelers Cos. Case: Cost Savings and Improvements in Productivity

The Travelers Cos., with over \$52 billion in assets and 33,000 employees, service their customers across the country at 410 major locations from 9.5 million square feet of space (7.5 million square feet leased, plus 2 million square feet owned) (Schako, 1992). Travelers recently consolidated their 13 "personal lines policy service centers,"

that support their homeowner's and automobile insurance business, at two locations—Knoxville, TN and Glens Falls, NY. While this consolidation enabled Travelers to reduce total employment from 558 employees to 430, the cost savings achieved went far beyond just a reduction in space and salary expenses (Schako, 1992).

In addition to Travelers reducing rent per square foot, the amount of space under lease, and total number of employees in their personal lines policy service function, it also was able to hire better educated employees at the offered wage with a stronger work ethic, take advantage of economies-of-scale in training and other operations, and provide many of these employees with more rewarding work (thereby further improving worker productivity). Cost savings achieved from lower employee turnover and more efficient training have been significant. Furthermore, Travelers is now well positioned to take advantage of future "business engineering" opportunities and information technologies (*e.g.*, optical imaging) made cost effective by the higher employee concentrations at the two remaining locations.

It is interesting to note that previously, between 1978 and 1990, Travelers reduced their number of personal lines policy service offices from 71 (with 1,344 employees) to the 13 remaining offices in 1990 (with 558 employees) as they consolidated locally based records at individual offices into a nationwide database. These 13 remaining offices in 1990, prior to this most recent consolidation, were all located in suburban perimeter locations in some of the largest metropolitan cities in the U.S. (*e.g.*, Atlanta, Dallas and Walnut Creek, CA). These sites were originally selected because of the nearby availability of executive housing. During the company's major office consolidation moves of the 1980s, the severe commuting problems in the 1990s faced by ordinary workers (*e.g.*, traffic jams, unaffordable housing, long commute times, etc.) were not anticipated (Schako, 1992).

In contrast, Travelers' selection of Knoxville, TN, as one of their two remaining sites, demonstrates their company's greater focus today on cutting costs while improving overall productivity, quality and profitability. Knoxville, which was not even one of the 13 remaining sites in 1990, was recently selected out of 28 possible cities because it is a smaller city with fewer commuting problems and a stronger work ethic. Other reasons for selecting Knoxville include: (1) favorable insurance industry regulatory climate; (2) little direct competition anticipated from other employers in the area for the desired labor pool, and thus a lower cost of doing business was likely to continue for some time into the future; (3) space lease rates being 50% below the national average; and (4) availability of labor at the offered wage with about two years education grades above the national average with at least some college (Schako, 1992).

In planning for relocation of some of Travelers' "health claims processing" operations, which handle the receipt of provider (*e.g.*, hospital, pharmacy) information, considerable personnel consolidation will also be possible in order to reduce administrative support overhead (*e.g.*, supervisors, trainers, mail service, security, etc.). While the total number of sites may not be reduced, the redistribution of a significant number of personnel in "transportable positions" should enable

Travelers to reduce training costs and number of supervisors. New health claims processing employees will then be trained more quickly at fewer locations in formal training programs; thus, making them productive sooner, less likely to quit (*i.e.*, lowering costly new employee turnover) and improving their job satisfaction.

Travelers is also beginning to consolidate some sales support offices into fewer central locations and to encourage these people to work more from home and car with the help of telecommuting technologies (*e.g.*, voice mail, facsimile machines, email, etc.). Cost savings from reduced need for office space and technical sales support is beginning to occur. It is worth noting that this gradual consolidation of sales support personnel at central locations (which are often more distant from customers), is made possible by Travelers' customers relying more heavily on voice mail, facsimile machines and electronic mail when interacting with sales support personnel.

