Eureka!

Innovation and Disruption in the Economy and how the Workforce can prepare

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Analysis & Report: Colby Spencer-Cesaro and Hector Acosta
INTRODUCTION

Technological change is moving at a rapid and accelerating pace. The rise of computers and high-speed internet, transformative themselves, have played fundamental roles in supporting other significant innovations: for example, smartphones, texting, online commerce, modeling and simulation, 3-D printing, and numerous other breakthroughs have dramatically altered how business and workers shape the economy.

While new ideas and processes come about on a daily basis, the pace of adoption can vary greatly. Moreover, some technologies may prove to fundamentally alter a product or process (disruptive), while others may be more subtle in nature, offering important but less significant change (incremental). This leaves organizations that are charged with preparing companies and workers for inevitable change in a quandary: What technologies are most important to adopt now and which ones should wait for later? What do workers need to know to be successful for the jobs of tomorrow?

In hopes of exploring answers to some of these questions, the Workforce Intelligence Network for Southeast Michigan (WIN) created an extensive, online employer survey for Michigan companies to help shed light on what business leaders predict will be the economic and workforce-related effects of some of today’s most promising disruptive technologies and trends, known as Eureka technologies. 233 company leaders provided insights through the survey, the findings from which are presented throughout this report.

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Section One

Eureka Innovations and Michigan Businesses

What is a Eureka innovation?

WIN defines an innovation as a “eureka” technology or breakthrough if it helps create a new market and value chain and eventually goes on to fundamentally alter an existing market and value chain, displacing an earlier technology, process, or practice. Sometimes this phenomenon is known as “disruption,” which can occur in a very short or long period of time. “Eureka” technologies often describe innovations that improve a product or service in ways that the market does not expect, resulting in new consumers, applications, and markets.

The following are examples of Eureka technologies that are likely to affect businesses and the workforce in the coming years.

Cloud computing providing cheap and nearly limitless processing power/storage
Use of computer hardware and software resources delivered over a network or the Internet, often as a service.

Mobile internet
Increasingly inexpensive and capable mobile computing devices and Internet connectivity.

Mobile workplaces
A group of employees who are scattered across various physical locations and are connected by computers, smartphones and other devices via the global Internet.

Tablet computers
A computer that accepts input directly onto an LCD screen rather than via a keyboard or mouse.

New types of social media
Websites and applications that enable users to create and share content or to participate in social networking.

Business-oriented social networks
Social media websites and applications like LinkedIn and Glassdoor that are business-focused.

Real-time data
Information that is delivered immediately after collection. There is no delay in the timeliness of the information provided. Real-time data is often used for navigation or tracking.

Increasingly sophisticated data analytical tools
Process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making.

Smart systems (machine to machine communications)
Machine to Machine (M2M) refers to technologies that allow both wireless and wired systems to communicate with other devices of the same type.

Big data
Extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.

Visual, tactile, and voice interfaces in primary computing devices
Digital interfaces are used to connect a video source, such as a display controller to a display device, such as a computer monitor.
Automation of knowledge work
The use of computers to perform tasks that rely on complex analyses, subtle judgments, and creative problem solving.

3D Printing
Additive manufacturing techniques to create objects by printing layers of material based on digital models.

Cheap smartphones
Average global smartphone prices have been dropping. The average price of a smartphone was $314 in 2014. By 2018 the average price will drop to $267.

Connected vehicles & transportation systems
A connected vehicle or transportation system is equipped with Internet access, and usually also with a wireless local area network. This allows the vehicle or system to share Internet access with other devices.

Internet of Things
Networks of low-cost sensors and actuators for data collection, monitoring, decision making, and process optimization.

Embedded electronics
Any electronic system that uses a computer chip, but that is not a general-purpose workstation, desktop or laptop computer. Such systems use microcontrollers (MCUs) or microprocessors (MPUs), or they may use custom-designed chips.

Renewable energy
Generation of electricity from renewable sources with reduced harmful climate impact.

