A COMPARATIVE STUDY OF DES MOINES' ABILITY
TO ATTRACT HIGH-TECHNOLOGY INDUSTRY

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Prepared by
Denise W. Derscheid

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PREFACE

Initially, the intent of my project was to study the Iowa State Innovation System. My goal was to try to identify the factors that would attract graduates of the incubator to a permanent location. The purpose was to identify ways in which Ames might influence the graduates to locate in the new idustrial park project.

During my meeting with ISIS Director, Marty Blubaugh, in early March he pointed out how new the incubator is. He thanked me for going through him rather than approaching the incubator's residents directly. They have been bombarded by the press since entering the program and contacts from outsiders have become an annoying problem.

Mr. Blubaugh was very willing to work with me on the project but felt that broadening the scope would develop a more conclusive study. With only two graduates from the ISIS incubator, he felt my sampling was severely limited. The remaining participants, he pointed out, are so engrossed in their efforts to survive their first few years in business that many haven't put much thought into the location decision - its a distant consideration and they cross that bridge when they get to it.

I decided to follow Mr. Blubaugh's advise and revised the scope of my project and set new goals. I am grateful to him for pointing me in this new direction as I feel that it will build the foundation for other projects. I hope that my original project will be taken up by another student as I feel it is a worthy topic to study. Perhaps my efforts to identify factors that are important to high-tech site seekers will provide some background for further research.

I have approached this project from the perspective that it is an attempt to lay the foundation for further research into the issue of improving the Midwest's economic development. We've observed the success of Silicon Valley in California and Route 128 near Boston with its belt of electronic and medical technology. Both areas have flourished as entrepreneurial centers of high technology, manufacturing products such as computers, software, and electronic equipment. I've targeted high tech industry as the subject of prime interest in my study based on several attractive components.

The development of high technology in those regions has not only generated new industrial jobs. It's stimulated the creation of jobs in such business services as law, banking, advertising, transportation, consulting and retailing. Some studies have shown, in fact, that two service jobs result whenever a new manufacturing job in high technology is created. And if the high-tech company's headquarters are near its manufacturing activity the ratio is probably even greater.

High-technology firms have had a big impact on the American economy: the more than $100 billion electronics industry, for example, has been growing twice as fast as the economy as a whole. Additionally, high-tech industries have run up a trade surplus of more than $60 billion over the past two years.[1] The growth in the industry has sent states scrambling for a piece of the economic pie.

The intent of my project is to expose the specific factors that are of particular importance to high-tech industries when they are faced with a location decision. Further, I compare the general information packets of four Midwestern metropolitan centers to evaluate their effectiveness in addressing key locational

concerns of high-tech site planners. The goal of my project is to identify areas where Des Moines may improve the information it supplies to potential high-technology industries and to provide suggestions for marketing the state's cities in a way that will ultimately attract high-tech industries and spark their interest beyond the initial request for data.

My research is based on information requested from the Chamber of Commerce offices of : Des Moines, IA; Minneapolis, MN; Kansas City, MO; and Omaha, NE. I chose to compare Des Moines to metropolitan areas within a 250 mile radius of its location, basing comparison on the quality of the information they provided and how effective it would be in stimulating the interest of high-tech firms. I proceeded to study the various factors of interest to high technology industries when choosing a location relying on various articles as the source of my information. I followed up on information received from the four metro Chamber offices by conducting brief interviews to identify their typical services and to some extent their efforts to market their cities to high-tech industries.

HIGH-TECHNOLOGY DEFINED

High-tech is a buzzword we hear more and more frequently these days, and, part of the reason is that the technological revolution is contributing to the recovery of the American economy. The revolution has vaulted industries that were unheard of two decades ago in to the economic mainstream, and it's rubbed off on older industries, too, as they have found new technologies for older processes. In turn, we've seen a revival in some of our smokestack industries through revitalization of efficiency.

The thrust by American business to remain competitive with foreign corporations has required a massive input of technology - which simply means ways of applying knowledge to develop new products and new manufacturing processes. Defining "high-tech" is not particularly easy. Is the manufacturing

process the determining factor? Is it the nature of the product? Or, is it the skills of the labor force which can vary from engineers and scientists with PH.D.s to unskilled assemblers? The U.S. Department of Labor has come up with three seperate distinctions of high technology industries. One definition requires and industry to be above average both in its use of technical workers - engineers, scientists, and technicians - and in its expenditures on research and development as a percentage of sales which represents effort to develop new products and production methods. Under this definition 28 industries account for 7% of all U.S. employment. They range from drugs, computer services, aircraft, and guided missiles to plastics. The other two Labor Department definitions focus on technical employment and R & D individually as criteria. It's interesting to note that only six industries meet the criteria for inclusion on the basis of R & D alone.[3]

