

# Michigan Knowledge Economy Business Study

## *Research Report*

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## INTRODUCTION

Knowledge and technology have always been important for economic growth and development; however, the current wave of technological change places a premium on the generation, management, and application of knowledge—triggering a seismic shift in the products we make and the skills we value. The information technology revolution (i.e. Internet, microcomputer, telecommunications) powers this internationally competitive, “flattened world” in which the keys to economic success lie in the extent to which knowledge, technology, and innovation are embedded in products and services (Atkinson, 2004; Friedman 2005). Communities, businesses, and individuals, by necessity, are struggling to find successful new approaches to compete in the global knowledge economy.

Not surprisingly, economic developers are also challenged to understand how to support knowledge-based economic development in their communities. As new models of knowledge-based economic development emerge, economic development practitioners will need to use different economic development tools to support the knowledge economy business in their communities. Traditional economic development tools, such as land development, infrastructure, construction, tax incentives and abatements (Bartik, 2003) are *necessary but not sufficient* for economic development in the global knowledge economy.

Some recent studies have identified new economic development practices that effectively support knowledge-based economic development (Florida, 2004; Friedman, 2005). Mayer, Provo, & Seltzer’s research, for example, indicated the need to place a higher priority on more regionally-based strategies that increase innovation and knowledge, develop industry clusters, support entrepreneurship, enhance quality of life, and focus on workforce development and continuous education (2004). Similarly, the San Diego Association of Governments identified industry clusters, quality of life/liveability, regional leadership and collaboration, workforce development, education, and affordable housing as relevant economic development tools for the knowledge economy (1998). Research conducted at the Progressive Policy Institute identified knowledge jobs, innovation capacity, globalization, economic dynamism, and digital economy as key indicators of the global knowledge economy (Atkinson 2004; Atkinson & Gottlieb 2001; Atkinson & Court, 1998; Fernandez, Garg, & LaMore, 2005; LaMore, & *et. al.*, 2004; LaMore & *et. al.*, 2005).

The Mayer, Provo & Seltzer study also revealed that economic development practitioners continue to implement traditional economic development practices (i.e., development of land, infrastructure, construction, and markets) in spite of their awareness of the fundamental economic changes associated with the global knowledge economy. Reasons given for adhering to traditional economic development approaches included institutional and individual inertia, tensions between a local and a regional economic development focus, a lack of a global knowledge economy business leadership, and the weakening effects of global competition on their communities (Mayer, Provo, & Seltzer, 1998; Wilson & Corey, 2001).

Conversations with the Michigan Economic Developers Association Board echoed the themes of these research findings—namely, that economic development practitioners are mostly unaware of knowledge-based economic development strategies and that, if they are aware of the new strategies, they are reluctant to implement them for a variety of reasons. What is needed to re-establish Michigan’s economic competitiveness is a more complete understanding of how economic development

practitioners may support knowledge economy businesses. Given the severe economic distress faced by Michigan communities, especially those coping with automobile plant closures, it is imperative for Michigan's economic development practitioners to learn new strategies to creatively address the challenges of the global knowledge economy.

## PURPOSE

The purpose of this study was to understand the current and future needs of Michigan knowledge economy businesses and to ascertain how community and economic development professionals might better meet those needs. Interviews of information communication technology (ICT) businesses and high-tech manufacturing businesses in three areas of Michigan were conducted, and data from the business owners were analyzed (**see Appendix A for more detailed description of the study's methodology**). This report summarizes the key findings and makes recommendations for community and economic developers to consider as they continue to support and strengthen the knowledge economy in Michigan.

## FINDINGS

Information communication technology and high tech manufacturing business owners reported differences in the type and quality of support they received from economic developers throughout the state. Overall, ICT business owners were more critical of and less satisfied with the support they received from economic developers, while high tech manufacturers were more satisfied with their relationships with economic developers. The findings, therefore, are reported in a way that reflects this dichotomous experience.