Advanced robotics
Increasingly capable robots with enhanced senses, dexterity, and intelligence used to automate tasks or augment humans.

Advanced materials (light-weight steel, nano-fibers, etc.)
Materials designed to have superior characteristics (e.g., strength, weight, conductivity) or functionality.

Autonomous vehicles
Vehicles that can navigate and operate with reduced or no human intervention.

Artificial intelligence
Development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Algorithmic-based diagnostics/decision making
The implementation and application of algorithms to a variety of problems to find solutions.

Drone technology
An unmanned aircraft or ship that can navigate autonomously, without human control or beyond line of sight or is guided remotely.

New oil and gas exploration and recovery
Exploration and recovery techniques that make extraction of unconventional oil and gas economical.

Which Eureka technologies do the survey companies believe will affect their business and workforce?

- Cloud computing providing cheap and nearly limitless processing power/storage: 54.20%
- Mobile internet: 48.85%
- Mobile workplaces: 46.56%
- Tablet computers: 45.04%
- New types of social media: 44.27%
- Business-oriented social networks: 43.51%
- Real-time data: 41.98%
- Increasingly sophisticated data analytical tools: 40.46%
- Smart systems (machine to machine communications): 38.17%
- Big data: 29.01%
- Visual, tactile, and voice interfaces in primary computing devices: 29.01%
- Automation of knowledge work: 28.24%
- 3D Printing: 24.43%
- Cheap smartphones: 22.14%
- Connected vehicles & transportation systems: 20.61%
- Internet of Things: 20.61%
- Embedded electronics: 19.85%
- Renewable energy: 18.32%
- Advanced robotics: 16.79%
- Advanced materials (light-weight steel, nano-fibers, etc.): 16.03%
- Autonomous vehicles: 14.50%
- Artificial intelligence: 13.74%
- Algorithmic-based diagnostics/decision making: 12.98%
- Drone technology: 7.63%
- New oil and gas exploration and recovery: 6.11%
SECTION TWO
How will Eureka technologies and ideas affect Michigan’s current and future workers

With all of these changes occurring in the economy and businesses adopting new technologies can the workforce keep up? WIN asked businesses which Eureka innovations and technologies are likely affect their workforce and how.

Will we work more or less because of Eureka innovations?

The fast pace of technological change and the ever-more-connected world mean people can do more and more in less time.

Respondents were asked to list up to five of the most significant new technologies that their company or organization has recently implemented. The most common responses included updated technology and hardware (phones, computers, tablets, software, etc.), use of cloud data storage, and web services like google services and social media platforms. Below is a word cloud representing common phrases found in responses.

What is YOUR company’s Eureka change?

The majority (59.79%) of respondents believe that Eureka innovations will increase worker productivity in the coming years. But, increased productivity does not necessarily mean businesses need more workers. After all, increased productivity means doing more with less.

Over half (53.61%) of respondents believe new innovations neither increase nor decrease the need for workers. Businesses see technology as a allowing them to do more with the same number of workers, not necessarily requiring them to reduce the total number of workers that they have on hand.

Respondents were heavily divided on how the average number of years worked before retirement may change in the next five years; 48% believe it will remain the same while 44% believe people will be working more years before they can retire.

While the general group was divided, manufacturing employers swayed to more working years before retirement especially the respondents who work in finance and R&D at manufacturing firms.

What about training and collaboration?

Considering how computers have infiltrated businesses, more workers will need to be technically trained in order to get the job done, but companies are divided on future educational-attainment needs: 50% of respondents think that today’s average education & training levels will be sufficient to meet future work requirements while the other 50% believe that innovation will require more training and education.
Surveyed companies in several industries believe strongly, however, that more education and training will be necessary for workers to stay competitive in the new economy:

- 70% of respondents from manufacturing firms,
- 73% of respondents from health care, and
- 64% of respondents in educational services

believed that increased education and training will be essential for worker competitiveness.