Ernst & Young: Hoteling

In addition to their site selection decisions, some progressive managers of corporate real property at large firms like Ernst & Young, Eastman Kodak Company and Arthur Anderson are innovating to dramatically reduce their operating space needs to increase cash flow and shareholder wealth. For example, Larry Ebert at Ernst & Young initiated "hoteling" with the June, 1992, opening of Ernst & Young's new Chicago office, a practice referred to as a "just-in-time-office" by Bruce Russell at Eastman Kodak.

The objective of the hoteling concept at Ernst & Young is to dramatically reduce the amount of auditing and consulting professional office space needed by eliminating 70%–90% of the offices that historically have not been in use at any given time. While it has been a privilege for everyone on a highly paid auditing and consulting staff to have their own private office, this appears to be a wasteful overhead expense when considering that most auditing and consulting professionals are working at a client's office 80%–90% of the time. While partners and principles at Ernst & Young have their names on their office doors, the firm's senior managers and more junior staff share a pool of private offices that become their own "private" office, complete with personal computers, files, personal items, etc., on days when they need to work out of the firm's offices. Ernst & Young's Chicago office pool has only one office for every five senior managers, plus only one office for every ten less senior consultants and auditors on long term assignments. Less senior consultants and auditors on short-term assignments share "just-in-time-offices" at a ratio 1:5, the same as senior managers.

Under the hoteling concept, an auditor or consultant who needs to use one of the firm's private offices, makes a reservation in advance for an office just like for a room in a hotel. On days they use their firm office, they arrive in the morning after the "conciierge" has already delivered their "hard copy" files to their office. Their personal computer files, along with needed software, is available to them on the personal computer in the office. Their personal items and supplies (like family pictures) are also waiting for them in their "locker" that was retrieved from centralized storage and delivered to "their" office for the day. In addition, an updated computer

"map" of associate and manager office locations and phone numbers (*i.e.*, for other professionals that they may need to meet with or talk to that day), is also at hand. While Larry Ebert recognizes that "the verdict is still out" on the ultimate success of the office hoteling concept, Ernst & Young's confidence to date has been sufficient to make plans for conversion of their Minneapolis office to the hoteling concept as well.

Minimization of Total Costs

In the same way that Eastman Kodak, The Travelers Cos. and Dunn & Bradstreet have expanded their efforts to reduce employee and space costs in the foreseeable future, can be further extended to take even greater advantage of facility site selection to increase shareholder wealth. Site selection decisions often have major implications for a company's other costs such as the (1) cost of materials and/or components; (2) cost of all locally produced goods and services needed for production (other than space and labor); (3) cost of energy, other utilities and infrastructure needed to support production; (4) transportation costs for both raw materials and components needed for production; and (5) distribution costs for finished goods or services.

We observe that where as a single the production-input component represents the major portion of a facility's costs, a company (*e.g.*, Travelers) will often locate the facility at a site, which minimizes the cost of that particular input component. (With the cost of white-collar labor representing 80% of field office total expenses, Travelers' emphasis on total cost and productivity of labor makes good sense.) However, companies with no single overriding input cost need to look at how the cost, quality and quantity of each of their significant production inputs varies geographically in order to confidently (*i.e.*, lower risk) improve cash flow and maximize company stock price when choosing operating sites. In addition, the cost of production inputs varies not only regionally and internationally, but also within a given urban area (*i.e.*, suburban versus a more central urban location). Fortunately, a number of quantitative approaches for evaluating alternative site locations have already been suggested for handling this type of complex total cost site comparison analysis (Harding, 1988; and Meirleir, 1990). While each individual site location decision may not, by itself, significantly impact cash flow per share of common stock, the cumulative effect of a site selection process covering many sites, can have a material impact.

