



The South-Central Kansas Entrepreneurship Ecosystem Entrepreneurship Assessment

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The South-Central Kansas Innovation and Entrepreneurship Ecosystem

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The South-Central Kansas Innovation and Entrepreneurship Ecosystem

1. Executive Summary

This report outlines a multi-method approach to assess the strengths and weaknesses of the innovation and entrepreneurship ecosystem in South Central (SC) Kansas. To study this ecosystem, researchers from Wichita State University's Center of Entrepreneurship collected data from multiple sources. These sources include: (1) websites of key small business and startup resource providers in the state and region, (2) national lists of high-growth and innovative firms by state (3) surveys of SC Kansas business owners and resource providers (i.e. investors and bankers), (4) interviews of high-growth and startup founding CEOs and other key stakeholders in the region (i.e., funding providers), and (5) economic data from Wichita and other peer metropolitan statistical areas (MSAs) on factors related to innovation and entrepreneurship. This investigation discovered the following key findings:

- ✓ The state of Kansas lags the nation in the number of high-tech startups and the 10 county region of SC Kansas lags the state in high-tech ventures.
- ✓ Services in the region that support high-tech startups exists but are only equipped to assist a small number of firms.
- ✓ Relative to other MSA's in the United States Wichita scores very high in the percent of manufacturing jobs to all jobs and the share of exports in regional GDP. While this data suggests regional strength in manufacturing, in particular aircraft manufacturing, it also points to a lack of economic diversification which limits high-tech startup initiatives as a majority of attention and resources are directed to support the dominant industry.
- ✓ The Wichita MSA falls in the middle on many innovation factors compared to peer MSAs but scores toward the bottom of the group of comparison MSAs on patent activity, availability of venture capital, and economic dynamics. The low economic dynamics score is due to an over reliance on one industry which is dominated by several large firms and a lack of new startups in the region.
- ✓ Survey results of business owners and resources providers in SC Kansas indicates that the strengths of the business environment include quality of higher education, low cost of living and cost of doing business, and quality infrastructure for doing business. Weaknesses include availability of risk capital from angel investors and venture capital firms, and government regulation and tax policy.
- ✓ Findings from interviews of high growth and startup firm CEOs in the region support the survey results and identified a perceived lack of collaboration mechanisms in the region by which entrepreneurs can network with other entrepreneurs and business owners to receive the advice and support needed to launch high-tech ventures. Tax policy in Kansas was also identified as a problem by the CEOs. In particular, the inability of owners of LLC firms to deduct net operating losses from their taxes was viewed as a serious limitation to high-tech startups.

To overcome the identified weaknesses in the region, successful Venture Development Organizations (VDO) are benchmarked. A strategic plan for the region is then recommended based upon VDO best practices. In particular, it is recommended that the region marshal its resources to successfully develop a high-tech startup. While this effort will require the collaboration and attention of all regional stakeholders, we suggest that the emergent WSU Ventures is the best platform. Strategic recommendations on how WSU ventures should structure this effort are provided.

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2. Introduction

The W.F. Barton School of Business Center for Entrepreneurship, Wichita State University was sub-contracted by the WSU's Center for Innovation and Enterprise Engagement to conduct an innovation and entrepreneurship ecosystem /market assessment as part of the Investing in Manufacturing Communities Partnership (IMCP) phase 1 grant from the US Dept. of Commerce. The Center for Entrepreneurship is uniquely positioned to conduct the innovation and entrepreneurship ecosystem assessment.

This report consists of several sections. First we describe the portfolio of innovation and entrepreneurial resources available in the south-central region of Kansas, including access to capital.¹ We then benchmark the Wichita metro area with five metro areas of similar size (1) Boise, ID; (2) Madison, WI; (3) Toledo, OH; (4) Syracuse, NY; and (5) Charleston, SC. We then describe the rate of business formation in the south-central region and compare it to state and national norms. We then analyze perceptions of the business climate through interviews with local entrepreneurs and a survey of entrepreneurs/innovators in the South Central Kansas region. We summarize by identifying and analyzing regional innovation gaps and weaknesses. We define some best practices, provide recommendations for strategic directions, and provide a system of metrics.

3. REGIONAL INNOVATION AND ENTREPRENEURSHIP MARKET ASSESSMENT

Portfolio of innovation and entrepreneurial resources

This section of the report provides a portfolio of innovation and entrepreneurial resources that are available in the region. Some of these are not physically located in the South Central Region, but they make their services available to individuals and businesses throughout the state. For each resource provider we provide an address and contact information. In most cases we provide the name of the leader of the organization, and in some cases names and contact information for all service providers in the organization. We describe the resources and services that they make available for entrepreneurs, and the stage of development of companies they serve. We also try to give a sense of the scope of services they offer and the number of clients they typically serve and are capable of serving. This material was gathered from provider websites and direct contact with some providers. There are a few providers with somewhat cursory information because their websites were not very descriptive and they did not respond to our requests for supplemental information.

Advanced Manufacturing Institute

510 McCall Road
Manhattan, KS 66502

¹ The South-Central Kansas Region consists of the following ten counties: Butler, Cowley, Harper, Harvey, Kingman, Marion, McPherson, Reno, Sedgwick, and Sumner.

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Contact Information:

ami-info@k-state.edu

Jeffrey W. Tucker | Executive Director

Direct 785-532-3421 | Cell 785-313-4022 jwtuck@ksu.edu

19 full time employees and 8 student interns.

Services Offered:

- Engineering solutions
- Technology Development and innovation accelerator
- Advanced Manufacturing Research

Services for:

- Private industry at all stages of development
- This organization is not located in our ten-county region but will provide services to manufacturing businesses in our region.
- Serves 50 to 70 clients per year.

Alliance for Technology Commercialization, Inc.

1501 S. Joplin Ave.

Pittsburg, KS 66762

Contact Information:

Eric Ferrell eferrell@pittstate.edu

Services Offered:

- Commercializing Inventions
- Long-term Consulting
- Assistance in Patenting

Services for:

Entrepreneurs and small businesses. This service is not located in our 10 county area but will provide services in our area. The staff is small. We received no response to requests for additional information.

Bioscience & Technology Business Center

2029 Becker Drive

Lawrence, KS 66047

Contact Information:

Michael Smithyman smithyman@btbcku.com

Michael Bartlow bartlow@btbcku.com

E. LaVerne Epp elepp@btbcku.com

Services Offered:

- Provides highly specialized physical space in which to conduct business.

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- Offers value-added business services including guidance and counsel.
- The BTBC facilitates key relationships and exchanges between tenant companies and thought leaders from KU and the local community.

Services for:

Early Stage Bio-Science and Technology Companies. This is an incubator space associated with the University of Kansas. Services are provided to companies that locate their operations in the center in Lawrence. The Center directly employs nine employees. The Center is comprised of roughly 85,000 square feet of functional space, the BTBC now houses more than 27 companies that employ over 100 employees with an aggregated annual payroll over \$6,000,000. It may not be particularly relevant to companies that want to stay in our ten county region.

Information and Telecommunication Technology Center (ITTC)

2335 Irving Hill Road
Lawrence, KS 66045

Contact Information:

Perry Alexander alex@ittc.ku.edu
James Stiles jstiles@ittc.ku.edu

The center has six separate laboratories and 40 affiliated faculty researchers.

Services Offered:

- IT Technology Development
- Education/Training of students
- Transfer knowledge/technology to companies in Kansas and the US

ITTC technologies have diverse applications in the business, biomedical, educational, agricultural, and financial areas. And while this list is not all-inclusive, it does provide a sense of how information technology is altering the way we live, work, communicate, and learn. Research in the Bioinformatics and Computational Life Sciences Laboratory (BCLSL) ranges from analysis of genome sequence data to gene expression analysis using methods in artificial intelligence. Life-sciences research is dependent on information technology to process, analyze, and present biological data in new, meaningful and efficient ways. This research, such as [microarray data analysis](#) leads to improvements in people's health, longevity, and productivity. Research in the Communications and Networking Systems Laboratory increases the speed and improves the quality of communication systems interconnected via photonics, radio, and/or other technologies. [The National Networking Testbed](#) project is finding more available space on the radio frequency (RF) spectrum, using that space more efficiently, and evaluating new wireless technologies. The Computer Systems Design Laboratory (CSDL) focuses on the design, implementation and verification of systems whose primary components include computers. Designers of complex electronic systems, such as computers, must develop individual pieces while making sure they are complementary to the other parts of the system. Different vocabulary and engineering processes make communication between them difficult. The system-level design language, [Rosetta](#), allows these different parts of the whole to interact with one another. This interaction allows a greater trust in the correctness of the design and fewer errors in the actual design.

Services for:

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Companies seeking to improve information technology applications. The center works with an average of 20 companies per year. These services are available to all Kansas companies including those in our ten country region.

KansasBio

8527 Bluejacket St.
Lenexa, KS 66214

Contact information:

Angela Kreps akreps@kansasbio.org

KansasBio has a staff of five individuals and services member organizations in the following ways.

Services Offered:

- Facilitate business and investor relationships
- Knowledge and tools to grow business
- Cost Savings program on products and services from leading biotech suppliers

Services For:

KansasBio provides services for BioTech companies at all stages of development. Members range from incubator start-ups to well-established multi-national corporations. The organization lists 76 members (companies that are directly involved in BioScience), 48 associate members (companies that provide services to those companies), 23 not for profit and government agencies, 4 research universities, and 3 teaching schools. It is a comprehensive effort to provide community and voice for a growing BioScience community in Kansas. It has a 21 member board of directors including John Tomblin at Wichita State University.

Kansas Bioscience Authority

10900 S. Clay Blair Blvd.
Olathe, KS 66061

Contact Information:

Duane Cantrell	cantrell@kansasbioauthority.org
Kevin Lockett	lockett@kansasbioauthority.org
John Peryam	peryam@kansasbioauthority.org
Keith Harrington	harrington@kansasbioauthority.org
Thomas F. Krol	krol@kansasbioauthority.org
Tony Simpson	simpson@kansasbioauthority.org

Services provided:

- Capital Investment
- BioScience development
- Business Consulting

The Kansas Bioscience Authority is a venture fund. Originally it was supported by public funds, but is now a self-sustaining venture capital organization. It has a three person leadership team and a three person investment team, listed in the contact information above. It focuses on funding BioScience start-ups. It has a ten member board of directors and a four member research and

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development advisory board composed of the presidents of Wichita State University, Kansas State University, University of Kansas, and Pittsburg State University. It advertises that it has \$100 million dollars to invest. It currently has eight active investments.

Services For:

Bioscience start-ups and initiatives focusing on early to mid-term growth phase.

Kansas Polymer Research Center

1204 Research Road
Pittsburg, KS 66762

Contact Information:

Andrew Myers 620-235-6092

The research center has a staff of 13, 6 of whom hold PhDs. The group has acquired 17 patents since 1999.

