JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

I. MANUSCRIPTS

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5. "Relationship of Industrial Site Investment Alternatives to Manufacturing Costs and Return on Capital", March, 1961, School of Business, University of Wisconsin

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School of Business
University of Wisconsin

RELATIONSHIP OF INDUSTRIAL SITE INVESTMENT ALTERNATIVES TO MANUFACTURING COSTS AND RETURN ON CAPITAL

Part I: An Interview on Technique with Ronald Reifler
Fantus Factory Location Service

Part II: An Example of the Technique Applied to a
Michigan Metal Goods Company

Prepared by Professor James A. Graaskamp
March 1961

Part 1

RELATIONSHIP OF INDUSTRIAL SITE INVESTMENT ALTERNATIVES TO MANUFACTURING COSTS AND RETURN ON CAPITAL

A decision of a manufacturer to invest in a new plant and site can have highly important consequences on indirect productivity returns related to investment in location. Increased awareness of variations in both direct and indirect costs of operation among communities, states, or regions together with better understanding of geographical market potentials has led to increasing mobility of manufacturing capital investments. A decision to invest in land is based on a thorough analysis of all direct and indirect costs related to location.

In 1961 we had occasion to record an interview with an executive of a plant location service which operates internationally. The following case will provide the student with information on the analytical techniques employed by location consultants and with an opportunity to arrive at the selection of a specific location by interpretation of data collected by the consultant.

The first portion of this case describes the kind of service offered by the consultant, and represents an edited version of the transcript of the interview. The second portion of the case demonstrates the application of the technique to a specific company problem, and the student will be asked to arrive at some conclusion as to the optimal location for the ABC company on the basis of the information provided. Quotation marks and the use of the first person indicate recorded conversation from the interview with Ronald Reifler of the Fantus Factory Location Service. The typical case presented is drawn in part from the material furnished by Fantus for the book, The Michigan Economy, Its Potential and Its Problems. 1

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1 Written by William Haber, Eugene C. McKean, and Harold C. Taylor Published by the W.E. Upjohn Institute for Employment Research. See Appendix D--Operating the ABC Corporation in 11 midwestern cities, see pages 341-54.

[This page was retyped at Landmark Research, Inc. on July 27, 1992 because the print on the original copy was unclear.]

"You've asked what kind of service do we offer. We are plant location consultants. We make studies for companies to determine the best location for a manufacturing facility, warehouse, office building, and more recently retail store locations. That is about 80% of our work. 20% is making economic development studies for state, cities and regions, indicating the ways in which they can grow economically.

When we make a location study for a company, we are normally called in by the company because the problem is apparently more complex than they can handle on their own. As you probably know over 90% of all companies make their own location studies. We are dealing with the last 10%, and our biggest competition comes not from other consulting firms, but from firms that do it themselves. For very small firms, the president runs around on weekends, and for very, very large firms, there is a staff of people whom they might assign for this one particular job. Later on this staff forms a real estate department where they manage leases and answer questions about property. Of the large group of firms between these extremes, a growing number come to us for aid. Normally, we attempt to define very carefully at the outset what their exact location needs are--and for many companies this is difficult. The reason this is difficult is because the company has never systematically gone through and collected its data in a way useful to making a location study--so we sit down with them and meet with various department heads to determine the exact requirements of each of the departments.

We have prepared forms which assist them in this process. These forms, which appear in Appendix A can be briefly outlined as follows:

Page 1 - Background and Objectives of the Company. (Normally this page would be filled out by the top policy makers in the organization. The information may reveal directly or indirectly company policy concerning market orientation, proximity of competitors, linkages to other company facilities, company estimates of growth and financial needs, etc. The information should indicate whether the company wishes to buy or lease, to change their pattern of labor relations, or to find financial subsidies from a new community.)

Page 2 - Transportation Costs (Since each page of the questionaire can be separated and given to an appropriate department head, Page 2 might go to a traffic manager, marketing manager, or purchasing agent. From information collected we compute in-bound and out-bound annual freight costs and the cost of buying raw material at the best supplied prices.

Page 3 - Cost of Raw Material in Detail (We would include linkages to industrial services and building supply houses and evaluation of the necessity of maintaining these.)