Collaboration between workers and managers will also increase, according to the businesses surveyed. A strong majority (65.98%) believe that Eureka innovations will create more linkages between workers and their bosses. Supervisors and those reporting to them will be required to work more closely, according to survey respondents.

**SECTION THREE**

**Barriers to entry, what makes technological advancement so hard? Can every company keep up?**

Businesses of all sizes struggle with which new technology and office trends to implement and which to pass by. Costs are often an important factor for both small businesses and larger firms that may have to adjust how thousands of individuals work. Many companies do not implement Eureka innovations because there are too many barriers to successful implementation.

**Survey respondents noted the following barriers to implementing Eureka innovations in their companies.**

<table>
<thead>
<tr>
<th>_barrier</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up-front costs</td>
<td>64.60%</td>
</tr>
<tr>
<td>Infrastructure update and changes</td>
<td>45.13%</td>
</tr>
<tr>
<td>Knowing what is just a trend and what technologies are here to stay</td>
<td>34.51%</td>
</tr>
<tr>
<td>Flexibility and the ability for the company leadership to adapt to new methods</td>
<td>32.74%</td>
</tr>
<tr>
<td>Employee’s resistance to new technologies</td>
<td>30.09%</td>
</tr>
<tr>
<td>Privacy concerns</td>
<td>27.43%</td>
</tr>
<tr>
<td>Too many new workforce training needs</td>
<td>21.24%</td>
</tr>
<tr>
<td>Compliance requirements like changes in tax policy and regulations</td>
<td>15.93%</td>
</tr>
<tr>
<td>Loss of connectivity between workers in the organization due to outsourcing projects and activities</td>
<td>8.85%</td>
</tr>
<tr>
<td>None</td>
<td>8.85%</td>
</tr>
<tr>
<td>Other (Please specify):</td>
<td>1.77%</td>
</tr>
</tbody>
</table>

Because many of these barriers affect companies differently, the WIN team asked what the MOST difficult barriers to overcome were.

- **51.58%** up-front costs of implementation
- **10.53%** “Knowing what is just a trend and what technologies are here to stay”
- **10.53%** “Flexibility and the ability for the company leadership to adapt to new methods”
- **14.46%** privacy concerns
- **25.00%** required infrastructure updates

The companies selecting privacy as a top 2 concern were in professional services, educational services, and health care. Their response to this question is understandable given the types of information handled by companies in these fields.

With technological updates occurring more rapidly than ever before, companies and organizations now face the daunting task of maintaining and revamping their strategic plans in the face of technological updates occurring more rapid than ever. This task can be especially difficult due to up-front costs of new technologies.

Since 2008, business closings have outpaced openings by over 80,000 annually. In addition to this, research performed by the Economist Intelligence Unit highlighted that 4 in 10 of their executives surveyed were concerned about losing their competitive edge in the wake of rapidly advancing technological change. These statistics lead to the conclusion that many companies may feel that the future uncertain and maintaining their current strategic plan is not possible.

Michigan’s employers who took this survey, felt differently. Over half of respondents believed up-front costs to be the greatest barrier to implementing new technology. Despite this, 87% of respondents believe their company will be able to keep up and maintain its strategic plan over the next five years despite rapidly advancing technologies. Respondents were also given the opportunity to explain their answer.

While 87% of respondents felt positively about their respective strategic outlook over five years, 13% of respondents felt uncertain, and these held a number of traits in common. About 78% held a negative strategic outlook cited the overall number of workers employed with their firms (employment size) as the greatest barrier to successfully implementing their strategic plan over the next five years. These respondents cited that their larger employment size led to slower technological turnover mostly due to costs and rigid leadership. On the other hand, respondents at smaller organizations often cited that low employee numbers allowed flexibility and quick adaptations to newly-emerging technologies.