Services Offered:

- Research and Development for Polymers
- Testing Services

Services For:

Industrial Partners, Organizations, State and Federal Agencies, Producer Associations. It will work with private industry at all stages of development. A major partner has been Cargill. In addition other funding organizations have included Boeing, Cessna, Raytheon, the U.S. Department of Energy, U.S. Department of Agriculture, United Soybean Board, Kansas Soybean Board, and the Missouri Soybean Merchandising Council. Though it will work with start-ups it does not have a long history of doing so.

Kansas Small Business Development Center

1845 Fairmount
Box 148
Wichita, KS 67260-0148

Contact Information:

Marcia Stevens	marcia.stevens@wichita.edu
Alan Badgley	alan.badgley@wichita.edu
Ross Jordan	ross.jordan@wichita.edu
Elaine Hanna	elaine.hanna@wichita.edu
Steve Nussbaum	steve.nussbaum@wichita.edu
Karen Loyd	karen.loyd@wichita.edu
Jason Cole	jason.cole@wichita.edu
Linda Sutton	linda.sutton@ncksbdc.com

The eight employees of the Kansas SBDC headquartered at Wichita State University are listed above.

Services Offered:

- Training seminars for start-up and growth

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- Customized training and consulting
- Free consulting services

Services For:

Individuals seeking to start or expand a business. Most of the businesses are not technology focused, but there are some technology businesses among the clients. In 2013 clients started 64 businesses.

Mid-America Manufacturing Technology Center

10561 Barkley Ste. 602

Overland Park, KS 66212

Contact Information:

Gary Hogsett	ghogsett@mamtc.com
Mark Chalfant	mchalfant@mamtc.com
Steve Cowan	scowan@mamtc.com
Mike Niedenthal	mniedenthal@mamtc.com
Tiffany Stovall	tstovall@mamtc.com

The Mid-America Manufacturing Technology Center has six offices in central to eastern Kansas. Those offices are located in Overland Park, Manhattan, Pittsburg, Independence, Salina, and Wichita.

Contact information for the Wichita representative is:

Maribel Asensio masensio@mamtc.com

They list a total staff of 11.

Services Offered:

- Innovation-focused engineering
- Business Consulting

MAMTC also partners with Wyandotte County, Wichita Technology Corporation, Wichita Area Technical College, Neosho County Community College, Hutchinson Community College, Fort Scott Community College, Dodge City Community College, North Central Kansas Technical College, and Butler Community College to provide training to students so they will be prepared to work in advanced manufacturing. They list five client companies as success stories, and have not yet responded to our request to tell us how many client companies they served last year.

Services For:

- Small and midsize manufacturing companies

National Institute for Aviation Research

1845 Fairmount St.

Wichita, KS 67260

Contact Information:

John Tomblin	tomblin@niar.wichita.edu
Tom Aldag	taldag@niar.wichita.edu
Jerry Antes	jantes@niar.wichita.edu

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Tracee Friess tfriess@niar.wichita.edu

NIAR employs approximately 400 individuals. More than half are full-time employees. More than 60 of the full-time employees have PhDs and approximately 40 more have relevant Masters Degrees. NIAR has a total annual budget of approximately \$46 million.

Services Offered:

- Aviation focused research and development
- Product Testing

Services For:

All aviation oriented companies including Boeing, Bombardier Learjet, Cessna, Beechcraft, and Spirit and many supplier companies in the supply chain. NIAR serves approximately 100 different clients each year.

National Association of Women Business Owners

PO Box 572

Blue Springs, MO 64013

Contact Information:

Lisa Foley lisaf@fiskc.com
Elisabeth Decoursey elisabeth.decoursey@kctesting.com
Becky Brock becky@kbsells.com
Rachel Ronan rachel@kiwikc.com
Patricia Ann Dufur pdufur@wradvisors.com

Although this is a national organization there is a Wichita Chapter. The contact information for the Wichita Chapter is listed below:

Claudia Moeder : President, president@nawbowichita.com
Cathi Maltbie : Vice President, cmaltbie2@cox.net
Chris Allison : Treasurer, autoworksallis@aol.com
Marsha Abbott : Secretary/Membership Chair, marshainteriors@att.net
Donella Aubuchon : Corporate Sponsors Co-Chair, dd.aubuchon@mdsofkansas.com
Jeanne Erikson : At Large Chair, jeanneerikson@att.net
Angela Griffin : Web Administrator Chair, contact@angelagriffin.net
Tina Lee : Program Chair/Past President, tina@chewleeaccounting.com
Dixie Thomas : Chair, dthomasarb@aol.com
Cathy Torres : Corporate Sponsors Co-Chair and Business Blast Co-Chair, ctorres@collegehillobgyn.com

Services Offered:

- National conference and regional Summit meetings
- Local networking and training events
- Women's Business advocacy

Services For:

All women entrepreneurs. LinkedIn states that NAWBO Wichita has 159 members.

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Network Kansas

P.O. Box 877
Andover, KS 67002

Contact Information:

Steve Radley	sradley@networkkansas.com
Erik Pedersen	epedersen@networkkansas.com
Corey Mohn	cmohn@networkkansas.com
Anne Dewvall	adewvall@networkkansas.com
Imagene Harris	iharris@networkkansas.com
Jamie Hofling	jkhofling@networkkansas.com
John Paul Gendron	jpgendron@networkkansas.com

Network Kansas has a full-time staff of 8, with 5 part-time employees. It also has a 10 member board of directors.

Services Offered:

- To promote an entrepreneurial environment throughout the state of Kansas by establishing a central portal that connects entrepreneurs and small business owners with the right resources—expertise, education, and economic resources—when they are needed most. The primary offering
- Funding through public and private sources
- Opportunities for Community development
- Technical Assistance

Services For:

Aspiring entrepreneurs, early stage and small businesses. Since its inception in 2006 Network Kansas has provided matching loans of \$5.2 million to 210 rural businesses throughout the state, and has provided many networking opportunities.

Pipeline

1919 W. 45th Ave
Kansas City, KS 66103

Contact Information:

info@pipelineentrepreneurs.com

Joni Cobb is the President and CEO of Pipeline. It has a Board of Directors consisting of Ms. Cobb, and four others. There was no listing for staff on the website, but assume that it is a small staff. **Pipeline** is an exclusive community of entrepreneurial leaders building high-growth companies. By combining entrepreneurs with a national network of business experts at the forefront of their careers, they claim to be creating an ecosystem of innovation in the Midwest economy. This national network offers members exclusive advice and perspective from a plugged-in business community. Founded in 1996, Pipeline has created a network of 17 national advisors and 16 national mentors who work with members. Each year 10-12 new entrepreneurs, predominantly in Technology and BioScience sectors are accepted for membership. The organization currently lists 81 members who also commit time to work with new recruits.

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Services Offered:

- Linking Entrepreneurs to advisors
- Networking assistance

Services For:

Aspiring and early stage entrepreneurs throughout the Midwest in Technology and BioSciences.

Quest Center for Entrepreneurs

1 East 9th
Hutchinson, KS 67501

Contact Information:

gbc@hutchquest.com

Director: Ron Hurst

The Quest center has three employees including the manager, Ron Hurst. It has an eight member board of directors.

Services offered:

- Assistance in developing business plans
- Assistance in arranging funding. The E-community loan program.
- Business Consulting

Services For:

Aspiring and Early Stage Entrepreneurs. There is no specific focus on technology or BioSciences. The website does not list the number of clients served per year.

South Central Kansas Economic Development District

200 W. Douglas, Ste. 710
Wichita, KS 67202

Contact Information:

Elaine Hanna	Interim Executive Director	ehanna@sckedd.org
Donna Jackson		djackson@sckedd.org
Christie Henry		christie@sckedd.org
Sandy Ring		sandy@sckedd.org
Jodi Suhler		jodi@sckedd.org

SCKEDD has five directors and managers listed. The number of administrative support staff is not listed.

Services Offered:

- Funding sources through loans and grants
- General Business Assistance
- Community improvement and housing development assistance

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Services for:

Individuals, companies and government agencies. The agency manages in the neighborhood of \$6 million in grants and loans each year.

Wichita State University Center for Entrepreneurship

1845 Fairmount St.

Wichita, KS 67260

Contact Information:

Lou Heldman lou.heldman@wichita.edu

The Center for Entrepreneurship has four full-time and four part-time employees with an additional five Wichita State University faculty members who provide programming and are housed and associated with the center.

Services Offered:

Business Booster Training—Provides a variety of training in topics relevant to aspiring entrepreneurs, early stage companies, and small-business owners. Three hour training sessions occur most Fridays. Most sessions have from 10-30 participants

Rural Entrepreneurship Training—An eleven session sequence of courses focused on issues relevant to entrepreneurs delivered to rural communities throughout the state. Programs typically enroll 25 participants.

Entrepreneurship Forum—Three times a semester students and the general public who are interested in entrepreneurial issues have the opportunity to listen to panel discussions and forums with experienced entrepreneurs. Typical attendance is 150-200.

Kansas Family Business Forum—A networking event of 40+ family businesses in the Wichita area that meet for networking and training opportunities on a regular basis.

Services For:

Aspiring and Early Stage Entrepreneurs and Business Owners

Wichita Technology Corporation

7829 E. Rockhill Road, Suite #307

Wichita, KS 67206

Wichita Technology Corporation (WTC) is a private commercialization corporation created in 1994 through a partnership between the Kansas Technology Enterprise Corporation (KTEC), the Wichita State University and Wichita Area Development, Inc. to create and sustain a formal innovation network that will support technology advancement, transfer and commercialization in Kansas. Wichita Technology Corporation has a staff of four people and a ten member board of directors.

Contact Information:

Patricia Brasted, President/CEO

wtc@wichitatechnology.com

Services Offered:

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Business Consulting: WTC provides a variety of services to inventors, entrepreneurs and early-stage technology businesses. All consulting services are provided for a fee. This fee may consist of an equity position in the company, a royalty on future sales, a cash fee or any combination of the three, based on scope of services performed and potential of the business venture. The team at WTC strives to remain flexible in the delivery and types of services provided to remain competitive and to ensure that the clients of WTC can obtain category dominance. Providing services and taking ownership allows WTC to become a partner with the entrepreneur. Consulting includes business plan consulting, market research competitor analysis, sales and marketing strategy development, business model development, business valuation, operations and accounting assistance, public relations and promotion, assistance in locating and accessing debt and equity financing.

Seed capital funding. Wichita Technology Ventures typical investment ranges from \$25,000 to \$200,000. Occasionally, larger investments are made. WTV can also serve as lead investor in significantly larger transactions, arranging financing in association with other investment groups. Typical investment instruments are common and preferred equity securities, or debt that is either convertible or is issued with warrants. Investment opportunities originate from a myriad of sources including personal contacts from industry, venture capitalists, investment bankers, accountants, attorneys, consultants, economic development officials, intermediaries, limited partners, and others.

Services For:

Early Stage Technology Companies. The website lists investments in 18 current companies.

Wichita Independent Business Association

200 E. 1st St., Ste. 101
Wichita, KS 67202

Contact Information:

Tim Witsman ftw@wiba.org

WIBA has a staff of six and a 21 member board of directors. Currently there are 356 businesses listed as members in the membership directory.