Industries like biotechnology, robotics, telecommunications, semiconductor and computer manufacturing, aerospace and information processing firms are automatically associated with a reference to "high-tech". But, another source notes that virtually any industry can be labeled high-tech if it uses the products of the technological revolution in its manufacturing, distribution, and marketing processes.[4]

THE LOCATION DECISION: CRITICAL FACTORS

Access to materials, manpower and markets were once the most important criteria in plant location. For high-tech firms those traditional criteria have been replaced by access to research and education facilities, capability of drawing scientists and technicians, and environmental and quality of life factors.[4]

A 1984 study of the Route 128 entrepreneurs attempts to uncover the roots

of their success. Based on information collected from 117 questionaires sent
to Massachusetts' high-technology firms and personal interviews with top
executives from 35 of them. Some interesting insights into their development
surfaced.

Education and Research

Central to the decision of where to locate a high-tech industry is
proximity to a thriving research community. Nearly all the executives
surveyed highlighted the role of universities in Route 128's development.
They noted two ways that universities have promoted high-tech growth: 1) by
supplying skilled engineering professionals to existing firms and 2) by
generating, through research, technological advances and spin-off firms.

The entrepreneurs stressed the need for a positive university attitude
toward industry. They suggested a number of ways for universities to promote
high-technology in their own areas: 1) flexibility in allowing both faculty
and students to consult with and join R & D projects, 2) greater industry
access to university equipment and research with increased industry support
for university research, and 3) an advisory panel of industry and university
leaders should meet regularly to discuss topics of mutual interest. A
majority of those surveyed also stressed the availability of continuing
education for local engineers as well.[7]

Attracting a Skilled Workforce

A primary distinction of high-tech industries is their reliance upon
skilled professional workers. These professionals develop innovations, work
with complex and sophisticated machinery, and experiment with new, unproven
ideas that may be successful only after many years. That's why attracting
and then keeping these workers is a major concern of locational planners.

Because they are so mobile, technical professionals often have strongly

held preferences about the locations where they will live and work. Large
metropolitan areas are high on the list because they tend to offer a high
"quality of life" - that is, good universities, fine restaurants, cultural
activities, a choice of good schools for their children, and an abundance of
job opportunities.[3] Because appropriate jobs aren't available everywhere,
professionals prefer to find work in the same area if their old jobs are not
satisfactory. This prevents the hassle of uprooting their families. Often
highly educated scientists and engineers are married to other professionals
who are more likely to find work in their own fields in large urban areas.

For the company, the job market is a factor as well. It's easier to hire
workers already in a local area than to attract them from another area. That's
why places with several universities and places where other high-tech firms are
already thriving are logical choices when considering a location decision.

Environmental and Quality of Life Factors

When Route 128 entrepreneurs were asked to identify reasons why engineers
like Massachusetts they noted: its good intellectual environment, cultural
events, city night life, skiing and sailing, decent public education, Cape Cod,
ample job opportunities and many nice camping areas.[7]

Interest in the quality of life factors has grown through the emergence
of high-tech industries that require a location attractive to highly mobile
scientists and engineers, and with quality of life considerations came increasing
attention to environmental planning.

A campus-like setting has become the rule for high-tech industry, for
reasons that go beyond mere corporate image or response to public pressure.
Major corporations are forced by the labor factor to look at environmental
and quality of life issues more carefully - in the office and in the neighborhoods.
Operations planning manager for Tandem Computers, Jay Mackro, notes that

availability of skilled workers is the highest item on that firm's list of concerns in selecting plant sites. When they need to attract workers from competing industries it becomes all the more important to concentrate on building their plants in planned community settings and making them attractive to their workers.[4]

Geopolitical Factors

A Conway Data, Inc. survey of 35 corporate expansion planners asked them to attach major, moderate or little importance to four state government incentives directed toward attracting high technology industries. All the incentives involved education:

1) special facilities for teaching math and science at secondary and college levels

2) designated funding for joint university-industry R & D projects

3) assistance in creating R & D parks adjacent to state colleges and universities

4) a requirement that all graduating high school seniors pass an exit exam before receiving their diplomas

Providing special facilities and programs for teaching science and math proved, over all factors, to be the biggest incentive with 70% placing major and 30% placing moderate importance to the site selection process. The next most important attraction was state funding of joint university-industry research projects with 63% of respondents ranking it as a major influence on their location decision.[5]

Forty-three percent of the panelists attached major influence to a state's assistance in creating R & D parks near public colleges and universities. These parks allow tenants to share college research facilities and to use faculty members as consultants and graduate students as part-time workers. Akin to this would be the current efforts of Iowa State in this regard. As far as the exit exams for graduating high school seniors, 31% said that it would

be a major influence, while 43% attach moderate importance on the matter.

Another attraction to traditional and high-tech industries alike is the services of an ombudsman on the staff of state industrial development agencies. The ombudsman plays the role of point man in state governments for existing industries that have problems with state regulations, taxes, and services.