### **Finding 1: Michigan is a Great Place to Work.**

Most of the knowledge economy businesses were established in Michigan by Michigan entrepreneurs because the founders and owners liked living in Michigan. They, their spouses, or their parents were from this state, and their pride of place was palpable. They really enjoyed living in Michigan. One CEO said that "despite weekly offers to relocate my company, I am committed to staying in Michigan."

In addition to personal reasons for locating in Michigan, ICT firms felt Michigan had several (frequently ignored by public relation professionals and business recruiters) advantages over locations in other parts of the country.

1. Low cost of living means paying lower wages to employees. For example, a programmer in Silicon Valley might make \$70,000 and in mid-Michigan make \$35,000.
2. Michigan's (especially mid-Michigan) low costs for power translate into a great advantage for ICT firms whose electricity bills are sometimes in six figures.
3. Michigan's cooler summers (compared to Southern California, Texas, or Florida) mean much lower air conditioning costs—again a significant cost savings.
4. Michigan is a natural disaster neutral state. Clients do not have to worry about losing data like they would with businesses located in Southern California (earthquakes, fire) or Gulf States (hurricanes).

5. Located in the middle of the country, Michigan ICT firms have good ping rates (response time to/from servers) to both coasts (i.e., companies in New York would not chose a California company to work with and vice versa; however being in the middle appeals to companies on both coasts).

High-tech manufacturing firms also noted several advantages including an experienced, skill workforce for high-tech manufacturing, workforce training (incl. some workers from the auto industry and through other unions), availability plant sites and warehouses, and the nearby location of manufacturers in the supply chain.

However, both ICT and high-tech manufacturing businesses worried that the regional and national reputation of Michigan’s business climate is hurting their capacity to attract skilled workers from outside of the state. They noted troubling perceptions that there are few jobs available for spouses and that once you buy a house in Michigan, selling it is particularly difficult. From a recruiting standpoint, the cold winters in Michigan are a major barrier for enticing knowledge economy entrepreneurs to Michigan, especially from California, Texas, and other warm climate states. To manage this, one knowledge economy business has limited its out of state recruiting to nearby mid-western states.

### **Finding 2: Quality of Life Matters.**

For knowledge economy entrepreneurs with families (or whose employees have families), Michigan’s quality of life was cited as an advantage. **Clean environment, good K-12 schools, safe neighborhoods, affordable housing, short commute times, and reasonable cost of living were cited as key aspects of a positive quality life.** Access to the Great Lakes and the pristine outdoor recreation opportunities were also cited as a major advantage.

*It’s a fairly clean environment and a fairly safe environment, especially in the suburbs. The public schools are fantastic. Our neighborhoods are clean and people are friendly out here. Housing is inexpensive. Quality of life is great.*  
~High tech manufacturer in existence/early growth stage

For entrepreneurs without families (or whose firms employ younger individuals without families), Michigan’s quality of life was not considered to be an important factor. **In fact, the lack of alternative entertainment, vibrant downtowns, creative art scene, and the out-migration of young people were cited as negative aspects of quality of life by younger entrepreneurs in the ICT firms.**

### **Finding 3: Support from Economic Developers for Knowledge Economy Can Be Improved.**

Most knowledge economy business owners were not satisfied with the amount and type of assistance they were offered from economic developers in Michigan.

More than half of the knowledge economy businesses said they were not contacted or supported by economic developers. Several of them mentioned that the reason they agreed to the interview was so that they had a chance to talk to someone about their economic development needs. A few business owners said that

*I’ve called SBTDC and asked them about getting feedback on the business plan I had written. It had graphs, charts, market research I had done. And they said, “Well, read this brochure,” which didn’t provide me with a lot of direction. I am passionately committed to my business’s success, but didn’t feel they were at all. I didn’t call them back. It just wasn’t worth it.*  
~ICT business in start-up/ existence stage

when they contacted the economic developers, their phone calls were not returned. Others talked about minimal assistance from economic developers—e.g., just being handed a form instead of being walked through the process step by step. One ICT business owner in the start up phase mentioned that he had contacted SCORE for assistance but that they would not be able to meet with him for more than a month. By then, he felt he would have resolved the issue he was asking for assistance for. Overall, they felt that they and their businesses were not taken seriously because they were not automotive-related.