Services Offered:

- Business networking events and seminars
- Becoming the voice of independent business (lobbying in Topeka)
- Access to insurance plans

Services For:

All independently owned businesses. Membership ranges from the individual sole proprietor operating a home-based business to large corporations with thousands of employees.

We have compiled a list of 18 organizations and/or agencies that provide support for entrepreneurs and start-up businesses in the South Central Kansas area. Some such as The Advanced Manufacturing Institute and NIAR provide most of their services to existing businesses. Others such as the Kansas Small Business Development Center, and the Quest Center help entrepreneurs start small businesses, but most of their clients are in traditional industries and not based on technological innovation. Other groups such as the Wichita Independent Business Association and the National Association of Women

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Business owners provide networking and lobbying support, but are not focused on developing and growing technologically advanced businesses. Given that there were 3304 businesses started in the South Central region in 2012, the services of all of these entities combined reach only a small proportion of start-up businesses.

In summary, there are four organizations that provide services for technology-based, innovative, entrepreneurial start-ups:

The Kansas BioScience Authority. There appears to be more support for biosciences than for other innovative and technology based businesses. They have \$100 million in current investment capital. However, these services are headquartered in Johnson County. Although services are available in the South Central region, most BioScience activity is not occurring here.

Network Kansas. Provides services to start-up businesses in the South Central region. The scale and scope of operations is focused on start-up and early growth, helping entrepreneurs make connections to move forward. There is no specific emphasis on technology based businesses, and the amount of money per loan is quite small, facilitating start-up but not growth capital.

Pipeline. Focuses on tech based businesses, but accepts only 10 to 12 new members each year in the entire Midwest. This is an excellent program, but it can touch relatively few businesses.

Wichita Technology Corporation. Focuses on helping technology based start-ups. It has 18 active investments, with average loan amounts between \$50,000 and \$200,000.

There are services to help with high-tech start-ups, but with the possible exception of BioSciences there seems to be a substantial void in services and financing for high-potential companies with significant growth potential.

Business Finance Structures and Access to Capital

For entrepreneurs and startups access to capital may be the crucial element necessary for the success of the venture. This is especially true for high-growth and technology-based startup firms. High growth tech startup firms are those that hold the promise of rapid growth and significant employment for the region in which they are located. However, to reach the growth levels that signify rapid employment growth for a community, significant inflows of capital must be secured early in the life of the enterprise with an uncertain payoff at some time in the future. Funds may be necessary for intellectual property (IP) protection (patents), prototyping and demonstration projects, or scaling the enterprise (building production/distribution capacity) long before cash inflows from sales offer the hope of financial viability.

The Wichita and SC Kansas region has a strong banking sector that is engaged with the business community and is willing and able to loan money to businesses. However, the banking industry is not structured to fund high growth startup enterprises. Banks are structured to make loans to creditworthy businesses that can secure the loan with assets or a record of sales. Banks are not in the business of making large loans to high risk borrowers with significant uncertainty regarding when or if they will recoup their capital. Risk capital is a necessary component for entrepreneurs and startup enterprises seeking to achieve high growth to large scale. For the purposes of the following discussion three financing stages will be discussed: Seed (Startup) stage; Development stage; and Growth stage.

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Seed stage—the seed stage of the venture begins when an entrepreneur begins the effort to start an enterprise. Sources of capital at this stage include the entrepreneur’s own financial commitment as well as commitments from family, friends, and fools. For enterprises with high growth potential and based in the technology sector, the traditional sources of capital are likely insufficient. There will be a need for the entrepreneur to avail themselves of other sources of funds including grants through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) government programs. While the funds from these sources can be substantial they are competitive and subject to the vagaries of the evaluation process used to award the grants. Experience and knowledge of the programs and the process of successfully applying for these types of grants will be crucial for the region to be able to secure seed stage funding for high growth technology-based enterprises. In addition to government grant programs there are opportunities for student entrepreneurs to obtain small seed stage grants through foundations and organizations such as the National Inventors and Innovators Alliance (NCIIA).

In spite of the fact that there are significant sources of grant money available to would-be entrepreneurs, there will likely need to be a fund dedicated to the region that can be tapped by those unable to secure the grant funding. Such a local fund would likely need to be competitive and subject to significant milestone achievement to obtain succeeding amounts in the startup process. The fund could be used for IP protection, developing the business plan, early prototyping or proof of concept, and work toward business launch. Absent a sizeable “seed-stage” fund available to entrepreneurs (individuals, faculty, and students) from the South-Central Kansas Community the likelihood of technology-based startups increasing significantly is very small. At this point no such “seed-stage” fund exists to assist prospective high-growth technology-based startups. The Midwest Venture Alliance (affiliated with Wichita Technology Corporation) labels itself as a “seed stage” investment firm but according to information posted to their website (www.midwestventure.com/entrepreneurs.html) the criteria used to screen candidate enterprises indicate that it may be a late “seed stage” or early “development stage” investor.

Development stage—The development stage of a high growth enterprise blends with the seed stage and there is no clear demarcation regarding the start and end of the preceding stage. The development stage occurs when there is sufficient evidence to convince early stage investors that the entrepreneur and the idea have sufficient merit that there may be likelihood of success. At the development stage Angel Investors or Venture Development Organizations become involved with the enterprise. In the Wichita/SC Kansas region Wichita Technology Corporation is the Venture Development Organization (VDO) for the area. Network Kansas is a second organization involved in the development stage of entrepreneurial enterprises linking entrepreneurs with funding sources and other resources in the region. Network Kansas deals with all types of entrepreneurial ventures while Wichita Technology Corporation deals exclusively with technology-based startups.

In an interview with Ms. Trish Brasted, CEO of Wichita Technology Corporation, and Mr. Steve Radley, Director of Network Kansas, conducted in late April 2014 expressly for this project the issue of available risk capital was a priority discussion. Both individuals were adamant that risk capital dollars are available in the SC Kansas region at a level that exceeds demand. Funding for quality startup

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investments exceeds the number of quality technology startup firms that are seeking that funding in the region. Angel investors are placing their risk capital dollars with opportunities outside of the region and in many cases investments are being made in neighboring states. The question was also asked: “If the quality of deals increased markedly would angel risk capital supply rise to meet demand?” The answer to this question was yes. There seems to be more investment dollars available from angel investors than demand for the dollars to develop technology-based businesses.

Another issue discussed during the course of the interview was the services provided by WTC as part of the development process. Investment funds are but one facet of what a VDO provides to its client companies. Hands-on commercialization expertise and assistance is generally necessary during the development phase of the technology-based startup. Depending on the nature of the technology this expertise may be hard to come by in the region. Finding individuals that can work with or on the management team of the startup can be challenging. Knowledgeable individuals familiar with the issues of a technology-based startup or a high-growth business are in very short supply in the region. The last issue emanating from the interview that is of particular relevance this discussion involves SBIR/STTR knowhow in the region. There currently is a very limited number of individuals (as few as one) that possess the know-how and experience associated with applying for and obtaining grants for prototype and proof-of-concept. Again the knowledge and experience base is lacking in the region for successfully accessing key pools of funding for early stage development.

Growth stage—the growth stage of a high-growth technology-based enterprise comes after proof of concept and the achievement of significant sales or demonstration of the prospects of significant sales. Needed are the production/distribution capabilities to deliver the potential sales to customers. Scaling to the necessary size to achieve the potential requires high dollar investment commitment that the Venture Capital market can provide. The Wichita/SC Kansas region however, is far off the radar screen of VC firms. Given the lack of high-growth firms in the region (discussed elsewhere in this report) there is simply no demand for the services of VC firms. The Great Plains Capital Conference hosted each year by the Wichita Technology Corporation was initially intended to showcase high-growth technology-based companies in the region (including NE Kansas) to prospective investors. The Conference has been successful with respect to angel investors but not successful attracting the attention of VC firms (interview with Trish Brasted). Until such time as there is sustained demand for the services of VC firms the South-Central Kansas region will continue to experience a gap in the risk capital available to would be entrepreneurs and high-growth technology-based startups.

In sum, there are gaps in capital availability for high-growth startups in the region. Capital availability is strong from the banking sector. However, the banking sector is structured to support existing ongoing businesses with growth and expansion and is not a supplier of risk capital necessary for startup firms to achieve high growth. Seed stage and very early stage financing is extremely limited as is the expertise to tap into sources for funding. The angel investing sector for early and development stage funding in the region is relatively strong but is looking outside the area for funding opportunities due to the quality of investments bubbling up in the region. Lastly, there is a significant gap in the region for venture capital funding to scale potential startups to reach high-growth levels. This is not a chicken/egg issue for the region. Demand for VC funds is a pre-requisite which means

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the region will need to organically generate strong prospects to attract the attention of venture capital firms.

4. REGIONAL INNOVATION AND ENTREPRENEURSHIP CLIMATE COMPARISON OF SELECT MSAs

MSA Selection Methodology

Peer Metropolitan Statistical Areas (MSAs) were identified from the complete list of MSAs in the US. The criteria used for selection into the peer group was based on similarity to the Wichita MSA in terms of 1) population, 2) the presence of a research university, 3) type of industry (high tech or advanced manufacturing) prevalent in the area, 4) the presence of a military base, and 5) other statistical similarities. Each of these screen conditions were applied to the group of MSAs closest to the first criteria.

The following were identified as MSA Peers to the Wichita MSA based on population:

- Akron, Ohio
- Charleston, SC
- Colorado Springs, CO
- Syracuse, NY
- Winston-Salem, NC
- Cape Coral-Ft. Meyers, FL
- Boise, ID
- Springfield, MA
- Madison, WI
- Lakeland-Winter Haven, FL
- Ogden-Clearfield, UT
- Toledo, OH
- Deltona-Daytona Beach, FL
- Des Moines, IA
- Jackson, MS

Subsequently the following were selected as the closest peer-group to Wichita MSA based on all criteria:

- Charleston, SC: College of Charleston – 12000 students; developing Boeing Assembly plant; Joint Base Charleston (Air Force and others)
- Syracuse, NY: Syracuse University – 21000 students; Industrial hub of Central New York; Hancock Air National Guard Base
- Boise, ID: Boise State University – 22000 students; Micron Headquarters and plants, Hewlett Packard facility, JR Simplot Corporation (large privately held Agribusiness); Mountain Home Airbase

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- Madison, WI: University of Wisconsin – 43000 students; Agriculture, MFG, and Financial services in addition to state government; Truax Field Air National Guard Base
- Toledo, OH: University of Toledo –21000 students; Automotive industry and medical technology manufacturing; Toledo Air National Guard Base