Incorporating Forecasts of Future Costs

Because the optimal low cost production site does not necessarily remain static over time, companies like Travelers (Schako, 1992) look at the factors impacting future input costs (*e.g.*, labor) at possible new locations (*e.g.*, Knoxville, TN). In addition to these concerns about future costs and quality of individual inputs, corporate real estate managers also need to be concerned about future trends in the quantity (*i.e.*, weights) of their individual required inputs, particularly when changes in manufacturing (or service delivery) processes are forecasted. For example, Freed (1989) noted that "the future introduction of robotics, computer-controlled equipment and machining cells will make manufacturing operations less labor-intensive, thereby de-emphasizing the

importance of wage rates as a decision factor." While production wages may be less important, Freed also notes that local support to keep the expensive equipment fully utilized will become more important and crucial (*e.g.*, availability of highly-skilled technicians that can repair the expensive equipment, avoidance of workforce militancy and risk of production disruption in areas with strong unions, etc.).

In the future, corporate real estate managers can expect (1) greater international competition (sometimes based upon production site advantages); (2) greater reliance on computer analysis taking advantage of more useful and complete databases; and (3) greater investigation by engineers into production substitution possibilities concerning materials, labor, machines, components and even production processes all aimed at lowering total production costs.⁴ Consequently, we should expect intense cost competition between international companies seeking to take advantage of product (or service) design by cost engineers, and even engineered production processes, in order to tailor products (and services) to the lowest cost resources available at optimal facility locations. Sophisticated real property managers (*e.g.*, The Travelers Cos.), have already begun working to forecast future cost trends of major inputs (with the help of computers and historical information) in order to identify the most probable lowest cost production site over the forecast time period of anticipated future production (Schako, 1992).

Integrating Major Functional Areas

Inevitably, as markets become more competitive in the future, the accurate estimation of the variation in total cost of producing a varying product (or service) using a variable production process among different possible site locations will require closer cooperation and exchange of information among all the major areas of a company. For example, the relocation and consolidation of Travelers' personal lines policy service centers in 1990 required the involvement and joint planning by the managers of business operations (production), human resources, finance, marketing, development, data processing, telecommunications, legal, facility design and corporate real estate (Schako, 1992).

A forum of leading corporate real estate executives found that "increasing demands require higher quality and more timely information from diverse sources internal and external to a firm, as well as improved methods of decision analysis. Creating decision-support systems to meet these demands not only can assist real property managers in their decision processes, but [can] also be a catalyst for the reevaluation of organizational information needs and reporting" (Joroff, 1992). In addition, a speech by Michael Bell, (Director, Corporate Real Estate, Dun & Bradstreet Corporation), noted not only the importance of close collaboration between corporate real estate executives and others in management throughout a company, but also that corporate real estate managers will need to rely more in the future on sophisticated information resources and flows as part of continuous process management in place of the real estate deal making approaches of the past (Bell, 1991).

Location Choice Impact Upon Revenues

Where many businesses, particularly those in manufacturing and national distribution, may find selection of the lowest cost operating site to be the most profitable, others may not. For example, many retail companies (*e.g.*, fast food businesses) and regional manufacturing and distribution companies, will find their most profitable site determined by the volume of "units" that can be sold from a prospective site. Many of these companies need to look closely at both components of total revenues (*i.e.*, units sold and price per unit) as well as total costs, in order to identify sites that will truly maximize future cash flow, and thereby contribute to maximizing shareholder wealth.

Erickson and Wasylenko (1980) argue that important factors for location decisions vary across firms.⁵ They develop theoretical models for the location decision focusing on whether or not a firm's sales level is affected. For location decisions that affect manufacturing and transportation costs, but not sales volume, a cost minimization model is recommended. However, for location decisions that affect sales volume, a profit maximization model is cited as being more appropriate. In these situations, an excessive emphasis on minimizing costs can lead to location decisions that sacrifice revenues and net profits, leading to a reduction in shareholder wealth. In their empirical research applying a cost minimization model, Erickson and Wasylenko report that nearness to highways and sites surrounded by high proportions of vacant land were important factors for attracting manufacturing plants. Their results suggest that agglomeration economies and proximity to available labor force are important factors for vertical relocations.⁶