Page 4 - Labor Requirements and Wage Costs (See Appendix E)

Page 5 - Utilities Required and Fuel Costs

Page 6 - Special Occupancy Requirements and Problems and Costs

Page 7 - Site and Building Structure Problems

Page 8 - Local and State Tax Costs

Page 9 - A Recapitulation of Operating Costs at the Present Location

When the company fills this out. we are then in a position to draw up a short and concise specification sheet which is used in all our discussions with communities or state officials in reference to the client. The client is identified by code number and only material that can be released is on the public specification sheet. Every man in our own organization receives a copy of it. for while our personnel will be assigned to manage one project or another, each also has a specialty such as freight, tariffs, or labor cost, or taxes.

Once the specifications are established, we try to define the broad general area in which a new plant should be located. This is done in a number of ways but generally we are concerned with five factors of comparison: labor costs, freight costs. utility costs, occupancy costs, and tax costs. On the basis of surveys in these factors, the broad geographic area might be defined as either one part of a state or parts of a number of states, say Northern Illinois, Northern Indiana. Western Iowa, or Eastern Nebraska. We are doing a study now for a confectionary manufacturer which defines the general area as between the northern suburbs of Boston and the northern suburbs of the city of New York, an area which encompasses quite a number of cities and towns.

Once we define the general area, we systematically classify each of the towns in that area to eliminate them from further consideration. Immediately we get rid of some towns according to population--some are too big--some too small. Others are excluded by a wide variety of devices--they do not have natural gas. or sufficient water, or their tax rates are unusually high. A town may lack truck terminals. rail lines and intersecting rail lines. The greatest delight we have is removing a town from the list because it simplifies the whole process, and community development people should realize that the easiest thing is to have their town removed from the list unless it matches up to a wide variety of circumstances. They might say "Oh, our town is wonderful and why were we eliminated?" It was eliminated because it did not satisfy the exact requirements, and because you can always find some other town which does satisfy more closely a given set of requirements. So then we end up with 10 or 15 towns that look good on paper.

At this point we are ready to travel. We go to those towns: we spend enough time to appraise the industrial climate. This means talking to the major manufacturers, talking to the manufacturers that are similar to our client in size, and perhaps in production processes. We look at industrial sites, checking carefully the kind of utility problems that would result at these sites. We get the feel of the town in general, talking to city administrators, retailers, school superintendents, etc. We then return and prepare a study in which we compare each of the final towns on the basis of what does it cost to operate in the town, what are the operating conditions of the town, what problems might it entail, what kinds of living conditions would it supply. We then make our recommendation to the client. We take the top three towns, write them up, and present these alternatives to the client. If he goes ahead at all--and only about half our clients actually go ahead after a location study, about 90% of the time they will take our first choice. This choice has been so systematically screened and so carefully outlined that unless their specifications change or unless they have a different interpretation of the criteria--then they will normally go ahead with the first choice. They do have two other choices and if those are unsatisfactory, we give them further advice. This is describing briefly the kind of work we do in community selection.

An additional locational problem is the selection of a specific site within a town. We study each of the available bits of property in the community which might be useful for industrial purposes and out of this we try to identify those sites which are best suited to our client's needs. It has to meet the minimum size needs, location needs relative to such things as rail and downtown, etc. We have a detailed site analysis form (see Apprendix C) on which we systematically catalog the criteria pertaining to each of the sites including the physical description of the site, soil conditions, environment, etc. We are mostly concerned with what does it cost to acquire a site--not only the cost of paying the landowner but the cost of bringing utilities to the site, and any necessary changes. We prepare clients needs. The site might be beautiful, might be ideal for one type of firm, but may be unsuitable for another. Therefore it is based on the client.

Normally our work ends when the site selection is made. We will assist the company in negotiating for the site with either local people or with the local community. What we mean by negotiation is that normally communities, that are well organized as for industrial development, will frequently have title to the site. They will have a price, but the question is "what is a fair price?" We are in a position to tell the client at what price other community sites are offered. and what we know how the general area value of land (industrial) in the general region is priced. If it is too high, we would protect the company who hired us in the first place. However, we are also able to tell the community that they might lose an opportunity for this company to locate there if they try to obtain too high a price. Our feeling is that the community should not hope to make money on the sale of some land, which is a one time thing, but to get the industry in and makes its money from the income generated by the presence of the primary activity employer.