Other Factors

Generally, new firm formation in an industry is highest in places with existing agglomerations of high tech firms in that sector. New companies are typically started by professionals involved in the R & D end of the industry and they tend to cluster in large metro regions. One source referred to this as the "snowball effect" where once in business, a core of industrial firms attracted similarly constituted forms. This phenomena is especially apparent in the U.S.'s geography of high-tech industry which is concentrated mainly in the Northeast and the West.

Taxes are another area of concern for high-tech industries. Massachusetts, as a prime example of success in attracting high-tech firms, has made a conscious effort to keep property and personal income taxes down to promote development. As a result, rather than being sought for its lifestyle advantages, it's now become the location for high-technology ideas, contracts and financing.

The availability of venture capital was another factor often mentioned by sources but with mixed comments. While the importance of venture capital for most new high-tech businesses cannot be denied, the source of such financing is the question. Public venture capital is a controversial approach to attracting high-tech industry. However, its importance for attracting industry, no matter what the source, would appear to be the key issue to potential high-tech candidates.

It's difficult to prioritize the criteria important in location of high-tech industries because the ranking varies by both industry and by firms within each high-tech industry. It's obvious that each location decision is unique to the situation and thus that decision is weighted to reflect those preferences. The aforementioned criteria will provide a basis for understanding the more pertinent considerations of high-tech industry location and serve as a basis for evaluating the information provided by the four metro Chamber of Commerce offices. I do not intend to negate the importance of labor costs and union status, especially for high-tech assembly operations, nor do I wish to ignore the importance of transportation structure and availability or utility costs. However, for the scope of this paper I will concentrate on the major factors outlined in the previous section.

COMPARATIVE ANALYSIS

In brief phone interviews with each Chamber office I tried to identify the services they offer and to a lesser extent, an idea of their marketing efforts. Each office generally sends a data packet on their city - providing basic demographic information, and the extent of information beyond that varied by city, when initially contacted by a firm. From there they tailor the information to the needs of the firm and will generally work to provide any specific data a company may request. Each office claimed to work very closely with other economic development units within the area, often involved jointly in efforts to secure new industries and sharing research and information.

Efforts to secure venture capital for new businesses varied from an introduction to available sources to an active role in helping a firm obtain the financial backing they require. None of the cities had information packets specifically directed toward attracting high-tech industries. However, Minneapolis was in the planning stage of developing an effort - including

special information – to attract high-tech industry, specifically medical technology. Des Moines Chamber representative, Brian Flynn mentioned their office's efforts to locate appropriate sites for companies, they offer training programs, and assist firms in applying for various government grants and programs. Kansas City used direct mailing campaigns to 7,000 companies across the country, which included a number of high-tech industries but did not target them with any special information geared to attract them specifically. They utilize personal contact through staff travel and advertise in various publications.

Sitenet, a broad electronic information service of Conway Data in Atlanta, offers worldwide coverage of such plant location factors as site availability, tax incentives and labor factors. It is yet another important application of technology that will assist the site seeker by eliminating the reliance on mail and bulky files and to do much of the preliminary legwork by telecommunications. Omaha was the only metro area of the four that was on-line with Sitenet which increased their exposure worldwide. The other locations all mentioned efforts were underway to establish their own data bases.

The point was raised by Sam Hunter of the Kansas City Chamber office that the problem with data bases is that of maintenence. It is very important to keep the data within the data base up-to-date. This necessitates constant revision that becomes problematic. Data bases, however, are definitely a positive development that brings information to a console on the corporate planner's desk. Today's site selector works under pressure of deadlines that are becoming shorter and if local area data is not current and easily accessed, the tendency will be to pass the location by.

The information I requested from each city was the standard data that they would send to a firm when initially notified about the firm's interest in

locating there. Des Moines sent a packet that outlines the Des Moines area economy, another that identifies the city's growth trends, and various loose-leaf materials covering transportation, labor cost, productivity, occupational statistics, taxes and workers' compensation. Des Moines included an outline of recent legistlation that has improved Iowa's business climate which was especially innovative and pertinent information to any industrial prospect.

Kansas City presents its general demographics within a 35 page color brochure that is interspersed with advertisements and articles on Kansas City's major development projects and various background information. It did include a listing of the area's colleges and universities and statistics on educational attainment of area residents. Accompanying the brochure were leaflets on population and various economic indicators.

Omaha sent a 1986 consumer preference study consisting of 43 pages of data collected by the Omaha World Herald. It included demographic statistics, a survey of buying power and various information on existing businesses and their customer profiles. A 12 page section on the area's transportation network and services was very thorough. A 20 page color brochure presented data on: markets, labor, energy and quality of life information as well as a listing of the services offered by the Omaha Economic Development Council and who to contact for information. A community profile highlighted pertinent information from the brochure in a concise leaflet that would facilitate those who want information at their finger-tips. Finally a loose-leaf sheet listed statistics on Omaha's economic indicators over the past two years.