Company industry also heavily influenced respondent answers to this question. A majority of respondents who felt negatively about being able to adhere to their companies’ strategic plans were representatives of publicly-funded institutions such as colleges, university health systems or workforce investment boards. These respondents cited that, in addition to larger employment size, anticipated funding challenges in the future heavily influenced whether they felt their organization could successfully implement its strategic plan over the next five years. In contrast, representatives from manufacturing firms felt positively and answered “yes” to the question of being able to maintain their strategic plan.
SECTION FOUR

Disruptors non-technology changes, what will affect business moving forward?

Eureka innovations are not the only things that businesses must take into consideration when planning for the future and their workers. Local and regional factors such as government funding, legislation, the quality of infrastructure, and population shifts matter a lot.

Among businesses surveyed:

• 31% believe that government changes in Michigan will greatly affect the way they do business.
• 29% are concerned about rising employment costs and future liability payments for pensions and retiree health care.
• 28% see population decline in the state as a concern.

Government funding priorities in the region
43.75%
Government changes in the state of Michigan
31.25%
Future liabilities and costs (retiree pensions and health benefits)
29.17%
Rising employment costs
29.17%
Population decline
28.13%
Baby boomers leaving employment
21.88%
Later retirement
20.83%
Infrastructure quality
20.83%
Declining tax base and wealth in the region
17.71%
City financial health
15.63%
Effective transportation systems
15.63%
Changing housing market
14.58%
Generation Z (people born in the 1990s and early 2000s) entering the workforce
14.58%
More immigration
8.33%
More women in the workforce and in upper management
4.17%
Emergency financial management
3.13%

Non-Technology Disruptors
What industries are most concerned about what local/regional changes?

• Manufacturers are concerned about future liabilities in health care and retirement payments.
• Professional services firms are concerned about city financial health and government funding.
• Health care firms are concerned about changing government priorities and employment costs.
• IT firms are concerned about infrastructure, transportation, and population changes.
• Education related companies are concerned about rising employment costs, declining tax base, and government funding priorities.
• Respondents were also given the opportunity to provide open-ended responses about non-technological changes that concerned them. Notably, the top three open-ended responses from survey takers were all talent-related and include:
  • Addressing science-technology-engineering-and math (STEM) skills shortages,
  • Addressing basic employability skills/soft skills deficits, and
  • The need for more collaboration between higher education, companies, non-profits, and the k-12 education system.

SECTION FIVE

What’s next? How to prepare for the future

With each new technological change or innovation in the economy, the workforce must adapt and respond. New training and skills, a shift in work-life balance, a change in hierarchy, and other modifications are necessary to keep current and future workers ready to move business forward. WIN asked survey takers to identify the most pressing training needs for the workforce of the future.

What can be done NOW to prepare for anticipated shifts in workforce needs? Respondents clearly believe that more training and education in these areas is important.

Adding computer skills to the middle and high school core curricula
58.59%
Coursework in high school and college on problem solving, critical thinking, and analysis
58.59%
Professional development for the current workers focusing on technology
57.58%
Increased opportunities for apprenticeships
53.54%
Digital literacy for all workers
51.52%
Increased opportunities for shadowing professionals
45.45%
Increasing the availability of and access to computer science coursework
44.44%
More opportunities for character training and acquiring soft skills
42.42%
More writing and communications coursework in high school and higher education
40.40%
More group-work and group-oriented projects in high school and higher education
38.38%
Increasing the availability of and access to computer science coursework
38.38%
Less emphasis on higher education degrees and more on skilled trades
23.23%
Other (Please specify)
6.06%

When asked, “Please indicate which of the following you believe is the most important to do now to prepare for some of the anticipated shifts in workforce needs in the next 5 years?” Respondents chose:

10.87% Digital literacy for all workers
10.87% Increasing the availability of and access to computer science coursework
20.65% Professional development for the current workers focusing on technology
18.48% Coursework in high school and college on problem solving, critical thinking, and analysis
Responded shifted when respondents were required to select a single training focus that was considered the most important.

When asked what was simply important (vs. most important) to do to prepare the workforce for technology shifts in the next five years, employers placed equal emphasis on problem solving/critical thinking/analysis and on computer skills. Apprenticeships, a form of experiential, hands-on learning, ranked close behind.