One objective of economic analysis is to provide some data to which economic criteria as to the rewards of relocation can be applied. Companies value the rate of return on the capitalized investment and cost of relocation as a very important criteria. While looking for a high rate of return, there is no one rule. One industry might be satisfied with five or six per cent as a magnificent improvement over present experience, while to another 25-30% might seem barely squeezing by. Executives should certainly consider rate of return, but not all of them do because there are a lot of intangibles involved. A present building may be so old they have to get out, or it stands in the way of a super highway. And it is only where careful, systematic studies have been made that you can even come up with a rate of return. Many companies make a move instinctively, flying by the seat of their pants. They move within the same labor market area: they buy land which seems to be reasonably priced and put up a building that seems to be reasonably priced, and pay the same labor rates as before. They don't really compute a rate of return figure for alternatives.

Oddly enough personal preferences and noneconomic criteria enter into location selection more than you might realize. Every company professes to say "find us the best lowest cost area." When the chips are down there is always some intangible. However this can be qualified. Normally the company will in many cases stay in the area in which the costs are the lowest, but they may not take the exact lowest cost. The officers like the appearance of a town or the way in which the high school students handle themselves or the way they were treated in a town. In one sense they are being very economic; they are being very cautious by confining themselves to the area of lowest costs. Other firms, especially firms that are held by one man or one family will say

"Well, we're not going to move out of the town we have lived in all these years, or we're not going to move South if we are Northerners, or North if we are Southerners." And some companies, of course, just go under...because they refuse to make these adjustments. Other firms just swallow hard and go, but the personal factors play a part in the more closely held company. One company hired us...they said don't let us influence your selection...make sure you find us the lowest cost place. And so we found a location for them in southern Indiana and the first question the president asked was, "What happened to Michigan City in Northern Indiana?" I said, "Well it came out too high." It later turned out that he harbored his boat at Michigan City and had his summer cottage there, so wanted it to be there, but it ended up farther South, because it made more sense. Whenever, the economics are so clear cut, then it's easy to convince them of it.

We prepared a form (see Appendix D) which only I use--the other fellows in the organization are not completely comfortable with it. But I sit down with the clients after we have developed the specifications and I say, "All right, we still need some clue to the relative ranking in importance of these things to you and so I'll just call off these items and you tell me whether this is most important to you, of average importance, or below average." Then I quiz them on such things as labor supply, quality and quantity, union labor management relationships, delivery of raw materials, shipment of finished products, characteristics of utilities, tax considerations, community protection services, passenger transportation services, production service, machinery and repair, castings, tool and dye shops, living features, schools, hospital, recreation, characteristics of the community, the self improvement programs, etc. And while it's not precise, it does help to give us a feel for what's most important, so that when we are looking at the towns we know which things to emphasize. For example, a lot of companies select a specific site because of its attractiveness. Assuming they are in the area they want to be in, frequently they will say this site is the best looking. So the general area is very desirable and of course location on super highways is very desirable because of the advertising value. Most firms will not pay a premium for this. They will tell us, "Sure we'd like to be on an interstate route but if someone's going to charge us extra, we're not going to pay it." A few firms will say, "We want to be on it, we will pay the premium" I personally think its worth a great deal...especially to a company selling consumer products and yet we are working for a confectionary firm that says, "Now people aren't going to buy our 5 cent candy bars just because they see us when they drive by on a super highway."

Other firms will select the site just because it's convenient. For example, one firm wanted to be near a college town, so we found a small community within 15 miles of a college town. There were two sites--one on each side of the small community, but they selected the site closest to the college town, so you wouldn't have to drive through the small community to get to the site--just a question of convenience.