Proximity to Customers

Harding (1990) forecasts that, in the future, global business competition will push companies in capital-intensive manufacturing, service and distribution industries, with high service requirements, to locate closer to their markets. This will enable them to provide higher quality goods and services customized to their customers' needs. Not only will global quality pressures require the marketers and researchers of high service capital-intensive companies to locate close to their customers, but just-in-time delivery requirements will also force high-service capital-intensive suppliers to do the same. In contrast, "capital-intensive industries with low service requirements (*e.g.*, chemicals) will be pushed away from dense urban areas and toward locations where other key resources (*e.g.*, electric power and minimal environmental damage) are most economically available," (Harding, 1990).

Thus, it follows that market oriented companies like Hewlett Packard and IBM, for whom labor costs are less important due to advanced manufacturing technologies and outsourcing of many components, have recently been selecting manufacturing plant sites to gain access to key markets. For example, Hewlett Packard selected Bergamo, Italy, for their new 250,000 sq. ft. manufacturing and R&D facility, to better serve the Italian marketplace. Dennis Raney, director of real estate for HP, expects the new facility will enable product engineers to better understand Italian customer needs, and will also shorten product development and delivery times.

In addition, Raney reports that HP will significantly broaden its market opportunities within Italy. Governments are increasingly interested in the jobs, technology transfer, taxes and foreign exchange created by internal manufacturing investments. HP's new facility will permit HP to be viewed within Italy as a "local" and thereby open doors to government and government-related marketing opportunities that would not be available otherwise. Such nationalistic economic customer attitudes are common in many countries including the U.S., where some consumers regard Japanese cars manufactured in a U.S. plant more favorably.

Variation in total company transportation costs among different locations can determine a company's lowest cost operating location; but, what if a significant portion of the transportation costs of finished goods or services are left for the customer to pay? In these cases, proximity to the point where a customer picks up the cost of transportation may have a major impact upon a company's total dollar sales volume. While such customer transportation costs often mean getting a product or service from the company outlet to a customer's home or business, it may also mean getting the customer from their home or business to the company outlet (*e.g.*, fast food). In either case, more sites closer to customers, or possibly more generous customer delivery policies, may have to be considered.

Critical Mass Presence in a Market

To further complicate matters, companies such as Taco Bell, Pizza Hut and Kentucky Fried Chicken have recently found that site selection strategy needs to consider more than just selecting the most profitable individual site locations. Not only are site locations of nearby stores in the same chain as well as competitor chains important, but the total number of stores a chain decides to locate within a single urban market is also of paramount importance.

This is because a critical mass of some minimum number of stores within each urban area is needed by a chain retailer to profitably supply and service the chain's stores in that city with adequate management supervision and product distribution support. Without a sufficient number of retail locations in each urban area where the company has a presence, overhead will be too high to adequately support the stores in that area. Also important are the significant economies-of-scale in mass advertising, as well as consumer buying habits related to product or service recognition within an urban area. Consequently, experienced retail chains (*e.g.*, fast food businesses) are more likely to consolidate 10 individual stores within a single urban area than to spread them less densely over several urban areas.

Jim Chronley, past senior vice president of development at Taco Bell Corp. (Irvine, CA), cites the consideration of opening at least 10 to 15 stores every time they enter into a new city as key in their expansion and site location strategy. Chronley, along with David Cattell, vice president of real estate for Kentucky Fried Chicken (Louisville, KY), cites Pepsico's expansion strategy for their new Hot 'N Now hamburger chain as further evidence of the importance of opening up a minimum critical mass number of stores in each new urban market. From a beginning of only

77 stores in December, 1990, when Hot 'N Now was acquired, Pepsico has added a significant number of new locations.