<table>
<thead>
<tr>
<th>Workforce Preparation</th>
<th>MOST Important</th>
<th>Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework in HS and college on problem solving, critical thinking, and analysis</td>
<td>18%</td>
<td>59%</td>
</tr>
<tr>
<td>Digital literacy for all workers</td>
<td>11%</td>
<td>51%</td>
</tr>
<tr>
<td>Adding computer skills to the middle and high school core curricula</td>
<td>4%</td>
<td>59%</td>
</tr>
<tr>
<td>Increased opportunities for apprenticeships</td>
<td>8%</td>
<td>54%</td>
</tr>
<tr>
<td>Less emphasis on higher education degrees and more emphasis on skilled trades</td>
<td>9%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Each industry offered a different response when asked about the most important education and training change that will help Michigan’s workers be competitive in the future. In some cases, industries were split with equal weight placed in two individual education solutions.

### Industry | MOST important education change to prepare workforce
--- | ---
Construction | Professional development for the current workers focusing on technology
Educational Services | Coursework in high school and college on problem solving, critical thinking, and analysis; Professional development for the current workers focusing on technology
Finance and Insurance | Digital literacy for all workers
Health Care and Social Assistance | Coursework in high school and college on problem solving, critical thinking, and analysis
Information | Coursework in high school and college on problem solving, critical thinking, and analysis
Manufacturing | Professional development for the current workers focusing on technology; Increased opportunities for apprenticeships; Increasing the availability of and access to computer science coursework
Professional, Scientific, and Technical Services | Coursework in high school and college on problem solving, critical thinking, and analysis; Professional development for the current workers focusing on technology
Public Administration | Professional development for the current workers focusing on technology: Less emphasis on higher education degrees and more on skilled trades
Utilities | Digital literacy for all workers
Other Services (except Public Administration) | Coursework in high school and college on problem solving, critical thinking, and analysis; Digital literacy for all workers

Many companies that work with WIN talk about the need for more training programs to address their skills needs. As part of this survey, WIN asked companies to indicate their willingness to be part of the workforce training solutions. Here is what the respondents said:

- **47%** would like to partner more with other organizations and training institutions to make sure that their workers acquire the skills needed to adapt to
- **42%** said their company SHOULD and WILL start to do more to train their own workers
- **14%** said that their company will not or cannot spend the extra time or money involved in training workers
- **7%** *said their company would like to sponsor a program to help share their training methods with other firms that could benefit.

### Future of the workforce: will robots take over our jobs?

In 1930, in the midst of the Great Depression, John Maynard Keynes warned of a “new disease” that could cause economies and populations to suffer: technological unemployment. Keynes wrote on the possible problem for the future: “This means unemployment due to our discovery of means of economizing the use of labour on a scale on which we have thus far perhaps only dreamed.”

Keynes’ worry has not come to fruition, yet, and the majority of employers in Michigan believe that increases in technological innovations will either have positive or no impact on employment in the near future.

Respondents were asked to consider a number of technological improvements and how they may affect employment at their company in the next five years. Here are their responses:

- **Almost half of respondents believe that technology advances will have no impact on employment in the next five years while a third believes it will increase employment.**
- **Nearly two-thirds of respondents believe that a broadening world economy will bring no change to employment in the next five years while the remaining one-third believed it will increase employment.**
- **Four of every five respondents believe that bandwidth in the cloud will have no change to total employment.**
- **Over two-thirds of respondents believe that increasing volume of data collection (big data) will have no influence on employment numbers in the next five years.**
- **Six of every ten respondents believe that data analytics and smart systems will have no impact on employment.**
- **Three quarters of respondents believe that neither video communication nor social-network based interactions will have any influence on employment numbers in the next five years.**

From these responses, we gather that most employers in Michigan believe that technological innovations will not have much of an impact on employment in the near future. About 20-30% of respondents have optimistic views of technology and that improvements will create new jobs. According to Michigan’s business community robots are not going to take over our jobs — at least not in the next five years.