So there are a number of intangibles that come into play, once you define the area of lowest cost. Once the location decision is made, we normally step out so we don't know what happens to a firm once it has made a move. Of course, we have occasion to interview again while pursuing a study for another firm interested in the same area. And it is apparent that relocation can be pretty hard on those who move with the firm. You know yourself when you move from one place to another, even within the same city, there is a great disruption when you move beyond the normal range of people you are accustomed to see. It is most difficult for the teenagers and the wives. They must find a new place in a new town and face an entirely new set of problems. The company executive goes to work to a lot of the same problems, and he is pleased and motivated by his promotion. Usually, when you make an executive move, you promote him upward or give him more money to make it seem like something worthwhile, because you are obviously tearing a man away from his moorings. We did a study for a company that required a small town for its production of facilities. We found a small low cost community, but their chief engineer's wife would not go to a small town, so we had to put the central administrative and sales office in a larger town and the plant 75 miles away in a small community, which satisfied everybody, but that normally isn't as economic as putting them all together.

After relocation it takes time to build the same working efficiency enjoyed by the organization before the move. On the one hand efficiency is improved because presumably the physical layout of the plant has been improved. On the other hand, efficiency is lost because people don't know where to go for things, whom to see, or what their job entails, so that it can get very garbled. The first year is usually quite an expensive operation...with all these people running around not producing anything, and they were hired at a little lower cost in expectation they won't produce anything. At the old location the company has the problem of discharging many employees for whom loss of a job is quite a blow. But then there is trouble in moving a labor force to a new location. Our recommendation has always been to start small, to start with a nucleus, to start with less than 50 people in the organization. This is true even if the plan eventually calls for a couple of thousand employees. Once these 50 are oriented and working smoothly it is possible to bring in people for these 50 to train and so grow out from this nucleus smoothly and efficiently. Try to pile everyone in at once and success is certainly endangered. There is one auto manufacturer who moved into a southern town, got a contract from Ford to produce the window vents and then had to hire 300 people in one month. They just hired anyone they could--they ripped apart their whole organization...they went at it too fast, lost money, closed down and moved back to Detroit. A Michigan newspaper said, "Here is an example of a firm that was disillusioned and moved from the South to the North." Now I can see what happened--it was just too much in too short a time. They just didn't have a chance to develop properly.

Our location reports can aid in the financing of a new plant. Our report has little use in a prospectus for a community revenue or general obligation bond when a community development corporation will build a plant. But if the new location is financed privately, say through an insurance company, then this report would indicate to the insurance company that company plans were based on careful collection of data and selection techniques. Expense analysis would forecast for the lender cash budgets and recovery times and give the lender an idea of probable expenses. On the other hand insurance lending departments have their lending idiosyncracies. The Prudential of Chicago traditionally does not like to lend in smaller communities. These lenders are used to the Chicago metropolitan area where building turnover is high so that it is easy to sell a property in default. On the other hand, the Prudential Cincinatti office, which handles parts of Kentucky and Ohio, is ready, willing, and able to finance development in small Kentucky and Ohio towns.

Reports can also be used to force concessions from the present locality of the client. Armed with our studies a client will say, "We don't want to leave, but there are economic cost advantages in operating elsewhere; here is some evidence, now what can you do to help us." Naturally, the local people first attempt to refute the report. People will challenge sources of information, and argue that the best place is not always the lowest cost place. They claim there are a lot of intangibles such as the quality and loyalty of employees, that the existing organization would be broken after years of building, and that company officials will face a whole host of new relationships that have to be established.

Setting aside the subject of intangible influences on site selection, our stock and trade is the preparation of the economic studies based on facts and figures which can be measured, compared, and predicted. To see what kind of information is sought and in what form it is summarized to aid in decision making, it is best to review a typical case.

MEASURING THE PRODUCTIVITY OF ALTERNATIVE INDUSTRIAL SITES IN TERMS OF NET RETURN ON EQUITY TO THE CORPORATION

A case illustration of economic factors influencing a decision to buy land and invest in a new plant structure can be found in the book The Michigan Economy, Its Potentials and Its Problems. The students should read pages 341-54, i.e. Appendix D. However, prior to answering the questions contained at the end of this problem sheet, the student might do well to review the following notes on the process of assembling the data summarized in the text and on the drama inherent in a plant relocation.