In addition to customer recognition advantages and other advertising economies-of-scale, Pepsico plans TV advertising for each urban area targeted for Hot 'N Now expansion. For example, Pepsico planned a local television campaign in Fresno, CA, following the opening of their new Hot 'N Now stores. Pepsico's marketing strategy for this chain is based upon providing "drive thru" hamburger menu service faster and more conveniently than traditional sit-down and drive thru fast food site operations. Cattell notes that total investment for each new Hot 'N Now location, with a second streamlined drive-thru capability, will be a little less costly by eliminating the investment needed to provide sit-down restaurant space, restrooms and parking. Pepsico plans to reap the same critical mass marketing, supply distribution and management economies-of-scale benefits with 10 to 15 new Hot 'N Now stores for each city targeted, with less total dollar investment than either their sit-down Kentucky Fried Chicken or Taco Bell locations. Even more important to Pepsico's long-term strategy, Chronley and Cattell both cite the tremendous economies-of-scale cost saving advantages generated by supplying meats, buns, beverages, etc. to the fast food operations of four major chains around the world—Kentucky Fried Chicken, Taco Bell, Pizza Hut and Hot 'N Now.

Location decisions are essentially capital investment decisions and their impact on shareholder wealth depends on the expected change in bottom line performance associated with these capital investment (location) decisions. McConnell and Muscarella (1985) provide empirical evidence that increases in capital expenditure (a positive signal) indicate a firm's access to profitable growth opportunities that result in an increase in a firm's stock price.⁷ Firms locating retail or other facilities, which benefit from agglomeration economies, to more densely populated areas are expected to have more opportunities for increasing firm revenue. McConnell and Muscarella's results imply that the positive signal of increasing revenue will also enhance shareholder wealth. However, facilities, such as manufacturing plants, that do not experience increases in revenue by locating to spatially aggregated areas are more likely to maximize shareholder wealth by locating such facilities to sites that offer cost savings (Ghosh, Rodriguez and Sirmans, 1995). In such cases, expected cost savings should act as a positive signal that causes an increase in firm value.

Impact of Location on Shareholder Wealth

A classification and listing of corporate facility location considerations is provided in Exhibit 1 to illustrate the numerous ways that locational variation in corporate costs and revenues impact corporate profitability and shareholder wealth. For practitioners seeking to compile their own list, Exhibit 1 is an excellent starting point as it summarizes the experiences of the executives we interviewed as well as the literature references.

A basic model is presented that tests the hypothesis that corporate location decisions do impact shareholder wealth through their expected effect upon future corporate expenses and revenues.

The Theoretical Model

Firms will increase shareholder wealth by relocating facilities to new sites when the marginal benefits from moving to a new site exceed the marginal costs of doing so. Thus, firms should evaluate the overall benefits and detriments of staying at an existing location and compare them to those of relocating to a new site. If a firm relocates to a new site, it incurs costs as follows:

$$C_n + M - R_n.$$

If a firm stays at an existing location, it incurs costs as follows:

$$C_e - R_e.$$

Where:

C_i = Overall costs of operating at new location ($i = n$) or at existing location ($i = e$);
 R_i = Overall revenues from operating at new location ($i = n$) or at existing location ($i = e$); and

M = Relocation moving costs.

Thus, shareholder wealth gains will occur if a facility is moved when the costs associated with a new location are less than the costs of staying at an existing location.

$$C_n + M - R_n < C_e - R_e.$$

However, it is also true that a firm's value will be reduced if a facility is moved when the costs of staying at the existing location are less than those associated with the new location (*i.e.*, $C_e - R_e < C_n + M - R_n$). The wealth effects of firm relocation decisions is therefore an empirical issue.

Database

The Wall Street Journal (*WSJ*) was used to identify the announcements of relocation decisions from 1966–1995. It was searched under several key words such as “relocation” and “moving.” The search yielded 267 relocation announcements. For multiple announcements relating to one move, the earliest relocation announcement date was used. Of the 267 relocation announcements, sufficient data was available in the CRSP files to provide a usable database of 182 cases.