2. John Maynard Keynes, Economic Possibilities for our Grandchildren, 1930
Concerns for the future: the new frontier and its challenges

Until recently, consumers rarely dwelled on the security of their information on credit or debit cards. In 2013, however, widespread fear dominated headlines when Target released information on their data breach. Then, 2014 was filled with even more data breaches; hundreds of millions of records with personal and financial information were stolen. When asked what will be the most negative effect of technology change on companies and workers over the next five years, 25% of respondents chose greater exposure to security breaches. This was the most selected answer and demonstrates how recent data breaches have shaped how both consumers and employers prioritize security.

The next most selected answer to this question was worry over a reduced scope for direct human interaction with customers, suppliers, and partners. While the percentage of e-commerce sales as a share of total retail sales has doubled since 2008, online retail still only accounts for seven percent of all retail sales. Nonetheless, nearly 20% of employers that took this survey fear the negative effects of automation and technology on the future of consumer-employer relations.

Conclusion

The Eureka survey findings have provided insight into what Michigan’s companies and current and future workers must do to compete in an ever-changing economy. Michigan’s firms, at large, believe that they will be able to maintain their near-future strategic plans continuing business as usual—a more confident answer than many global firms had in other similar surveys. The workforce, on the other hand, must strive to keep up with technological advances working to keep their skills fresh. Eureka innovations are cropping up every minute making it imperative that companies and the educational community work closely together and continue to create a ready, willing, and most importantly prepared workforce to keep Michigan’s businesses moving forward.
WIN researchers worked closely with Survey Sciences Group (SSG) to develop the Eureka survey. Taking questions from the Economist Intelligence Unit’s report on technological innovation and disruption along with McKinsey’s study of the same topic, the WIN team focused questions to Michigan businesses.

Once the survey was compiled it was sent in pilot form to a group of other researchers in the WIN network for feedback. After the feedback session WIN released the report for public response in May 2014 through several channels including:
- Ad in Crain’s Detroit Business online
- Ad in Crain’s Mackinac Policy Conference Publication
- WIN direct outreach to employer partners in health care, IT, and manufacturing
- Michigan Works! direct outreach to employers
- Ad in the WIN newsletter

The WIN team presented in June 2014 at the Michigan Career Educator and Employer Alliance Conference (MCEEA) and shared preliminary findings from the first survey responses. The survey remained open at this point.

The survey was closed at the end of December 2014.

Where are the survey companies headquartered?
91.26% of survey takers had company HQ in Michigan, all companies surveyed have a location in Michigan.

### Demographics of Survey takers
- 233 respondents
- 21 survey takers took the survey on a mobile device
- 13.37% in manufacturing industry
- 11.63% in health care
- 11.05% in professional services

### How large are the survey companies? How many employees?
- 26.58% of survey takers were in companies with 1,000 or more employees
- 42.41% have under 50 employees

### Is this representative of company sizes in Michigan?
No, the Eureka survey over represents large firms: in Michigan less than 1% of companies have 1,000 plus employees compared to 26.58% of the Eureka sample. Of all firms in Michigan, 94.57% have under 50 employees while only 47.36% of the Eureka survey sample have under 50 employees.