Consider for a moment all the past management decisions which have led to a diagnosis calling for radical "plantectomy" and transplant as a cure for company problems. The ABC company has an antiquated, multi-story factory building, lacking physical capacity for new processes and efficient layout. The labor costs of the ABC company are quite high; of thirteen companies in the industry it has the third highest wage cost. Its pension costs are the highest, which indicates that the average age of its workforce is somewhat higher than average for the industry, but that its basic hourly rate is a little below some of its competitors. Nevertheless, the ABC company faces severe competitive pressure because six of the thirteen companies in its industry moved south in the past five years. Another three were already located in the south, so that ABC is one of the four remaining in the north.

Many of its customers in the appliance and the auto parts field have already moved to the south to take advantage of lower labor costs and favorable plant occupancy costs. Management is afraid that the ABC market area is moving away from its headquarters at City "B" in Michigan. Wages represent more than 50% of the cost of production, and so management naturally is attracted to alternative sites with the lowest labor costs.

However, the company family management is greatly interested in their family home City "C". The management has been predisposed to do well by its workers, and the company has enjoyed a good working relationship with the union. The union has been successful in securing raises over the years to a point where the company is facing a competitive crisis. In effect the management has shouldered its responsibility to the community by paying what the union would call fair wages. But fair wages to the employees may not be fair to the company investors. On the other hand, should the company move away it would not be fair to the employees. The company has sought alternative solutions to the dilemma by introducing various cost cutting devices. Naturally, the union resists extensive application of time and motion study; the union has accepted layout rearrangements, but these have been limited by the antiquated physical plant. The company has not tried strong remedies, and the union has not resorted to the antidote of strike. Therefore, employees think favorably of the company and its products, and life goes on without crisis in Michigan City "C".

Nevertheless, the point has been reached where labor costs must be reduced sharply or the company must move drastically. The ABC company is the biggest employer in town, and its close would mean unemployment for more workers than the community could absorb. If many people move away, home values would decline sharply and retail trade would be hurt; friends of a lifetime would be left behind, and the whole town would be transformed. Chances of finding another industry would be small. The town would be irreparably damaged. Management is caught in a classic squeeze between the interest of their workers on one hand, and the demands of customers for lower cost products on the other. It is the story of an old company which may have weathered depression and recession which must make an agonizing decision if it is to survive the economic dynamics of the 1960 decade.

The cities selected for study were restricted to the states of Michigan, Illinois, Ohio, Indiana and Kentucky. They were to be within the 30,000 to 100,000 population range, and the economic complexion of each was to be similar as measured by the manufacturing ratio. This ratio of manufacturing employment to total non-agricultural employment varies directly with the size and industrial skill level of the local industrial labor pool. As a large number of workers with some familiarity with factory were required, a manufacturing ratio of 50-75 was considered acceptable.

In determining the operating costs of a firm in a given area, the consultant is usually concerned with five factors in his forecasts. Generally, he analyzes labor, freight, utility, occupancy, and tax costs. Since he is interested in differentials, constant cost items for the company are ignored. Freight may be considered but not the price of purchases, unless the price quoted is on a delivered basis and the delivered price varies from place to place.

The material in the case under consideration was current as of February, 1959. The following comments on procedure for collecting information to summarize for a location report are quoted from a recorded interview with Ronald Reifler of the Fantus Factory Location Service.

"We obtain our labor rates by interviewing the major manufacturers in each of the communities. If possible, we try to obtain union contracts if they are available. We also rely upon area-wide studies such as labor studies that were made by employers' associations. We find that the public employment service is not a reliable source of information because of concern with starting wage rates. Starting wage rates are misleading . . . they give you an impression too low for an area. If we're screening a general area, the one most useful guide is the U.S. Department of Labor publication entitled <u>Employment and Earnings.</u> This service has a table every month which is entitled "State and Area Hours and Earnings Table C8" and lists every state and key cities in each state, giving average weekly earnings, average hourly earnings, and average weekly hours worked. So, it is a good guide for general wage rates and you could not go wrong by using these. However, they apply only to larger cities. When you are doing studies for smaller cities, they are usually unreliable, but they do have statewide averages which help a bit.