Economic developers, when they did offer assistance, offered assistance that was out of sync with the business and its stage in the business cycle. Knowledge economy business owners did not believe economic developers understood the innovation cycle; nor did economic developers realize that one company might have more than one product/service line that are in different phases of the innovation cycle and therefore required different types of support.

*How many other companies are sitting there in the 10 employee range? What if we could help that 10-person company, find the money they need so they can turn into a 50 or 100 person company? That's what economic developers need to do. 'Cause looking back, that's when we really needed some assistance.*

*~ICT firm in expansion phase*

Specifically, **ICT knowledge economy business owners found that economic developers did not understand their needs during start-up and early growth phases.** They were offered tax breaks when their companies were not yet generating revenue to pay taxes; access to investors when there was no longer a need for start-up capital; space in incubators at square footage rates that were unaffordable, and incentives to redevelop buildings that they did not need at the time.

Several knowledge economy businesses mentioned that economic developers were not interested in working with them until after their business had grown to the point of needing a second or third building (and then the businesses were offered acceptable incentives to expand in traditional ways). But these offers of support only came after the firms had reached the expansion and maturity stages, when they were already successful in their won right and did not need as much assistance as they had in needed in the past.

#### **Finding 4: Sites are available for knowledge economy businesses.**

Most of the high-tech manufacturing firms were satisfied with the availability of facilities to purchase or remodel for their business needs. Closed school buildings in some areas are a preferred space for high-tech manufacturers. They were typically well-built with thick concrete walls that can support manufacturing equipment. They have loading docks, parking lots on site, and water on all floors. Some found that open floor of former gymnasiums could be easily retrofitted and used for clean room manufacturing space. Overall, high-tech manufacturers were pleased with the assistance they received from economic developers during their expansion.

*The EDC really helped us out. They helped us get the building, the financing in place, the tax abatements, the lights.*

*~High tech manufacturer in expansion/maturity stage*

**Leaders of ICT companies were interested in owning their own buildings (versus renting space in incubators or business parks) and in building additional rentable spaces for other ICT firms to co-locate in their buildings.** They said their incubator space would easily out-compete the municipal-

owned incubators because they would have enough volume wired for internet, offer more Business 101 assistance for start-ups, and more relevant business contacts for their tenants. These ICT business leaders mentioned that the “rolodexes” at the traditional incubators were not full of the kinds of contacts they needed.

None of the high-tech manufacturing firms mentioned municipal-run business parks or incubators as viable options for their businesses—at any stage.

**Finding 5: Access to capital is a challenge, particularly during start-up.**

As is typical with entrepreneurs, several knowledge economy business firms used personal equity to establish or expand their companies. More than one mentioned mortgaging their home; others borrowed capital from family members to get started. Others financed business expenses with personal credit cards.

**One ICT firm noted that it had difficulty accessing traditional forms of capital, especially for expansion, because lenders did not understand the company’s assets.** For example, one bank said that they did not believe servers could be used as collateral because they could not be liquidated like assembly line equipment. That firm eventually found financing from a bank in Ann Arbor that was more familiar with ICT businesses and valuing their assets.

At least two, high-tech manufacturing firms mentioned being approached by venture capitalists after their businesses were up and running successfully. Both declined working with these investors because they would lose a share of their business’s profits to them. The VC offers did not make sense given the stage their businesses were in.

**Finding 6: Acceptance and access to the business community can be improved for ICT firms.**

**ICT entrepreneurs struggled to gain access to traditional business circles—from chambers of commerce to other business oriented groups such as the Rotary.** They cited not being invited to serve on boards, or if they were, not being welcomed by the more established and traditional business leaders. They also gave examples of how these more traditional business organizations do not fit the work styles of knowledge economy entrepreneurs, who work very long hours (often through the night and on weekends), who do not take business lunches, and who do not spend their time socializing with business people at country clubs or golfing.