Benchmark

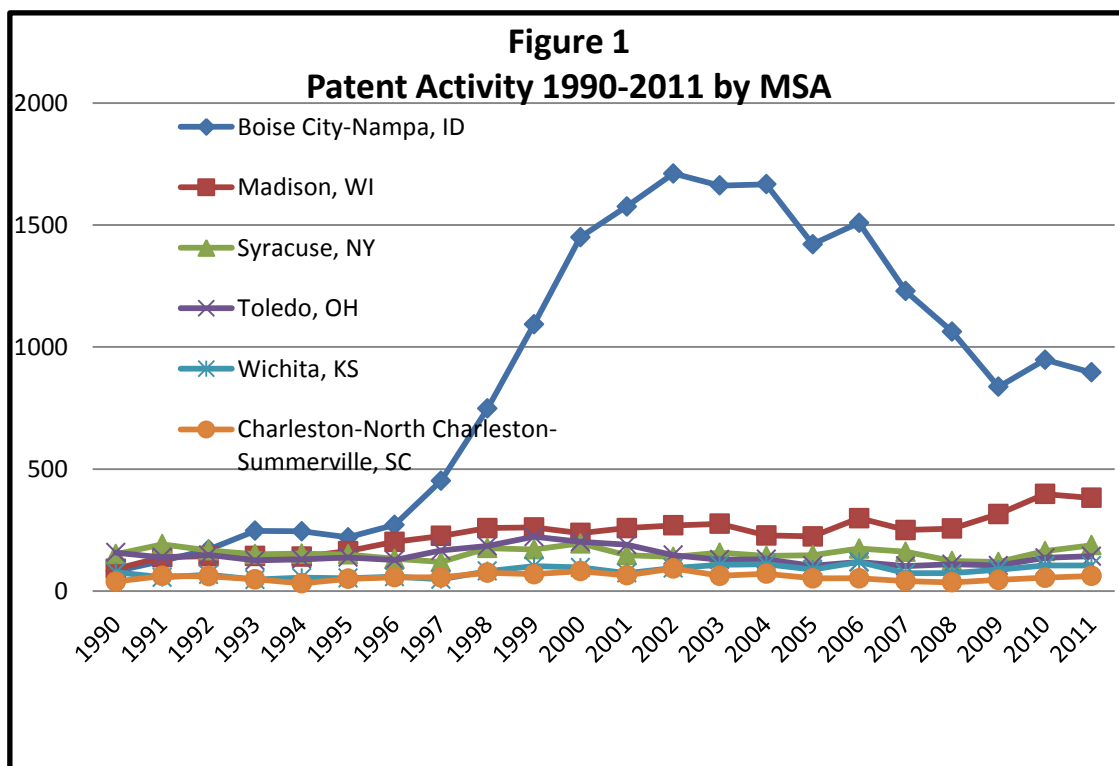
When making comparisons between the selected MSAs and the Wichita MSA it is important to recall the purpose of this research project: To benchmark the innovation and entrepreneurial ecosystem of the South-Central Kansas region. With that objective in mind we begin with the state of the current business ecosystem and compare that across the selected peer MSAs. In this comparison Wichita rises to the top in many statistical comparisons across the group using the latest data compilations available. The Wichita MSA ranks very high in the US in two important manufacturing benchmarks: Manufacturing jobs as a percent of all jobs (ranked 1 with 17.8%) in the MSA and Export Share of Metro GDP (ranked 1 with 20.4% in 2012 and #2 with 20.6% in 2013). The second highest manufacturing jobs is the Toledo MSA ranked 10 with 12.4% with all other peer MSAs at or below the national average of 8.5% manufacturing jobs compared to total employment. With respect to export share of Metro GDP Boise is ranked 4 with 16.4% in 2013 is Toledo is ranked number 10 with 15% export share in 2012. Another notable comparison is the percent of manufacturing jobs classified as “very high-tech.” Wichita is the highest ranked of the peer MSAs chosen with a ranking of number 3 in the US (64.1% of manufacturing jobs). Boise is the closest peer with a rank of 10 (41.0% of manufacturing jobs). A third notable comparison among the peer MSAs is the wages paid in the “very high-tech manufacturing” sector with Wichita the lowest with an annual wage of \$69,623 versus \$100,360 for Charleston (the highest wage rate for “very high-tech manufacturing” for the peer group. The last interesting comparison among the peer MSAs is the number of employees per average manufacturing plant for each. Charleston (ranked 8 with 80.5 employees), Syracuse (ranked 10 with 74.5 employees), Wichita (ranked 16 with 70.7 employees), and Toledo (ranked 23 with 65.8 employees) are the peer MSAs with the largest number of employees per manufacturing plant. Madison (ranked 30 with 60.8 employees) and Boise (ranked 62 with 45.2 employees) round out the peer group comparison.

The above statistics illustrate both the upside and the downside in comparing the Wichita MSA with a group of similar MSAs in the US. First the upside is that Wichita compares very favorably on a number of dimensions. The high rankings with respect to manufacturing jobs, export share, and percent of “very high-tech” manufacturing jobs is significant and bodes well for the foreseeable future in terms of manufacturing employment stability. However, the dependence upon the aircraft industry (58.7% of manufacturing jobs) leaves the local economy heavily dependent upon one industry. Boise is the closest to Wichita with its 40.7% of jobs in the computers and electronics industry. All other peer MSAs are below 20% of manufacturing jobs within any one industry sector. The aircraft manufacturing sector is a highly cyclical industry and the local economy is vulnerable to the vagaries of industry cyclicity. Additionally, the Wichita MSA is heavily dependent upon large sized (and mature) firms competing in a mature industry (number 16 rank for number of employees per average manufacturing plant). Large firms in a mature industry are unlikely to grow their employment levels significantly. Indeed they are likely to do just the opposite as competitive

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pressures force firms to cut costs in the face of intense competition. So, while we have a significant high-tech manufacturing cluster as the basis for our local economy it is not without inherent risk that South-Central Kansas is so heavily dependent upon one industry. Therefore, it is very important to develop the capability to start high growth businesses that can complement or draw from the skills and know-how that has been generated by the aircraft manufacturing sector of our economy.

While the Wichita MSA compares favorably on many dimensions there are areas of great concern. Foremost is the rate of intellectual property generation for the region. If the desired thrust for economic development is in the realm of creating high-growth technology-based startup enterprises, the basis for these firms will necessarily be high-value intellectual property. One measure of the ability of the region to generate technology-based startups is the rate at which the region generates patents. Figure 1 illustrates the patent activity for the Wichita MSA and the peer group. The Wichita MSA is second only to Charleston in the fewest patents generated over the last 20 years. The Boise MSA data points are highly correlated with the growth of the computing and semiconductor sector (Micron, Hewlett-Packard, and other small startups) and the growth of the Boise metro area from 1990 to the present.



The link between IP generation (measured by patent activity) and economic growth is important. The dominance of very mature industries in the Wichita (aircraft), Charleston (autos and aircraft), Toledo (autos), and Syracuse (general manufacturing) MSAs and the low rate of IP generation and resulting innovation is a challenge for economic development. If the Wichita region is to be successful in developing high-growth technology-based startups an increase in IP generation may be a necessary ingredient. The role of Wichita State University in this effort is clear. However, the University alone cannot be the sole driver of IP and resulting innovation as the basis for high-growth technology-based

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startup businesses. Industry within the region will need to play a large role in this effort but the dependence on and the maturity of the aircraft industry as it is currently configured in the Wichita MSA may be problematic in this quest.

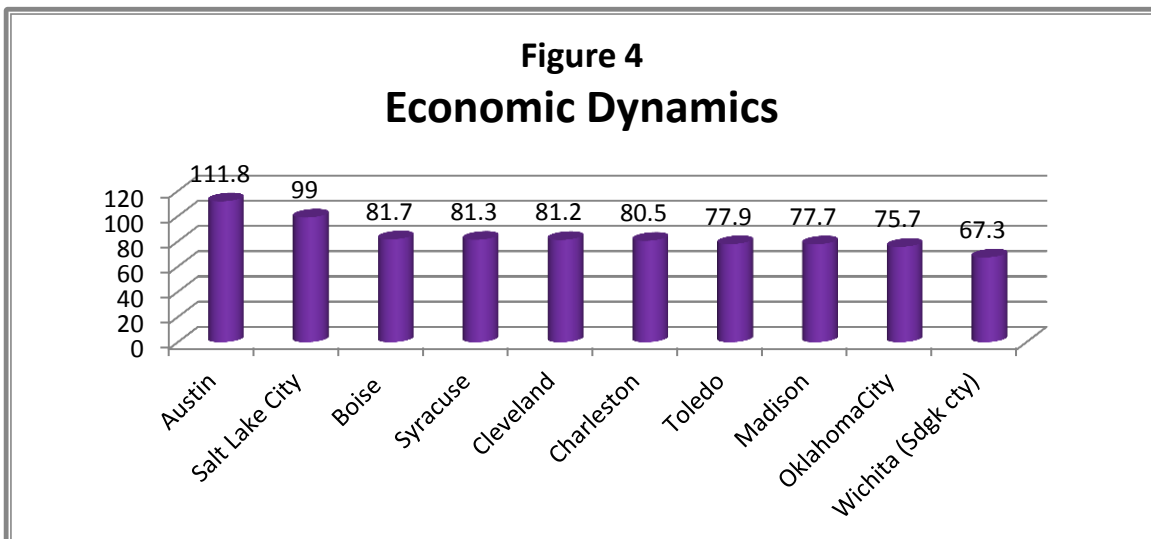
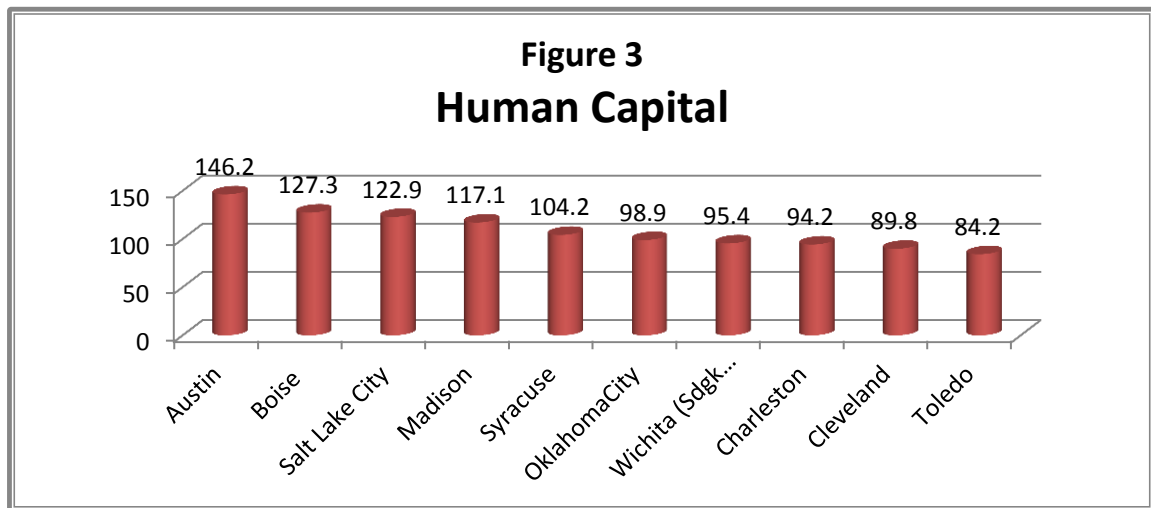
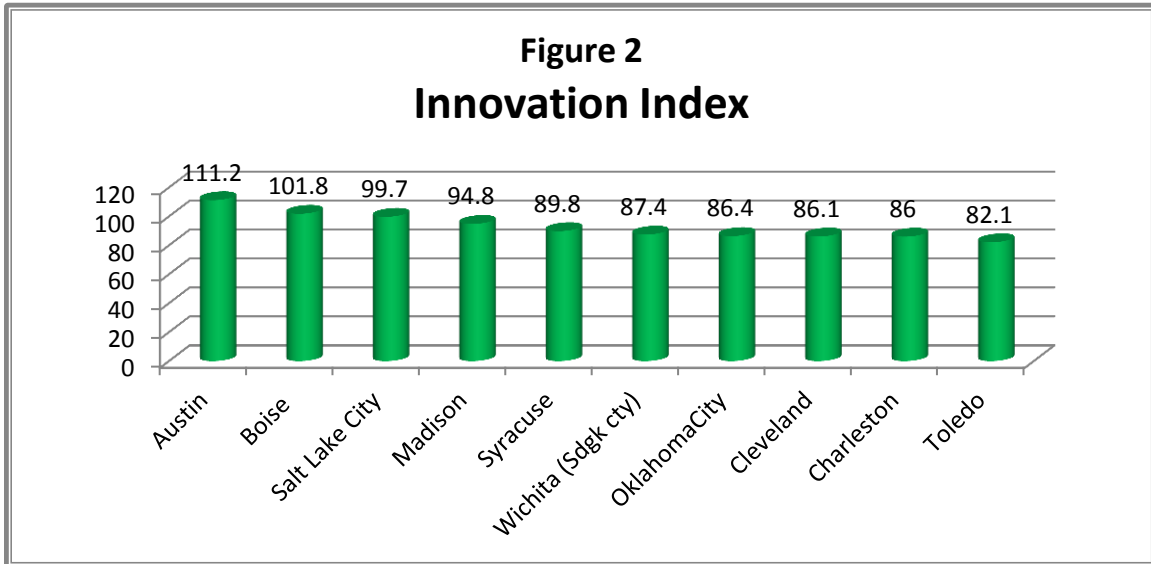
The data for the above discussion was obtained from summary statistics presented in “Locating American Manufacturing: Trends in the Geography of Production” compiled by the Brookings Institution Metropolitan Policy Program (<http://www.brookings.edu/research/interactives/manufacturing-interactive>). Copies of each peer MSA summary are included in **Appendix 1**.