"Now in the case of fringe benefits, we take the information from the union contracts. We ask the manufacturers to cost out each of the factors if they can; that is, if they give 73¢ in fringe benefits . . . how is this total broken down. If they can't cost it out, they just give us a list of the items; then we can frequently cost it out and list it as an estimate. Labor rates usually constitute the single largest item. Research might extend to other B.L.S. publications. Monthly Labor Review, for instance, systematically publishes articles on wage rate provisions, fringe benefit provisions, and different union contracts and serves as a highly useful way of just seeing what is in the union contracts.

"We have two men who do nothing else but freight work. We prepare a distribution of the company sales by city, and the volume of sales to that city expressed in 100 lb. units. Then we obtain from our own tariffs and tariffs in the Chicago area the exact freight rate from one area to another. Freight rates are very complex and normally the beginning student is not qualified to wade through them. It takes quite a long time to familiarize yourself with not only how to use the books but how to read the exceptions and how to look for the amendments.

"In the case of occupancy, we obtain the cost of the land and we obtain a cost of constructing the building, usually from local contractors. We hire an architect to prepare a 4 or 5 page description of the building and we distribute these to the local contractors and ask them to tell us what it would cost to build in that area. On the other hand, we may take one contractor, say out of one city and ask him the cost of building in different area cities. The contractor will normally do it without cost in order to get the opportunity to bid. We do hire the architect, however, and pay for his services; we consider it worthwhile because we get a very fine detailed description of a building which grows longer all the time as we try to make it more complete. We attempt to write it in such a way that the builder can read it through and look at the quality level, the sizes, etc. and come up with a rough figure. We then add the cost of the building to the cost of the land. We further determine what the local interest rate would be to finance this building. We relate the company credit rating to the type of finance being used--anywhere from 3 to 6% depending on where its being done. For the purposes of the study, we assume we are going to pay this off over 20 or 25 years and determine amortization payments.

"The specification sheet establishes utility requirements, and we price them using local utility schedules. We take local power company schedules, and then we submit our estimate to the local power company for approval because power company schedules are tricky. There are some fuel adjustment clauses, rebates on taxes, and discounts for early payment. And we ask them to check it over and see if our computations are meaningful. We try to get a check on our work so that it is realistic. We always use local schedules.

"Tax forecasting is difficult. In the case of local taxes, you have to talk to the assessor, but then you also have to talk to other people who are paying taxes, such as other manufacturers. If the assessor says "Oh yes, we always assess at 75%" and then you talk to local manufacturers, you may find it is closer to 40%. You use the 40% realizing you can do just as well as anyone else. Try to compute an actual tax on personal property and real property. Finally state taxes are computed based on the company financial statement and distribution of sales around the country. We then send this to the local tax and state tax officials and ask them to check over our computations.

"The next problem concerns start-up costs. First of all the problem of site selection involves consulting fees, executive travel cost, executive salaries, attorney fees, land option costs, especially on options on sites that you do not select. Preparing to move this plant, . . . there is the executive and clerical time involved in this process, and there is the cost of public relations in the old area. You may wish to keep people of the old area informed on what's happening. There is severance pay, which you may or may not have, but more and more companies are going for it. They feel it is a necessity to give discharged workers time for readjustment. Many companies will pay something toward the sale and purchase of employee's homes, for those transferred. Employee transfer costs also include actual moving costs. If the company asks the person to move, they'll move his family. But that isn't the only moving cost. There is also family maintenance, reinstallation of new appliances, breakage allowance, plus draperies and things that won't fit from one house to another. Then there is equipment moving, disassembling and re-erection of equipment, shipping, packing, cleaning and repair. At the new site there is the cost of hiring new employees, the temporary clerical help for hiring new employees, additional hiring expenses, training costs and sometimes scrap and repair costs associated with the training period. Profits on sales during the first year may be reduced by the added shipping expenses which result from having an inventory in one place and a factory in another. Warehousing of extra inventories to provide continuity of supply during a period of transition will mean additional rent expense and interest cost for funds invested. Often there is a substantial loss on sale of the old building.

"There are certain offsets to these non-recurring expenses. Wages are low during the training period as people are hired at the bottom rate. Fringe benefits and vacation benefits are minimal and frequently the community or state into which the plant is relocated will contribute to the vocational training program. However, the ABC company would probably incur a training cost of at least $2 million spread over the early years of operation and the best any state might offer would be services worth $300,000. This may be a lot of money for the state but a drop in the bucket to the company requiring skilled help.