*If growth were completely stagnant and there was nothing that we could do, there was no knob to tweak or no new product to innovate, then I’m sure [a business] lunch would sound great.  
~ICT business in expansion phase*

Several ICT business owners talked about starting their own, alternative organizations in their own communities. One noted that he had participated in a business networking mixer established by a local government agency but stopped going because of the leadership and its ideas about over-structuring the networking group with sub-committees, membership dues, logo designs, and formal outings.

High-tech manufacturers did not mention lack of acceptance or access to the business community as a challenge.

**Finding 7: Availability of skilled, motivated workers is mixed.**

Knowledge economy business owners generally have a difficult time finding workers with appropriate jobs training and skills. For ICT firms, Michigan’s institutions of higher education are not graduating students with the necessary knowledge and skills to join their companies and to start working right away. Most ICT firms realize that they will have to train their new hires, sometime for up to a year or more. These companies are more likely to hire individuals who love computer programming, who pursue it as a hobby, or have learned Linux on their own. Some ICT company leaders are starting to work with curriculum committees at nearby institutions of higher education to change what is taught; however, the campus faculty members are very slow to change.

For high-tech manufacturers, the availability of an acceptable workforce was a mixed bag. High-tech manufacturers are not having difficulties finding high-skilled employees for their plants. In fact, they appreciate the availability of experienced machine operators, many of whom have lost jobs in the automotive industries, and come to them with extensive experience.

**However, when high-tech firms have to hire workers for lower skilled assembly line jobs, they struggle to find workers with an appropriate attitude towards work.** Several CEOs mentioned participating in state-run job re-training programs and/or hiring laid-off autoworkers, but in the end, found that the hires did not last long on the job. Their skill levels were acceptable; but their attitudes towards work were not. They expected union working conditions—many breaks during the day, many vacation days, many sick days—that start up companies could not accommodate or afford to offer. The companies who had reported taking part in the job retraining programs would not do so in the future.

*We have a lot of absenteeism. People come in on Monday and then take Tuesday off. The next guy comes in and needs Thursday off...a large proportion of the people we get (maybe 80%) don't want to show up day in and day out.*  
~Large high tech manufacturer

**Finding 8: Attitudes need to change to support local-global connections.**

Both ICT and high-tech manufacturing firms felt that the attitudes in Michigan were barriers to their continued expansion and success. For example, several business owners cited the bureaucratic red-tape and unwelcoming climate that foreign nationals face coming into Michigan for work. **In addition to government regulations about immigration, these knowledge economy business owners felt parochial attitudes made it difficult for them to hire and retain the best workers, who might come from another country.**

Economic developers’ failure to understand the local/global dimensions of the knowledge economy was also cited as a barrier. For example, from an ICT perspective, it is not a problem to have multiple web hosting businesses in the same town. While the companies are located locally, their clients are from all over the world. There is enough work worldwide to ensure that similar companies are not really competitors (as

*We are home grown with local ties, local people, and a local presence, but we have a market for our product that is everywhere, with almost nothing to do with local people necessarily, and that is kind of difficult right now to help people understand.*  
~High tech manufacturer



manufacturers of the same parts might be). These companies, in fact, would benefit from having a critical mass of similar kinds of businesses and employees in the area.

In both the mid-Michigan and Port Huron/St. Clair County areas, the failure to identify and support economic clusters was mentioned by knowledge economy business leaders. In mid-Michigan, insurance-processing and the related ICT infrastructure it requires was cited as an underdeveloped cluster. In the Port Huron/St. Clair County, medical manufacturing, that relies on some of the processes in the automotive industry's supply chain (e.g., ceramic coatings), was also noted as an area ripe for more concentrated development.