Methodology and Results

Standard event study methodology was used to ascertain the wealth effects of firm relocation decisions.⁸ Abnormal returns were calculated as actual return minus expected return. The market model was used to calculate expected returns. The null hypothesis to be tested is that the stock price impact of relocation decisions is not significantly different from zero. To measure the stock price impact, the average daily

and cumulative abnormal returns from sixty trading days before through thirty trading days subsequent to the first announcement of each relocation were examined. The announcement day in *WSJ* is used as day 0. [It should be noted that the market often receives information the day before it is published in *WSJ* and therefore a market reaction may occur on the day before publication (*i.e.*, day - 1).] The estimation period for the market model spans from day -180 through day -61 to provide expectations for returns without any effect from relocation announcements. Following Patell (1976), *t*-Statistics were computed.

It should be noted, however, that right skewness and leptokurtosis, sometimes suggested as being persistent in stock returns, often invalidate the normality assumption underlying parametric statistics. [For example, Corrado (1989) and others have documented that stock return distributions exhibit departures from normality.] Therefore, we also calculated a generalized rank statistic to test if the median abnormal return is significantly different from zero.⁹

Exhibit 2 provides *t*-Statistic and generalized rank statistic results of the wealth effects for the sample. Consistent with Ghosh, Rodriguez and Sirmans (1995), a significant wealth effect is not found for the sample portfolio of relocation announcements based on our generalized rank statistic results. The average market reaction was positive over most intervals, but the median market reaction tended to be negative. The lack of a significantly positive change in portfolio median equity values suggests that many location decisions have been carried out in a manner that did not increase shareholder value. While Alli, Ramirez and Young (1991) found a positive average market reaction

Exhibit 2
Relocation Announcements

Interval	Median CAR	<i>t</i> -Statistic	Rank Statistic	Number Positive:Negative
-1	-0.12	0.1	-0.51	78:104
0	-0.19	0.4	-0.07	78:104
+1	-0.01	1.7*	0.64	90:92
-1,0	-0.23	0.4	-0.41	82:100
-1,+1	-0.23	1.3	0.03	81:101
-5,+5	-1.04	-0.8	-1.29	77:105
-60,-2	-0.29	0.5	-0.37	88:94
+1,+30	-0.51	0.7	-0.48	98:84

Daily and cumulative abnormal returns in percent over various intervals for 182 relocation announcements from *The Wall Street Journal*. The announcement date (denoted day 0) for the relocation announcements come from the 1966-1995 period. The abnormal returns are generated by a market model estimated with 120 daily returns beginning 180 days before the announcement day. The equally weighted market index is used as a proxy for the market. The *t*-Statistics are calculated following Patell (1976). The rank statistic is presented in Corrado (1989).

*Significant at the 5% level.

to corporate headquarters relocation announcements, they report variation around this average and do not use nonparametric tests to examine the median market response. Yet, they did find abnormal returns were positively related to the availability of labor and negatively related to the cost of living at the new location and the changes in employment levels.¹⁰

Although the first empirical test of our full sample portfolio did not demonstrate a significant change in wealth, several individual firms did experience significant changes in value around their relocation announcement. Thus, we additionally estimated two regression models in an attempt to explain the cross sectional variation in wealth effects across relocating firms. Exhibit 3 presents the results for these cross-sectional regressions where cumulative abnormal returns from days (-1,0) are the dependent variable and dummy variables are used to capture if the relocation decision was based on expected cost savings or increases in revenues. These results do show a statistically significant positive relationship between the change in shareholder wealth and relocation decisions that are expected to reduce costs and/or increase revenues. It is interesting to note that while relocations expected to reduce costs were statistically significant at the 1% level, relocations expected to increase revenues were statistically significant at only the 10% level. This may reflect greater investor confidence in a company achieving cash flow gains through cost reductions as opposed to increasing revenues as a result of relocating. In addition, the intercept shows a significantly negative market reaction for the remaining relocation decisions, (*i.e.*, those relocating companies that did not cite expected reduction in costs or increases in revenues). Ghosh, Rodriguez and Sirmans (1995) report that relocation decisions appearing to be associated with agency problems elicit a negative market reaction. Furthermore, they report that relocation announcements without a stated motive, on average, experience losses in shareholder wealth. Apparently, the market looks down