Innovation Index

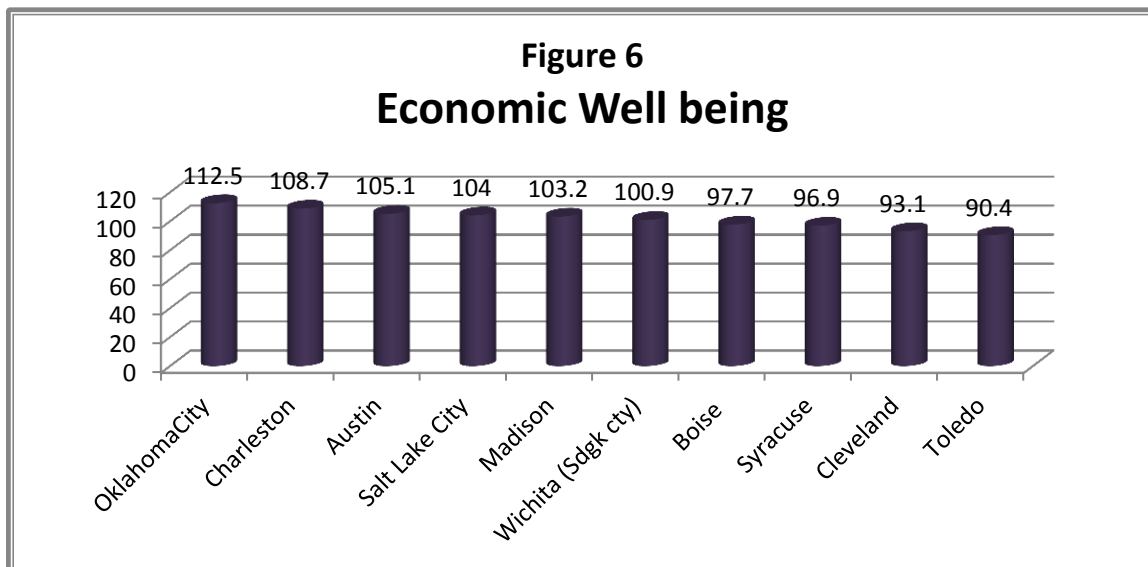
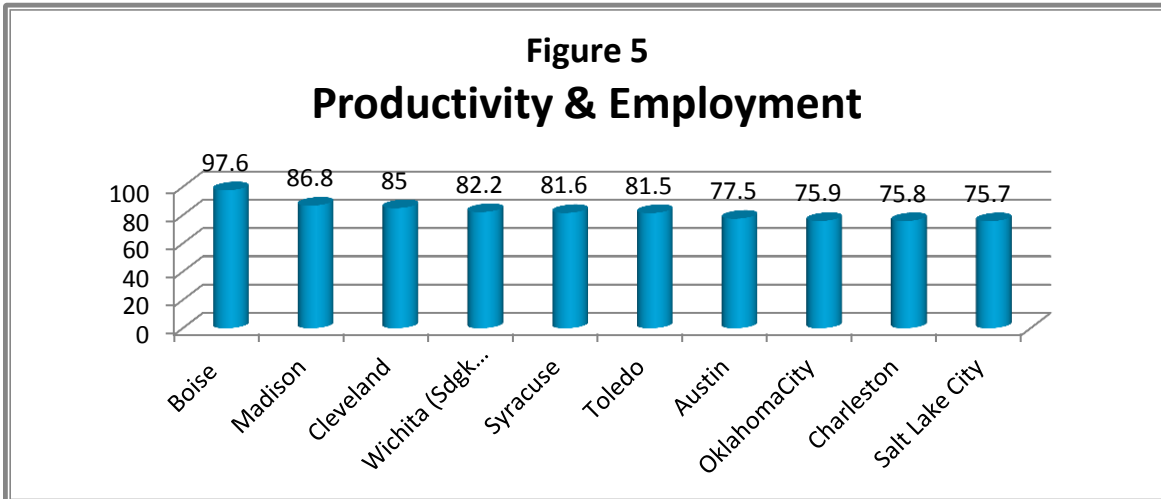
In addition to the comparison of five peer MSAs to the Wichita MSA the research team undertook a comparison of the components of the Innovation Index (explained briefly below and completely in APPENDIX 1) for the five peer MSAs and a select group of other MSAs that included Austin, TX, Oklahoma City, OK, Cleveland, OH, and Salt Lake City, UT. Austin and Salt Lake City were selected for their standout performance in generating high-growth high-tech firms, Oklahoma City was selected for proximity to Wichita and Cleveland was selected due to its “rust-belt” status and recovery over the last few decades.

The innovation index compiles statistical information from five weighted components—Human Capital (30%); Economic Dynamics (30%); Productivity and Employment (30%); and Economic Well-Being (10%). Each of these five components in turn are composite indices of a number of statistical elements (See **Appendix 2**). The charts shown below are compiled using data for the period 1997-2009. More recent data (2012) has become available as this report was being written but is not included. The specific numbers have changed slightly but not the relative position on each dimension for those cities included in the comparison. Figure 2 provides the positioning of the nine comparison cities/MSAs with respect to the overall innovation index and Figures 3-8 provide the component elements of the overall Innovation Index. The metric employed in the figures below benchmarks each MSA against the US average of 100 on the indices. Given 100 as the US average, Wichita is below the average innovation index in each category except “Economic Well Being.” Among the cities chosen for comparison Wichita is generally in the middle with one exception—“Economic Dynamics”—where it is lowest among cities in the evaluation.

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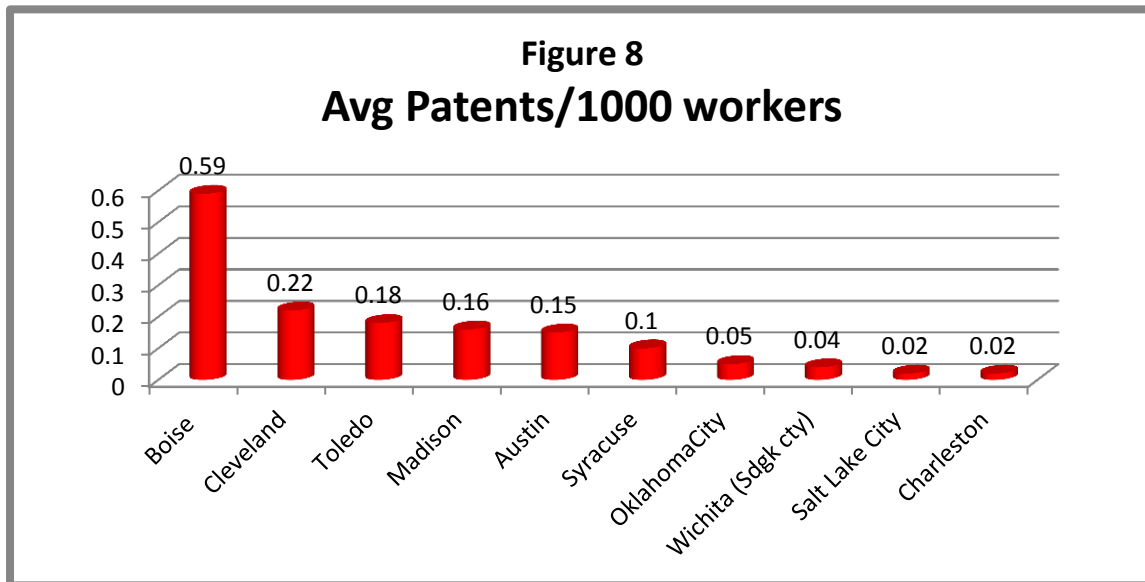
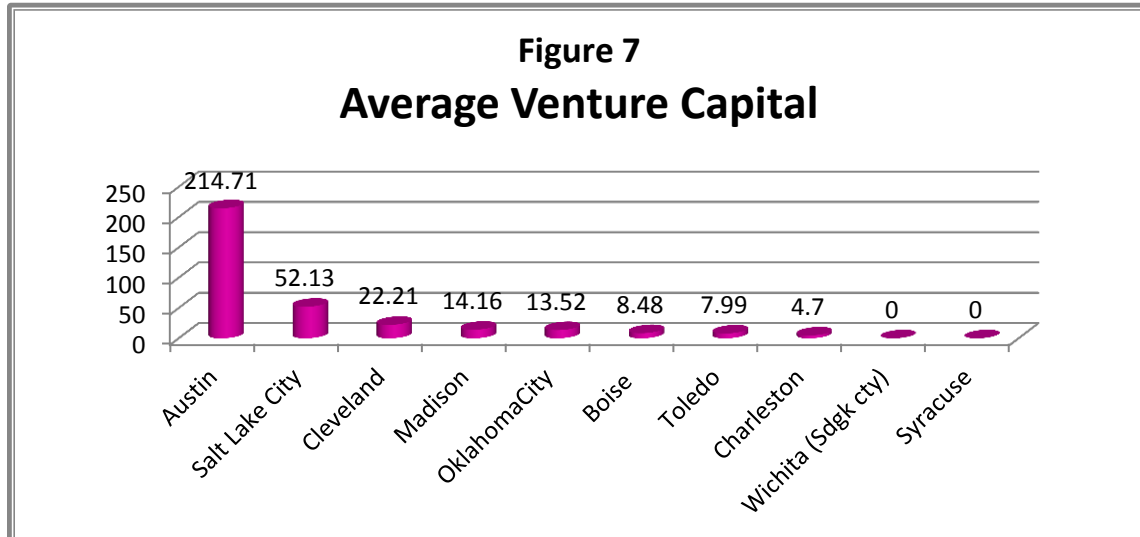