**Finding 9: Regional vision and downtowns need to be strengthened and built.**

In mid-Michigan, the lack of a regional vision for development, including the lack of a vibrant downtown, was cited by several companies—ICT and manufacturing alike—as a barrier to the region's capacity to move forward. In mid-Michigan particularly, new groups such as Prima Civitas, LEAP, along with more established groups like the Lansing Regional Chamber of Commerce (LRCC), Tri-County Regional Planning, and Michigan Economic Development Corporation (MEDC) were seen as splintered, uncoordinated, and confusing from the business owners' perspective.

*They all have to start working together. I'll get a visit from the MEDC and then I'll get a visit from the LRCC and then I'll get a visit from some of the other groups around here. It's almost like they have their little fiefdoms and they don't work together.*

*~High tech manufacturer in expansion phase*

**A number of knowledge economy business owners believed that “ultimately, the success of this area is going to depend upon the core city being strong.”** Several mentioned how the growth of Eastwood Towne Center (to the city's north in Lansing Township) was a tremendous loss to the downtown Lansing area. One noted, “Greater Lansing missed a golden opportunity when Eastwood Towne Center located in Lansing township. The area is more fragmented than ever. What we needed was a turnaround like Indianapolis in the early 1990s. What they did to the downtown is phenomenal. It's safe, vibrant, with great restaurants, microbrews, lofts, sports, and music.”

Another knowledge economy business owner in Port Huron said, “The downtown is really lacking. There are so many closed store fronts. There are only a few places to have lunch and you end up bumping into the same people. There is not a whole lot of exchange of ideas because we are all in the same boat.”

None of the knowledge economy businesses in Grand Rapids commented on the needs for a stronger regional vision or for a better downtown. They were satisfied with the business climate in their area.

**Finding 10: Knowledge economy businesses are here even if they aren't recognized.**

In each of the study areas, there was a growing number of ICT and high-tech manufacturing firms; **however the knowledge economy business owners felt that there was a general lack of awareness about their companies with the local leadership.** They hoped that more interest and awareness in the local business and generally the local community would eventually create a situation where their

*Michigan's well positioned to have manufacturing that has a lot of technology and know-how embedded in it—I think it's just something that has been forgotten a little bit.*

*~High-tech medical manufacturer*

contributions to the economy are recognized, just like the auto-industry's impact.

One ICT firm pointed out that they are a new economy business but that are making money in a very, very traditional way. They are in advertising—it's just that they are creating an on-line community around the arts (which is free to the participants) and their profits come through advertising sales. This business owner, however, felt that the local business community had no way of understanding or recognizing what they did. There just was not a level of awareness and understanding in the business community about his venture.

Another ICT firm mentioned being a viable, growing business (doubling employees every year) for nine years before being asked to co-sponsor a local community event. Up until that time, they felt overlooked, not really a part of the area's successful business community.

Another ICT talked about an awkward situation before a meeting with a local city government about potentially relocating his company into the city. Before the meeting began, city staff members were chatting about people they noticed outside of the window. One person commented and laughed about a person with multiple piercings and purple hair. Another laughed about a young person walking by wearing a leather coat and biker's chaps. The business owner was taken aback by these comments, particularly because many of his employees have multiple piercings and colored hair and his business partner was due to arrive at the meeting wearing his motorcycle gear. The city staff members' comments had indicated a lack of awareness that people in his kind of business might look different than the more traditional downtown business owners. He did not relocate into the city.