Exhibit 3
Ordinary Least Squares Parameter Estimates

	Intercept (α)	Cost Savings (δ)	Revenue Increases (ω)	F-Statistic
Estimated Coefficient ^a	-1.09 (-2.9) ^c	1.59 (2.9) ^c	1.55 (1.8) ^d	4.97 ^c
Estimated Coefficient ^b	-1.23 (-3.3) ^c	1.90 (3.6) ^c		12.91 ^c

Ordinary least squares parameter estimates for two linear regression models are presented. The estimated coefficients for the explanatory variables are reported along with the corresponding *t*-Statistics (in parentheses). The dependent variable is the cumulative abnormal return over the interval (-1,0). The independent variables equal one if cost savings or revenue increases are expected from the relocation and zero otherwise.

^aModel 1: $CAR(0,1) = \alpha + \delta D + \omega R$

^bModel 2: $CAR(0,1) = \alpha + \delta D$

^cSignificant at the 1% level.

^dSignificant at the 10% level.

on moves that do not provide expected cost savings or expected increases in revenues. Our results are consistent with Ghosh, Rodriguez and Sirmans that show that the wealth effects of corporate headquarters relocation's are associated with the motives cited (or not cited) in the relocation announcements.¹¹

While, on average, firms that relocate for cost reasons, such as lower taxes, lower rental costs, and lower transportation costs, experience a positive market reaction, not all firms that announced moves to reduce costs experienced positive changes in wealth. One reason may be that the expected cost savings were not large enough to offset the anticipated moving expenses. Another reason may be that although the relocation decisions were expected to decrease costs, investors also expected a decrease in the firm's sales revenues to the point that overall profitability would decline.

Conclusion

Corporate location decisions can have a significant impact on shareholder wealth. Important expense and revenue factors managers should consider when making location decisions are discussed and illustrated. Retail, as well as corporate facilities that require direct contact with a large number of customers, are most likely to benefit from agglomeration economies and increases in revenues that will enhance shareholder wealth. Wealth enhancing location decisions for other facilities are more likely to be driven by cost savings, which are often available at less centralized locations. In contrast, non-economic reasons for relocating, or a too narrow location decision perspective, is likely to result in location decisions that reduce shareholder wealth.

In addition to a literature review, a generic model is presented, discussed and empirically tested. While event study results for the total sample (Exhibit 2) do not reject the null hypothesis of no wealth effects, cross-sectional empirical tests (Exhibit 3) do support the hypothesis that corporate relocations to reduce costs or increase revenues can increase shareholder wealth. Furthermore, these cross-sectional results suggest that poorly justified or non-economic reasons for relocating are likely to have a negative impact upon shareholder wealth.

When a company announces a decision to locate, or relocate, facilities, it needs to specify what cost reducing or revenue enhancing strategy they envision for increasing their company's future profitability as a result of the planned relocation(s). Otherwise, they can expect a decrease in their stock price as the market appears to assume agency problems are motivating the location decision(s), (*e.g.*, moving to the CEO's favorite community). A broad cross-section of corporate facility location considerations are discussed in order to assist in broadening management's perspective for developing viable location strategies acceptable to their shareholders.

Exhibit 1 provides a classification and listing of location considerations that illustrate the ways that locational variation in costs and revenues impact shareholder wealth. For example, not only are direct costs (*e.g.*, utilities, transportation costs wages and materials) and indirect costs (*e.g.*, work force educational level, work ethic and

employee commuting time) included along with relocation costs under Operating Cost Issues, but current trends in operating costs and forecast changes in manufacturing (or service delivery) processes are also listed. These all may impact firm profitability and shareholder wealth.