"Now companies will incur this expense only in hope of a profit, generally a substantial increase in profit or rate of return on investment. Therefore it is necessary to relate non-recurring expenses to long term savings to measure possible rate of return.

"We usually have a few key tables. The first table would summarize the annual operating cost savings of a particular area or community. This table might reflect penalties, but normally those areas which are revealed to be too expensive early in the game are discarded in the process of study so that the table itemizes savings. The second table summarizes transfer and start-up cost. The third table compares start-up cost to annual savings to see how long it takes to recapture the investment in relocation. One rule of thumb applied to the recapture period would be that any period much longer than five years would probably not justify the effort, but this standard may vary with the company or the industry. It is then possible to go on to total capital cost or outlay, including land, building, non-recurring start-up costs, which may be hidden in operations but should be considered as a one time charge and investment in the future. Savings are related to this change in investment to determine the rate of return; we are also interested in the improvement of overall rate of return on stockholder equity."

Assuming the ABC Company is now located in Michigan City "C", the capital value of relocation and start-up cost excluding plant and equipment would be as follows:

Michigan - "B"	$1,500,000
Michigan - "A"	1,500,000
Indiana - "A"	1,600,000
Indiana - "B"	1,500,000
Ohio - "A"	1,600,000
Ohio - "B"	1,800,000
Illinois - "A"	1,600,000
Illinois - "B"	1,700,000
Kentucky - "A"	2,100,000
Kentucky - "B"	2,100,000

1. Assume that the present plant of ABC can be sold to net $400,000 and that this plant represents all real estate assets of the firm.

2. Assume that each community "A" would be willing to provide and lease to the company on a net basis with options of renewal all necessary land and buildings. Land and improvement would cost $1,600,000 to be owned by a development corporation. 50% of cost would be financed by a 15-year 4½% mortgage, and rent in addition to occupancy costs would equal an amount sufficient to amortize the development company mortgage.

3. Assume each community "B" is willing to make a gift to the corporation of land worth $200,000 but leave responsibility for financing and building in the amount of $1,400,000 to the company. Assume occupancy costs would remain unchanged, but that these do not recognize the return of mortgage capital in equal amounts over a 20 year span.

4. Assume "B" communities would each absorb $300,000 of the cost of training new workers, an expense included in the capital value of start-up cost.

5. Assume a 10% increase in sales and profits before taxes should the company move to Ohio or Indiana, and a 20% increase in sales and profits should it move to Illinois or Kentucky.

6. For ease in calculation annual total variable operating cost of the ABC Corporation in each of the following communities can be rounded off as follows:

Ohio - "A"	$3,900,000
Kentucky - "A"	3,900,000
Kentucky - "B"	4,000,000
Ohio - "B"	4,000,000
Illinois - "A"	4,100,000
Indiana - "A"	4,200,000
Michigan - "A"	4,200,000
Illinois - "B"	4,200,000
Indiana - "B"	4,300,000
Michigan - "B"	4,300,000
Michigan - "C"	4,500,000

7. Additional financial detail of the firm are contained in this pro-forma balance sheet:

Assets		Liabilities	
Cash:	$ 250,000	Capital:	$ 500,000
U.S. Bonds	1,000,000	Capital Surplus:	1,000,000
Accounts Receivable:	1,000,000	Earned Surplus:	5,000,000
Inventory:	1,000,000	Accounts Payable:	500,000
Work-in-Process:	2,000,000		$7,000,000
Machinery:	1,000,000		
Real Estate:	750,000		
	$7,000,000		

Problem

1. Select the first three alternatives for relocation which you as a consultant would suggest to the ABC Corporation officers. Make the selection on the basis of economic criteria and the financial position of the ABC Company.
2. Should the ABC Corporation move away from Michigan City "C" were all present factors to remain equal and unchanged for the foreseeable future?
3. Suggest the degree to which these three selections might be modified by intangible considerations.
4. What criticism can be made of the productivity analysis of alternative locations by the consultant? What are the hidden assumptions of this analysis of location?