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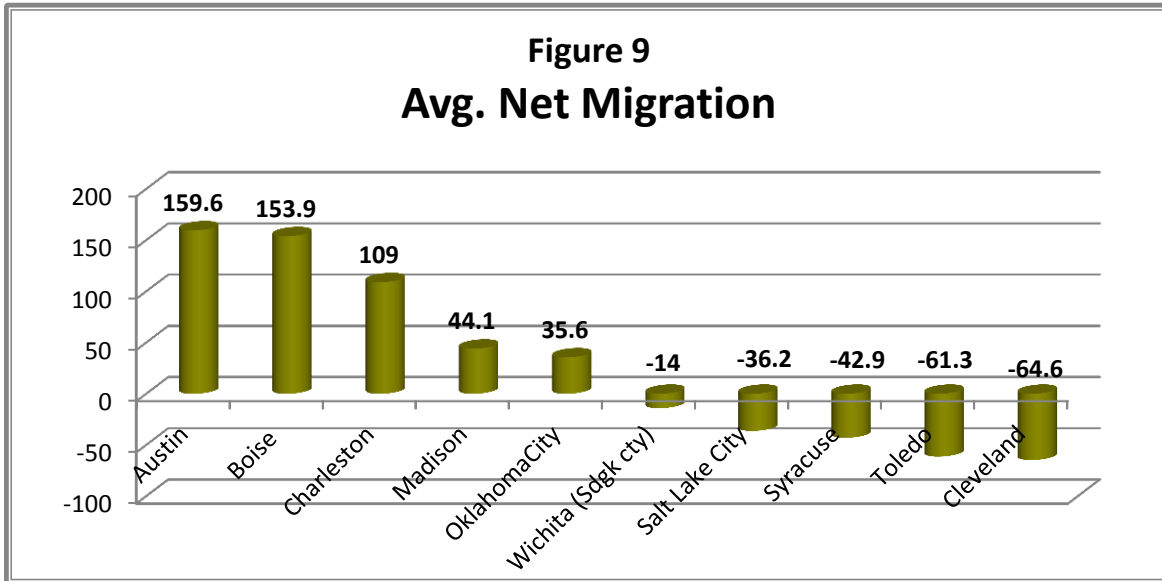
To validate information presented in other areas of this report two additional charts are presented in Figure 7 and 8. The first illustrates the issue of Venture Capital (VC) availability and demand. Wichita does not register with respect to VC capital usage. The second illustrates the issue of intellectual property generation by the metric of Patents generated per 1000 workers. Wichita is very low by comparison to most of the others in the comparison group.

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The last chart that we include in this section of the report reflects the net migration for all cities in the comparison group. Figure 9 shows that Wichita is losing individuals throughout-migration to other areas of the country. As illustrated in the chart, other cities are suffering the same issue but that is little comfort if the goal is to create high growth businesses Wichita will need all the talent that it can create. To the extent that Wichita is not able to attract talent or keep talent necessary for this goal, the region will have a very difficult time. To tease out some of the issues with respect to out-migration or efforts to retain talent the research team contacted Ms. Suzy Finn, Director of Young Professionals or Wichita (YPW), an organization sponsored by the Wichita Chamber of Commerce with the specific goal of creating and communicating an environment that is attractive to the young professional demographic necessary for a vibrant and innovative business community.

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The interview questions and discussion primarily revolved around the issue of attracting and retaining the key 25-44 age demographic group of workers to the Wichita area. Statistical data show a decline in the age group for the period 1999-2009 in the Wichita/Sedgwick County area of .3%. Of the comparison cities included in our research Cleveland, Madison, Syracuse, and Toledo were the only cities to experience decline in this key demographic equal to or greater than Wichita. Several of the cities in this group (Madison is the exception) can be classified as old industry (rust belt in the case of Cleveland and Toledo) cities that provide the young demographic limited opportunities in terms of professional growth or simply employment. The cities of Austin, Salt Lake, Boise, and Charleston are all growing in this demographic at 1% or greater (3.1% for Austin, TX). Given the technology thrust of Austin, Salt Lake City, and Boise, growing employment opportunities in tech-based growth firms may be an explanation for why there is significant in-migration growth in these areas.

Ms. Finn was asked whether, since 2009, the effort by the YPW or any other changes have made a difference in the trend of losing individuals in this demographic. There has been “some success” but not statistically measurable. Most of the recent trend changes have been influenced by the economic situation. Early in the great recession layoffs and cutbacks by companies were unhelpful but more recently the slow but steady claw-back in the job market has made a positive difference. The biggest impediment Ms. Finn sees is the job prospects. If there are jobs available then YPW and the community can address the quality-of-life issues because they become more important to those living in Wichita. Absent jobs, quality-of-life is much less relevant because prospective workers do not come. There is also the perception on the part of young workers and professionals outside the area that the only opportunity here is the aircraft industry. The lack of visible opportunities in Wichita for other employment areas and for highly skilled or trained workers is problematic to attracting a young worker demographic. Wichita State University can play a major role in that it needs to connect students to the community through internships and experiential learning opportunities that will lead to permanent positions in the community. Along with the experiential learning model the university needs to connect students to quality-of-life activities and organizations in the City. There needs to be significant coordinated effort between the city, university, and businesses at multiple levels. Asked specifically about how a high growth company

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would help, she offered the example of Conway, Arkansas where a high-tech company was founded and grew rapidly. Along with employment at the company, other ancillary companies were attracted to the area providing economic opportunity to the young demographic. A high-tech startup that moved quickly to high growth mode (“gazelle”) could be the spark of a significant virtuous cycle that would lift all boats in the Wichita community.

5. EVALUATION OF NEW ENTREPRENEURIAL STARTUP COMPANIES

Magnitude of new venture start-ups.

In the State of Kansas businesses must register with the state if they are organizing as a Limited Liability Company, an S-Corporation, or a C-Corporation. There is no registration required for companies organized as sole proprietorships or partnerships. However, there is no reason to believe that the proportion of firms registered compared to those that organize as sole proprietorships varies from year to year. We also point out that new registrations capture those that convert from a sole-proprietorship or partnership to a registered form. Also, in the case of LLCs, changes of principals in the business will trigger a new registration. Once again, there is no reason to believe that conversions and re-registrations as a proportion of the total vary significantly over time. Thus, we believe that the number of new registrations serves as a valid indicator of how the South Central Kansas region compares in business formations to the rest of the State. Table 1 shows the total number of domestic new business registrations for each county in the South Central Region. Although some states require NAICS codes for business registrations, the State of Kansas does not, so we do not know the industry distribution of new business starts.

Table 1

County	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Butler	196	214	228	199	201	232	190	199	224	250
Cowley	74	75	69	75	78	80	73	60	96	82
Chase	11	17	8	11	9	9	8	18	14	8
Harper	16	19	23	28	19	21	16	30	32	53
Harvey	91	99	119	109	103	114	88	102	114	109
Kingman	26	18	25	14	29	26	27	31	32	45
Reno	153	168	170	181	145	178	159	174	193	186
Sedgwick	1845	1936	2077	2057	2185	2165	2020	2133	2355	2488
Sumner	62	41	84	53	68	59	81	69	79	83
Totals	2474	2587	2803	2727	2837	2884	2662	2816	3139	3304

Table 2 displays an index that indicates how the counties in the South Central region compare to the rest of the state in business formations for 2010 and 2012. In 2010 there were 2816 new domestic business registrations in the south central region and in 2012 there were 3304 registrations. During

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those same time periods there were 13,024 and 15,008 new registrations in the State of Kansas. In the State of Kansas there were 456 new business registrations per 100,000 in population in 2010 and 520 new business registrations per 100,000 in population in 2012. Table 2 Displays that the South Central Region was at 83% of the state average in 2010 and 85% of the state average in 2012. Thus, the South Central region lags the rest of the state in new business formations.

Table 2

	Population 2010	Population 2012	New Registration Index 2010	New Registration Index 2012
Kansas	2853116	2885398	1	1
Butler	65880	65730	0.661696	0.731239
Cowley	36311	36244	0.36197	0.435002
Chase	2790	2752	1.413278	0.558927
Harper	6034	5888	1.089119	1.730698
Harvey	34684	34817	0.644214	0.601933
Kingman	7858	7835	0.864189	1.104299
Reno	64511	64245	0.590847	0.556656
Sedgwick	498365	503438	0.937567	0.950205
Sumner	24132	23698	0.626347	0.67341
South Central Region	740565	744647	0.832969	0.853105

INC 5000 firms in Kansas and the South Central Region

Inc. Magazine compiles a list of the 5000 fastest growing private firms in the nation each year. Table 3 shows the number of Kansas firms listed in the INC. 5000 list over the past five years. It also shows the number of South Central region firms on the list for the past 2 years.

Table 3

INC 5000 firms in Kansas						
Year	2009	2010	2011	2012	2013	Average
Number of Companies	37	35	35	41	34	36.4
Index compared to National Averages	0.81	0.76	0.76	0.89	0.77	0.80
In the South Central Region				10	4	
Index compared to state averages.				.94	0.46	0.72

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Over the past five years, there has been an average of 36.4 firms on the Inc. 5000 list in Kansas. Per capita, that translates to 80% of the national average. Thus, Kansas lags behind national averages in terms of the number of high growth firms listed in the Inc. 5000 list. Over the past two years, the South Central Region of Kansas had 10 and 4 firms on the Inc. 5000 firms respectively. The two year average places the South Central Region at 72% of the state average. Thus, Kansas lags the nation, and the South Central region lags the state. Tables showing averages for all states are included in the appendix.

Following is a list of the companies on the INC 5000 list in 2012 and 2013 in the ten county South-Central region.