## RECOMMENDATIONS

Based on interviews with the knowledge economy business owners, the researchers would like to make the following suggestions for economic developers to strengthen Michigan's knowledge economy:

1. **Promote the benefits of growing and locating businesses in Michigan.** Michigan has distinct advantages for business, despite the state's regional and national reputation to the contrary.
2. **Promote quality of life as one of Michigan's key advantages**—especially for those firms whose employees value safe schools and neighborhoods and high quality outdoor recreation.
3. **Strengthen downtown areas,** entertainment districts, and nightlife for young, hip entrepreneurs, so that the “cultural creatives” have vibrant places to live, work, and play as well.
4. **Raise economic developers' awareness about the knowledge economy,** the innovation cycle, and which economic development tools are useful at different stages of the innovation cycle.
5. **Recognize that businesses in different stages of the innovation cycle need different types of support from economic developers,** including access to different types of capital; work to ensure local lenders understand how knowledge economy businesses, especially ICT firms, work in terms of assets.
6. **Identify businesses in the pre-venture and existence stages,** especially ICT firms, and help connect them to experienced entrepreneurs and networks of similar businesses.
7. **Continue assisting knowledge economy businesses in early growth and expansion stages** to find suitable sites, tax abatements, and financing for their new facilities.
8. **Connect knowledge economy businesses to institutions of higher education,** including community colleges, technical schools, and universities, so that Michigan's institutions of higher education are preparing the next generation of knowledge economy business owners and employees.
9. **Change the mind-sets of traditional business organizations so that they are more welcoming to knowledge economy businesses** and/or support knowledge economy business leaders as they establish their own business networks and organizations.
10. **Assist knowledge economy businesses,** particularly high-tech manufacturing, **to make connections to overseas markets** and to navigate regulations for their products and services.
11. **Learn to work collaboratively**—not competitively—**on a regional basis,** with coordination of economic development services and “one stop shops” for businesses; Reduce duplication of efforts by (sometimes competing) economic development groups in the same locale.
12. **Show respect for knowledge economy business owners** by listening to them, returning phone calls, offering legitimate assistance, despite their sometimes less than traditional appearances or unorthodox work hours.

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## **APPENDIX A**

### **Knowledge Economy Business Study**

#### **Introduction**

In collaboration with an advisory committee, which included members from the Michigan Economic Development Association (MEDA), the researchers identified key research questions concerning economic development and the knowledge economy—what types of support are knowledge economy business owners receiving and does this support match their needs? What might economic development professionals do to support knowledge economy businesses in Michigan?

Interview questions for knowledge economy business owners were developed to identify their current and future needs and to ascertain how community and economic development professionals might better meet those needs. This study, named the Michigan Knowledge Economy Business Study, was funded in part by the Michigan Economic Development Association and by Michigan State University's Community Vitality Program in partnership with MSU's Center for Community and Economic Development.

#### **Sample Selection**

For this study, researchers identified and contacted knowledge economy businesses in three areas of the state: Port Huron/ St. Claire County (in the east), the Greater Lansing area (in mid-Michigan), and Grand Rapids (in the west). These communities were purposefully selected because they represent significantly different economic regions in Michigan.

Researchers concentrated efforts on identifying knowledge economy businesses in two main sectors: information communication technology and high-tech manufacturing. Because there is no directory or listing of knowledge economy businesses in Michigan, the sample for this study was identified by drawing upon a number of sources, including

- key informants knowledgeable about economic development in each of the study areas (e.g., members of the study's advisory committee, Economic Development Alliance of St. Clair County, Greater Port Huron Area Chamber of Commerce, The Right Place, Inc. (Grand Rapids), West Michigan Sustainable Business Forum, Michigan State University Office of Technology Transfer);
- write-ups in local business periodicals (e.g., *Grand Rapids Business Journal*, *Grand Rapids Press*, *Lansing State Journal Business Weekly*, *The Greater Lansing Business Monthly*);
- winners of business awards for innovation (e.g., West Michigan's 101 Best and Brightest Companies to Work For; Michigan 50 Companies to Watch (second stage entrepreneurs recognized by the Edward Lowe Foundation); and 21<sup>st</sup> Century Job Fund winners);
- knowledge economy business recruiting events (e.g., Capital Area Michigan Works! Information Technology Job Fair; job announcements in local papers); and
- snowball sampling, (e.g., asking business owners of identified firms if they knew of other firms we might talk to in the area).