The information from Minneapolis included a newly compiled data packet - very up-to-date information collected at the beginning of 1987. It consisted of two fact sheets and information sheets under the headings of: demographics, education, finance, housing, labor force, media, taxation, transportation,

utilities, and a listing of major employers. The data was extremely concise

and well presented. Along with the 36 page data packet, I received an

impressive 31 page color brochure. It included various promotional advertisements,

many articles highlighting the city's culture, education, transportation, sports,

and its dynamic growth-oriented environment. Comments by several of the city's

major corporate executives praised the city for its progressive atmosphere.

I suspect there's a chance that the information I received may not be

exactly what each location sends interested companies. Since I am a student

of Transportation/Logistics, more than once I was automatically transferred

to the traffic department where I explained myself and asked to be channeled

to the appropriate area to make my request. Nevertheless, I can only make my

suggestions based on the information I received.

Regarding education and research, Des Moines made no reference to area

facilities in its information packet. The other three cities basically listed

the colleges and universities and tech schools in the area - Minneapolis

provided addresses. None of them outlined state or local projects or funding

for research.

Quality of life factors were generally interspersed throughout the color

brochures of each city - either through indirect reference within articles

or by listings of cultural events and establishments. I don't think any city

can stress this area enough. Des Moines did not include any material that

highlighted the quality of life in the city.

Three of the cities outlined taxation in their area pretty thoroughly.

Kansas City's packet made no referance to tax structure within the information

I received. Within its color brochure, Minneapolis used comments by the

Chairman and CEO of Honeywell, Inc., Edson Spencer, to push its reputation as

a rising center of high tecnology. This was the most direct effort to attract

high-tech industry. The inclusion of a business climate status report by
the Des Moines Chamber was the only other notable effort.

SUMMARY AND CONCLUSIONS

I tend to believe that all midwestern metropolitan centers face a serious
hurdle in attracting high-tech industry due simply to many false preconceptions
and disinformation that are typical of those whom are not familiar with our
region of the country. This places a heavy burden upon midwestern cities to
overcome these barriers. I suggest that effective marketing is the key.

A good place to start is by including stimulating facts within the general
data packets. The ability to provide the information in a concise form is also
important in my opinion. Faced with a mountain of information from several,
maybe even hundreds, of locations, a site selector would be especially impressed
by up-front facts presented in a straight forward, logically sequenced manner.
Omaha's community profile is an excellent example.

I feel that addressing factors that are most important to high-technology
firms is a necessary step for cities to take, whether it is through a seperate
brochure or placed within the general packet. They should present information
on all area educational facilities and outline state and local projects regarding
research noting special government funding available for R & D. Highlights of
innovations within the state would be another idea. They should detail programs
like industrial parks near campuses and incubator projects.

Des Moines had a good start when it added the material on the improving
business climate within the state. Why not build on it - identify the state's
ombudsman and explain his role, play up the city's cultural attractions and the
wholesome quality of life the Midwest can offer its residents. If sources of
venture capital are available, the level of assistance that's offered should
be outlined - perhaps a recent success story could be highlighted. We need to

overcome the notion that the Midwest is populated by laid-back "country folks". We are progressive - let's project that image! It's dangerous to assume that potential industries will ask all the right questions and will pick up on the qualities we can offer by sorting through the statistics presented in the general packets. Don't misunderstand me, that information is very vital however, I don't feel that current information addresses the concerns of high-tech industries adequately.

By comparing metropolitan areas I have drawn general conclusions that will be broadly applicable to the efforts of any city to attract high-tech industries - and, of what significance is this study to the Iowa D.O.T.? Though indirect, I hope that this will promote an understanding of the elements that are necessary to attract innovative industry to our area. The success of projects like R.I.S.E. could benefit from these observations.

ENDNOTES

[1] William D. Marbach, "High Hopes for High Tech", Newsweek, Vol. 101, pp. 61-62.

[2] Charles F. Harding, "New Plant Location Strategies", Dun's Business Month, Vol. 124, pp. 112-126.

[3] "The Geography of High Technology", Focus, Vol. 35, pp. 2-9.

[4] "The High Technology Revolution's Impact on Economic Development: Special Report", Nation's Business, Vol. 71, pp.44A-44F.

[5] "Picking a Plant Site: Special Report", Nation's Business, Vol. 71, pp.44H-44M.

[6] Marshall I. Goldman, "Building a Mecca for High Technology: The Business of Attracting Industry", Technology Review, Vol. 87, pp. 6-8.

[7] Mark Templer, "Route 128: The Entrepreneurs' Story", Technology Review, Vol. 87, p.9 and p. 74.