**How representative of Michigan businesses is the survey sample?**

The Eureka survey over represents the opinions of educational services organizations, manufacturing, and non-profits and well represents health care, IT, professional services. Several industries are not represented in the survey sample at all.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Eureka Survey Group</th>
<th>All Michigan Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation and Food Services</td>
<td>0.6%</td>
<td>9.03%</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management and Remediation Services</td>
<td>0.0%</td>
<td>5.32%</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing and Hunting</td>
<td>0.0%</td>
<td>0.25%</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>0.0%</td>
<td>1.53%</td>
</tr>
<tr>
<td>Construction</td>
<td>2.3%</td>
<td>8.37%</td>
</tr>
<tr>
<td>Educational Services</td>
<td>23.3%</td>
<td>1.08%</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>0.6%</td>
<td>6.08%</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>11.6%</td>
<td>12.04%</td>
</tr>
<tr>
<td>Information</td>
<td>4.1%</td>
<td>1.59%</td>
</tr>
<tr>
<td>Management of Companies and Enterprises</td>
<td>0.0%</td>
<td>0.73%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>13.4%</td>
<td>5.71%</td>
</tr>
<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction</td>
<td>0.0%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>11.0%</td>
<td>9.90%</td>
</tr>
<tr>
<td>Public Administration</td>
<td>7.6%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>0.0%</td>
<td>3.49%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>1.7%</td>
<td>16.01%</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>0.0%</td>
<td>2.64%</td>
</tr>
<tr>
<td>Utilities</td>
<td>1.2%</td>
<td>0.18%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>0.0%</td>
<td>5.25%</td>
</tr>
<tr>
<td>Other Services (except Public Administration)</td>
<td>3.5%</td>
<td>10.48%</td>
</tr>
</tbody>
</table>

5. Data from County Business Patterns, U.S. Census
WHO at each company took the survey?

Most of the survey takers either were in management/owner roles at their firm, in human resources, or in strategy and business development.

<table>
<thead>
<tr>
<th>Role</th>
<th>Share of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>General management</td>
<td>27.5%</td>
</tr>
<tr>
<td>Human resources</td>
<td>25.5%</td>
</tr>
<tr>
<td>Strategy and business development</td>
<td>14.1%</td>
</tr>
<tr>
<td>Customer service</td>
<td>16.8%</td>
</tr>
<tr>
<td>Marketing and sales</td>
<td>3.4%</td>
</tr>
<tr>
<td>Operations and production</td>
<td>2.7%</td>
</tr>
<tr>
<td>Information and research</td>
<td>2.7%</td>
</tr>
<tr>
<td>IT</td>
<td>3.4%</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>2.7%</td>
</tr>
<tr>
<td>Finance</td>
<td>1.3%</td>
</tr>
<tr>
<td>Risk</td>
<td>0.0%</td>
</tr>
<tr>
<td>Procurement</td>
<td>0.0%</td>
</tr>
<tr>
<td>Supply-chain management</td>
<td>0.0%</td>
</tr>
<tr>
<td>Legal</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Half of the survey respondents have a lot of influence on, or are the final decision makers for hiring at their company.

<table>
<thead>
<tr>
<th>Hiring Influence</th>
<th>Share of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Influence</td>
<td>24.22%</td>
</tr>
<tr>
<td>Some Influence</td>
<td>25.47%</td>
</tr>
<tr>
<td>A Lot of Influence</td>
<td>39.13%</td>
</tr>
<tr>
<td>Final Decision Maker</td>
<td>11.18%</td>
</tr>
</tbody>
</table>

More than half of the survey respondents have a lot of influence on, or are the final decision makers for technology implementation at their company.

<table>
<thead>
<tr>
<th>Technology Implementation Influence</th>
<th>Share of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Influence</td>
<td>2.40%</td>
</tr>
<tr>
<td>Some Influence</td>
<td>44.80%</td>
</tr>
<tr>
<td>A Lot of Influence</td>
<td>40.80%</td>
</tr>
<tr>
<td>Final Decision Maker</td>
<td>12.00%</td>
</tr>
</tbody>
</table>

ABOUT WIN

The Workforce Intelligence Network of Southeast Michigan (WIN) is a collaborative effort between nine community colleges and seven Michigan Works! Agencies, in partnership with numerous other organizations, to create a comprehensive and cohesive workforce development system in Southeast Michigan that provides employers with the talent they need for success.

WIN’s activities focus on four areas: data & research, employer engagement, policy, and talent pipeline development. WIN covers a 9-county area, including Genesee, Livingston, Macomb, Monroe, Oakland, Shiawassee, St. Clair, Washtenaw and Wayne. WIN was founded with the support of the New Economy Initiative for Southeast Michigan and publicly launched in November 2011.