Once firms were identified, researchers conducted background research on the businesses through websites and business periodicals, so that profile summaries of the businesses could be prepared in advance of the interviews. That way, researchers approached the business owners with a degree of familiarity about their business and its success. Fifteen knowledge economy business owners agreed to participate in the study.

<b>Description of Businesses in Study</b>	
<b>Type of Knowledge Economy Business</b>	
Information Communication Technology	43%
High Tech Manufacturing	43%
Other, incl. design, entertainment	14%
<b>Size of Company, Number of Employees</b>	
Large (100 employees or more)	20%
Medium (50-100 employees)	7%
Small (50 or fewer employees)	73%
<b>Place of Company Origin</b>	
Established in Michigan	86%
Started in US, with MI location	7%
Started international, with MI location	7%
<b>Type of Community</b>	
Metro/urban area	67%
Metro/suburban area	33%
Small town/rural area	0%
<b>Type of Site</b>	
Downtown location	36%
Business or industrial park	14%
Incubator	0%
Other	50%
<b>Mobility</b>	
Plans to stay in Michigan	86%
Might relocate within Michigan	7%
Might keep current location and expand within Michigan	7%
Might keep current location and expand outside of Michigan	29%
Might leave Michigan altogether	7%
<b>Overall Stage in Business Cycle*</b>	
Pre-venture	0%
Existence	36%
Early Growth	14%
Expansion	21%
Maturity	29%
Decline	0%

\*Stages from Lichtenstein, G. A. & Lyons, T. S. (2006, November). Managing the community's pipeline of entrepreneurs and enterprises: A new way of thinking about business assets. *Economic Development Quarterly* 20(4): 377-386) and Lichtenstein, G. A. & Lyons, T. S. (2001). The entrepreneurial development system: Transforming business talent and community economies. *Economic Development Quarterly* 15, 3-20.

## Interviews

During 2006-2007, business owners were contacted by phone and invited to take part in a one hour interview, scheduled at their convenience, at their place of business. The consent forms and interview questions were mailed or emailed in advance of the interview, so that business owners had an opportunity to think through their responses in advance. In addition, any concerns about the focus of the study were eliminated because business owners could see that the researchers were not interested in obtaining any proprietary information from them.

Most of the interviews took place in the business owners' offices or conference rooms; more than half of the interviews included tours of the facilities as well. The interviews were conducted in an informal, conversational manner, with the research assistant making sure all of the questions on the standardized interview protocol were addressed at some point during the interview (see list of questions below). Business owners were sent thank you notes after the interviews were completed.

### Interview Questions

1. Tell me a bit about your company's history.
2. Why did your company locate here? Did you consider other communities?
3. Was quality of life considered a factor? If so, what aspects?
4. Tell me about your relationship with local community leaders (economic developers, business leaders, politicians). Who is/was helpful to you?
5. What was critical to your success—during start-up? and now?
6. What economic development or other assistance would be helpful now?
7. What economic development or other assistance would be helpful in the future?
8. What do economic developers need to know about assisting knowledge economy businesses like yours?

## Analysis

Interviews were audio-taped, with the consent of the business owners, and were later transcribed by a professional transcriptionist. Transcripts were then entered into Ethnograph, a qualitative data analysis software program. The transcript data were coded using both *a priori* codes (suggestions made ahead of time by the advisory committee and found in the literature) and inductive codes (based on new ideas that were repeated in the data). Researchers did not rely exclusively on the data analysis software during coding because different business owners used different language to describe similar situations and because some issues were described by some business owners as barriers and by other business owners as facilitators of their company's success. Researchers independently coded the transcripts and met to reconcile any coding differences, so that a high level of credibility and consistency was established and maintained during the process of analysis.

## Findings

Researchers identified themes (ideas that repeated throughout the data) and reported them as study findings. Special attention was paid to recognizing the differences the experiences of information communication technology business owners and high-tech manufacturing business owners. Quotes from the participants were used to illustrate the main findings of the study.