Table 4

Company Name	# Employees	Sales	What they do	Industry Sector	Year
Professional Home Buyers	5	\$3.2 million	Flipping homes through rent to own	Real Estate	2013
S&Y Industries	94	\$11.5 million	Circuit board assemblies, wire and cable assemblies	Manufacturing	2013
Capps Manufacturing	170	\$26.5 million	Aircraft parts	Manufacturing	2013
Call Cap	24	\$5.9 million	Call tracking and monitoring for customer service and sales	Business Products and Services	2013
S&Y Industries	84	\$10.5 million	Circuit board assemblies, wire and cable assemblies	Manufacturing	2012
Overstockart.com	24	\$4.1 million	Reproduction art work	Retail	2012
InfoSync Services	341	\$23.5 million	Accounting, payroll, and information system services to restaurant chains	Financial Services	2012
MoJack	19	\$10.4 million	Lifts for lawnmowers and other products	Consumer products and services	2012
Freddies Frozen Yogurt	2610	\$70.5 million	Fast food restaurants	Food and Beverage Services	2012
Capps Manufacturing	159	\$24.1 million	Aircraft parts	Manufacturing	2012
ARSI	85	\$5.4 million	Collection services for consumer debt	Financial Services	2012

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Company Name	# Employees	Sales	What they do	Industry Sector	Year
Occidental Management	9	\$5.4 million	Property Management Services	Real Estate	2012
Walton's	22	\$7.9 million	Meat related equipment and supplies	Business Products and Services	2012
King Enterprise Group	67	\$18.5 million	Heavy industrial construction for oil and gas industry	Construction	2012

S&Y Industries and Capps Manufacturing, both of whom appear on the list for both 2012 and 2013 are the only high growth manufacturing companies on the list. Most of the other high growth companies in the region are in services and retail. There does not seem to be a high growth cluster of firms in any narrow industry grouping in the South Central Kansas region.

6. STRENGTHS AND WEAKNESS ANALYSIS IDENTIFIED FROM INTERVIEWS AND SURVEY OF REGIONAL INNOVATORS AND ENTREPRENEURS

Interviews with Regional Innovators/Entrepreneurs

Methodology - We invited founding CEOs from 14 startup and growing firms in the 10 county south-central Kansas region to be interviewed for this project. The 14 firms were selected based upon the degree to which the firm fit with Lester's (2004) four market growth categories for innovative firms. These categories include: create a new industry, transplant into an existing industry in the region, diversify an old industry into a related new industry, and upgrade a mature industry. Only five CEOs responded to our request to be interviewed. The firms of these CEOs corresponded with two of Lester's market growth categories, that is, create a new industry and upgrade a mature industry.

Interview questions were semi-structured and asked respondents to describe the history and growth of their firm as well as to comment on how factors related to the regional innovation ecosystem in south central Kansas supported or did not support their firm's growth. In particular, respondents were asked to comment on the strengths and weaknesses of the human, financial, intellectual, educational, infrastructure, and governmental resources of the region.

From these interviews several themes emerged that highlight the strengths and weaknesses of the business environment for innovative firms in south central Kansas. We summarize below the findings of our interviews according to the themes identified from our interviews.

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Human resources – A clear area of strengths for this region according to all five founding CEOs was the quality of human resources available in the region. All five CEOs indicated that they were able to source talented associates for their businesses from the region. These included highly skilled technical jobs and business support positions. An exception to this was one of the CEOs who founded a web based business sourced the technical expertise needed for the business from other markets – primarily foreign markets. Business support positions for this firm were sourced from south central Kansas but not the technical jobs. While this entrepreneur had not actively sourced technical talent from this region she/he had the perception that the technical talent was not as good and more expensive than that which could be sourced in other markets.

Collaboration among entrepreneurs and businesses – Two of the entrepreneurs in our sample commented that there is not an effective forum or mechanism in the region by which entrepreneurs can meet and share ideas and information. This was viewed as a limitation for entrepreneurial activity in the region. That is, these respondents thought that entrepreneurs would likely benefit from the advice, support, and encouragement offered from such formal collaborations. Related to this point, the two CEOs both commented that a lack of incubation and accelerator space in the region was holding back entrepreneurial activity. Both CEOs however mentioned several positive steps that have occurred recently to encourage collaborations and information sharing among entrepreneurs. These include the ICT Unconference that occurred in Wichita in April 2014, startup weekend events, and more coverage of startups and in particular tech startups in the Wichita Business Journal. Despite these developments there is still no formal forum or mechanism, group, or organization to bring together entrepreneurs to assist them in launching and growing their business. One entrepreneur CEO in our sample mentioned that the Pipeline program in Kansas is a helpful program that facilitates collaboration with other high growth firms but the program only accepts a few firms each year.

Funding for startups and growing firms – Four of the five CEOs commented that finding adequate funding sources in the region is a problem. The other CEO was able to achieve sales relatively early and was able to fund their growth from the firm's growing income as well as from banks that were willing to lend money due to evidence of sales. Two of the CEOs who expressed dissatisfaction with funding options in the region are developing innovative new products in a mature industry. Both CEOs commented how difficult it is to receive funding from sources in south central Kansas. Both mentioned that venture capital funding is limited in the region and that there are few angel investors. Those angel investors that do exist generally are not willing to invest more than \$50,000 in a new venture according to the founding CEOs we interviewed. This was viewed as a big constraint to these entrepreneurs who needed larger amounts of capital to prototype, develop, and manufacturer their new innovative products. One of these entrepreneurs even expressed dissatisfaction with the willingness of banks to support growing businesses. This entrepreneur's business had sales but low growth and was told by her/his bank that his/her firm needed to find another bank because they were no longer going to lend them money. This led the entrepreneur to comment that funding is lacking in the region for startups but for those firms that have made it past the startup phase still struggle to obtain the funding needed in order to grow the businesses.

State of Kansas Tax Policy– On the whole all five entrepreneurs did not think the regulatory requirements for their businesses were burdensome in the region or state. However, two CEOs in

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our sample did not think that the tax policy in the state of Kansas was favorable to startup businesses especially when compared to other states. In particular, one entrepreneur who relocated to Kansas to develop a new innovative product was especially critical of the tax environment for small emerging businesses in Kansas. This entrepreneur owns property in both California and Kansas and stated that compared to California, Kansas did not compete effectively on property taxes. This entrepreneur further was very discouraged with the Kansas Legislature's move in 2012 to eliminate the net operating loss (NOL) deduction from income taxes for all businesses except corporations. According to this CEO, the NOL tax policy change penalizes entrepreneurs developing innovative products because the product development cycle is longer for these firms and the extra tax burden limits the capital the firm needs to achieve growth. Thus, this entrepreneur perceives that the Kansas NOL deduction tax policy change creates an environment where her/his firm is put at a significant disadvantage compared to other startups in other states. Consequently, this entrepreneur told us that he/she is considering relocating his/her product development and startup efforts to another state that in his/her mind is more accommodating to new startups.

The Business Climate Survey

The Business Climate Survey of South-Central Kansas was undertaken as one element of the multi-pronged research project to identify the strengths and weaknesses of the region to be the hub of high-tech and advanced manufacturing activity in the near future.

The purpose of the *South-Central Kansas Business Climate Survey* was to provide a deeper understanding of the key networks and cultural attitudes that foster entrepreneurship, shape the south central Kansas regional economy, indicate gap areas in the entrepreneurial landscape that require further investment, and provide a baseline by which to judge future progress toward regional prosperity through the creation of a high-tech manufacturing cluster within the ten-county region. The 2014 survey data reported in this summary analysis were collected during April and May 2014.

Methodology

The Center for Entrepreneurship researchers used a web-based survey to collect data from a large sample of businesses and organizations involved in economic and business development activities in the South-Central Kansas region.

Each individual received a written invitation to participate in the survey by the three lead researchers from the Center for Entrepreneurship at Wichita State University. The Center emailed additional reminder notices to encourage individuals to participate in the survey and administered a paper copy of the survey to individual judges evaluating business plans at the WSU Shocker New Venture Competition in April 2014.

The South-Central Kansas Innovation and Entrepreneurship Ecosystem

The survey format was adapted from the “The Regional Business Survey” published in the Council of Competitiveness publication, *Measuring Regional Innovation: A Guidebook for Conducting Regional Innovation Assessments*.²

Index Score

For each of the 27 *Business Environment* factors an index score was computed by weighting responses for respondents answering very beneficial to your business, beneficial to your business, neither harmful nor beneficial to your business, harmful to your business or very harmful to your business. All “not applicable” responses are excluded from the index score calculations.

To calculate the Index Score:

1. Number of answers in each response category are tallied for each business factor
2. For each business factor, the number of responses in each response category are multiplied by the following weights:
 - a. Very beneficial to your business has a weight of 1.0
 - b. Beneficial to your business has a weight of 0.75
 - c. Neither harmful nor beneficial to your business has a weight of 0.5
 - d. Harmful to your business has a weight of 0.25
 - e. Very harmful to your business has a weight of 0.0
3. Sum weighted results for each question
4. Divide by the number of valid/included responses
5. Multiply by 100 to get index score

The *Innovation* factors indices are calculated in the same manner exchanging extremely valuable with very beneficial, quite valuable with beneficial, etc.

The *Regional Norms and Attitudes* indices are calculated in the same manner exchanging strongly agree with very beneficial, agree with beneficial, etc.

The resulting index score provides a measure of the reported benefit of each business factor to the responding composite and advanced materials firms. The index can range in value from zero to 100. An index of 50 or greater indicates that respondents are generally positive about the business factor. An index of less than 50 indicates that respondents are generally negative about the business factor. The distance from 50 is an indication of the strength of respondents’ perceptions, either negative or positive, about the business factor.

Survey Sample Size

The Business Climate survey was administered to a broad cross-section of individuals and companies in the region. A large email list of business leaders, business advocates, economic development personnel and business managers was compiled for the region. Approximately 3000 individuals

² Measuring Regional Innovation: A Guidebook for Conducting Regional Innovation Assessments. Council on Competitiveness, August, 2005. <http://www.compete.org/publications/detail/212/measuring-regional-innovation/>

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received an email invitation to participate in the survey using the Qualtrix Survey system available from Wichita State University. One hundred fifty one respondents provided partial responses to the survey questions and 118 individuals provided complete responses to the survey.

Survey Instrument Introductory Text

Dear Business Advocate,

We invite you to participate in a research study of the South Central Kansas regional business climate. We are soliciting the opinions of approximately 3000 Business Advocates in the 10-county South Central Kansas area. We know that your time is valuable but by participating in this research you will be a part of an effort to improve economic development in our region. In particular, providing your unique perspective on the business climate in our region will help us accomplish the following:

1. **Provide decision makers in our region the data to make better economic decisions.** To make better collective decisions we need to know the strengths and weaknesses of the region with respect to business creation and growth.
2. **Compare your perspectives to other business leaders in our region.** The results of the study will help you better understand how your perceptions of the regional business climate compare to those of other survey respondents. At the end of the survey is a box you can check if you would like to receive an executive summary of the results.
3. **Seek federal funding to develop business opportunities in South Central Kansas.** The aggregated information will be an important element in a coordinated effort among WSU and the South Central Kansas Economic Development District to attract federal funding from the Investing in Manufacturing Communities Partnership (IMCP) program under the umbrella of the US Economic Development Administration.

Participation in this research is entirely voluntary. Research records will be kept confidential, consistent with federal and state regulations. Only the researchers will have access to the data files created from the electronic survey process and no identifying information will be used in the analysis or subsequent reporting of the results. There are no anticipated risks associated with participating in this study. However, if you feel uncomfortable with a question, you may select “not applicable.” You are under no obligation to participate in this study. Completing the survey indicates that you have read the information provided above and have voluntarily decided to participate. You may print a copy of this consent form for your records.