De Meirleir (1990) points out how “the historical development of strategic facility-location thinking is a rather recent phenomena and is linked to the evolution of overall management strategies, which differ in the U.S., Japan and Europe.” De Meirleir also discusses how the U.S. multinational companies are ahead of their European and Japanese competitors in strategically locating facilities to improve cash flow and shareholder wealth. As U.S. companies become more aware of the costs of human and material resources and strive to minimize waste to become more competitive internationally, “strategic facility location (thinking) has penetrated domestic U.S. corporate strategy and, in fact, has become the fourth leg of the corporate ‘decision table’ (along with marketing, production, and finance).”

While “strategic-location planning is growing in importance in the West and is almost nonexistent in the East, implementation of these new location-analysis strategies is still at too early a stage to assess their impact on global competition” (Meirleir, 1990: 4). Nevertheless, “a growing number of multinational corporations, American, European and Japanese, in the near future will rely on computer programs to simulate their competitive positions, chart their course of action and guide their expansion accordingly.”

It may seem obvious that picking operating sites that maximize cash flow (by minimizing costs while maximizing revenues) will contribute most to increasing the price of a company’s common stock. For some small businesses, where all company operations are conducted at a single location, selection of the best site can be straight forward with the aid of good data and decision making tools. However, for companies in multiple businesses, where each business may have not only multiple site locations for a function (*e.g.*, sales), but also different businesses run by managers with different perspectives within each functional area (*e.g.*, sales, distribution, customer service, manufacturing, assembly, etc.); the difficulty of gathering data and making good decisions probably increases exponentially with business size and complexity. While these larger, more complex companies will find it more difficult to coordinate their different functional areas when setting policies and analytical procedures for making good selection decisions, it is these very companies, with their greater resources and range of site location options and flexibility, that can benefit most from an understanding of the many ways in which site selection can impact their company’s shareholder wealth.

Notes

¹ Wasylenko (1998) examined manufacturing and non-manufacturing industries. His results varied by industry. Higher wage rates were significantly and negatively related to industry employment growth.

² A focus on relocation decisions reduces the signaling effect embedded in new location decisions.

³ Archer (1991) examines determinants of downtown versus non-downtown location choice.

⁴ Technological innovations will continue to create more choices and opportunities for corporate real estate managers. For example, the World Wide Web may be used to generate revenues as well as reduce costs. The Web can be used to receive sales orders and provide customer support services more efficiently. Technological innovations allow benefits previously associated only with location, such as proximity to customers, to become available at remote locations. As a consequence, technological innovations are generating substitute location possibilities and making sites feasible that otherwise would not be.

⁵ They separate manufacturing and non-manufacturing firms based on whether or not the location decision affects sales.

⁶ Agglomeration economies refer to the advantages of spatial concentration that result from the scale of an urban area. Much has been written regarding agglomeration economies. This literature includes (Pascal and McCall, 1980; Imai, 1982; Gronberg, 1984; Goldstein and Henderson, 1986; and Abel-Rahman, 1990).

⁷ Decreases in capital expenditures (a negative signal) elicit a negative market reaction.

⁸ Patell (1976), Brown and Warner (1985), Peterson (1989) and MacKinlay (1997) review standard event study methodologies.

⁹ The generalized rank statistic for daily abnormal returns is calculated using the non-parametric technique developed by Corrado (1989). For cumulative abnormal returns, Cowan's (1992) generalization of Corrado's technique is used.

¹⁰ Their proxy for labor availability is the unemployment rate in the new location. Employment levels are calculated as the change in the number of employees from the year prior to the move to the year of the relocation. Finally, the cost of living is measured by the CPI in the new location. Other variables (including taxes) were not significant in their regression model.

¹¹ Chan, Gau and Wang (1995) report similar results.

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