To participate, click on the link below to take the survey. The survey will take you approximately 20 minutes to complete and you may participate in a follow-up interview if you desire. Your decision whether or not to participate will not affect your future relations with Wichita State University. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

We thank you in advance for your participation in this study.

Sincerely,

Jim Wolff

Gaylen N. Chandler

J. Christian Broberg

The South-Central Kansas Innovation and Entrepreneurship Ecosystem

Professor Center for Entrepreneurship Wichita State University Jim.Wolff@wichita.edu	Barton Distinguished Chair Center for Entrepreneurship Wichita State University Gaylen.Chandler@wichita.edu	Assistant Professor Center for Entrepreneurship Wichita State University Chris.Broberg@wichita.edu
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If you have questions pertaining to your rights as a research subject, or about research-related injury, you can contact the Office of Research and Technology Transfer at Wichita State University, 1845 Fairmount Street, Wichita, KS 67260-0007, telephone (316) 978-3285.

Summary of Findings

The following reports a section-by-section presentation of the results of the Business Climate survey of the South-Central Kansas region.

Section 1: Business Environment

Twenty seven questions were asked with respect to specific aspects (cost of living, capital availability, transportation infrastructure, etc.) to understand respondent sentiment regarding the region as a place for business success. In addition, one overarching response item asked respondents how they would rate the region with respect to a place for business to succeed. Of 131 respondents 4.6 percent responded “excellent,” 31.3 percent “very good,” 41.2 percent “good,” 21.4 percent “fair,” and 1.5 percent “poor.” Overall, 77.1 percent of respondents (131 total) rated the region positively (“good”, “very good”, or “excellent”) when asked how they would rate the region overall as a place for business to succeed.

In **Table 5** below the top five business environment factors and the lowest five business environment factors are listed. The South-Central Kansas region’s educational institutions, the region’s cost of living and cost of doing business (real estate, wages/salaries, and utilities), and the region’s communications infrastructure were rated more favorably. The level of business taxation, state and local business regulation and business permitting procedures, the quality of promotional communication about the region and the availability of risk capital (angel and venture capital) were rated less favorably by respondents to the survey. The index scores for the bottom five factors indicate that more scrutiny of the issues surrounding the individual factors may be justified.

Table 5
Business Environment top five and bottom five factors

Please rate the region's current performance level on each BUSINESS ENVIRONMENT factor.	
Index Score	Top Five Environment Factors
80.2	The overall quality of the region's FOUR-YEAR COLLEGES and UNIVERSITIES
77.5	The region's COST of LIVING for your employees
75.5	The overall quality of the region's COMMUNITY and TECHNICAL COLLEGES
73.5	The cost of doing business in your region - specifically, the cost of REAL ESTATE, WAGES and SALARIES, and UTILITIES
72.8	The quality of the region’s COMMUNICATIONS INFRASTRUCTURE (e.g., wireless and high-speed internet)

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Please rate the region's current performance level on each BUSINESS ENVIRONMENT factor.	
Bottom Five Environment Factors	
54.7	The availability in the region of RISK CAPITAL from ANGEL INVESTORS
54.4	The quality of PROMOTIONAL and MARKETING campaigns featuring the region
53.6	The availability in the region of RISK CAPITAL from VENTURE CAPITAL firms
50.8	State and local governmental REGULATIONS and permitting procedures affecting businesses
50.7	The level of TAXATION affecting business (relative to other regions)

Table 6 provides the complete index score, response profile, and percentage responses to each of the response categories included in the business climate section of the regional survey.

Table 6
Business Environment complete response data and percentages

Please rate the region's current performance level on each BUSINESS ENVIRONMENT factor.							
Index Score		Very Beneficial	Beneficial	Neither	Harmful	Very Harmful	Not applicable
69.0	The overall quality of the region's TRANSPORTATION (e.g., roads, air transport, railroads and ports)	36 23.8%	58 38.4%	40 26.5%	16 10.6%	0 0.0%	1 0.7%
72.8	The quality of the region's COMMUNICATIONS INFRASTRUCTURE (e.g., wireless and high-speed internet)	48 31.8%	58 38.4%	27 17.9%	14 9.3%	2 1.3%	2 1.3%
73.5	The cost of doing business in your region - specifically, the cost of REAL ESTATE, WAGES and SALARIES, and UTILITIES	45 29.8%	61 40.4%	30 19.9%	12 7.9%	0 0.0%	3 2.0%
77.5	The region's COST of LIVING for your employees	49 32.5%	63 41.7%	25 16.6%	5 3.3%	0 0.0%	9 6.0%
67.6	The region's overall QUALITY of LIFE	34 22.8%	57 38.3%	38 25.5%	17 11.4%	2 1.3%	1 0.7%
75.5	The overall quality of the region's COMMUNITY and TECHNICAL COLLEGES	44 29.3%	70 46.7%	28 18.7%	5 3.3%	1 0.7%	2 1.3%
80.2	The overall quality of the region's FOUR-YEAR COLLEGES and UNIVERSITIES	58 38.4%	68 45.0%	18 11.9%	3 2.0%	1 0.7%	3 2.0%
66.6	The availability of the regional college and university APPRENTICESHIPS	27 18.0%	57 38.0%	48 32.0%	11 7.3%	2 1.3%	5 3.3%
67.3	The quality of TECHNICAL ASSISTANCE offered by regional colleges and universities to businesses	27 17.9%	56 37.1%	48 31.8%	10 6.6%	1 0.7%	9 6.0%

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Please rate the region's current performance level on each BUSINESS ENVIRONMENT factor.							
61.9	The quality of R&D COLLABORATION between businesses and regional college/university researchers	19 12.7%	42 28.0%	59 39.3%	14 9.3%	1 0.7%	15 10.0%
61.3	The availability in the region of WORKERS with the skills your business requires	27 17.9%	51 33.8%	33 21.9%	31 20.5%	4 2.6%	5 3.3%
57.5	The availability in the region of TOP MANAGERS with the qualifications your business requires	11 7.3%	46 30.7%	54 36.0%	25 16.7%	1 0.7%	13 8.7%
57.6	The availability in the region of SCIENTISTS and ENGINEERS with the qualifications your business requires	6 4.0%	42 28.0%	49 32.7%	17 11.3%	1 0.7%	35 23.3%
60.5	The availability of INFORMATION TECHNOLOGY professionals with the qualifications required	16 11.6%	45 32.6%	43 31.2%	20 14.5%	2 1.4%	12 8.7%
46.4	The availability in the region of RISK CAPITAL from VENTURE CAPITAL firms	4 2.9%	24 17.4%	54 39.1%	21 15.2%	14 10.1%	21 15.2%
54.7	The availability in the region of RISK CAPITAL from ANGEL INVESTORS	11 7.9%	25 18.0%	58 41.7%	19 13.7%	3 2.2%	23 16.5%
65.6	The availability in the region of CAPITAL from BANKS	31 22.3%	47 33.8%	32 23.0%	15 10.8%	6 4.3%	8 5.8%
58.4	The availability of specialized FACILITIES and LABORATORIES for product testing/development	15 10.9%	26 18.8%	58 42.0%	10 7.2%	4 2.9%	25 18.1%
62.5	The quality of the region's SPECIALIZED SUPPLIERS for your business	15 10.9%	44 32.1%	51 37.2%	11 8.0%	1 0.7%	15 10.9%
64.7	The regional availability of DEMAND / CUSTOMERS for your business	27 19.7%	45 32.8%	39 28.5%	18 13.1%	2 1.5%	6 4.4%
59.1	The effectiveness of the region's UNIVERSITY TECHNOLOGY TRANSFER	12 8.7%	28 20.3%	64 46.4%	7 5.1%	2 1.4%	25 18.1%
50.8	State and local governmental REGULATIONS and permitting procedures affecting businesses	16 11.7%	29 21.2%	38 27.7%	43 31.4%	7 5.1%	4 2.9%
50.7	The level of TAXATION affecting business (relative to other regions)	15 10.9%	24 17.4%	58 42.0%	30 21.7%	10 7.2%	1 0.7%
54.8	The effectiveness of GOVERNMENT-SPONSORED GROWTH INCENTIVES programs	13 9.4%	32 23.2%	56 40.6%	23 16.7%	5 3.6%	9 6.5%

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Please rate the region's current performance level on each BUSINESS ENVIRONMENT factor.							
54.4	The quality of PROMOTIONAL and MARKETING campaigns featuring the region	12 8.8%	27 19.7%	69 50.4%	18 13.1%	5 3.6%	6 4.4%
57.3	The effectiveness of regional programs to help STARTUP BUSINESSES	14 10.3%	33 24.3%	59 43.4%	16 11.8%	4 2.9%	10 7.4%
62.3	The effectiveness of regional programs to TRAIN ENTREPRENEURS	15 10.9%	54 39.1%	48 34.8%	16 11.6%	1 0.7%	4 2.9%

Section 2: Innovation Networks

Sixteen questions in the survey sought to provide insight into the capacity for businesses to innovate in the region. Specifically respondents were asked to rate how valuable the interaction with sixteen local institutions is with respect to their businesses capacity to innovate. Interaction with federal labs in the area, access to business incubators, and access to investment pools (venture and angel investment) stand out as the lowest rated elements affecting business' capacity to innovate in the region.

Table 7 below contains the respondents' top five rated institutions and the bottom five rated institutions regarding business' capacity to innovate in the South-Central Kansas region. In contrast to the business environment index ratings the top five positive factors in the capacity to innovate section of the survey were significantly less positive and the bottom five indicators were significantly more negative. Taken as a whole the factors in the "capacity to innovate" section of the survey were slightly negative (48.7 average index score). From the responses to this series of questions the region's capacity to innovate would seem to have elements that are in need of serious attention.

Table 7
Capacity to Innovate Top Five and Bottom Five rated innovation factors

Please rate how valuable the interaction with each of the following REGIONAL INSTITUTIONS is to your business's CAPACITY TO INNOVATE.	
Index Score	Top Five Innovation Factors
64.2	REGIONAL CUSTOMERS
58.1	FOUR-YEAR COLLEGES and UNIVERSITIES
56.7	BANKS
55.5	PROFESSIONAL SERVICE FIRMS
55.3	REGIONAL SUPPLIERS
Bottom Five Innovation Factors	
40.9	NON-PROFESSIONAL ASSOCIATIONS (alumni clubs, etc.)
39.8	ANGEL INVESTORS
38.1	VENTURE CAPITAL firms
36.2	BUSINESS INCUBATORS
27.9	FEDERAL LABS in the area

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Table 8 below provides the complete index score, response profile, and percentage responses to each of the response categories included in the capacity to innovate section of the regional survey.

Table 8
“Capacity to Innovate” complete response data and percentages

Please rate how valuable the interaction with each of the following REGIONAL INSTITUTIONS is to your business's CAPACITY TO INNOVATE.							
Index Score		Extremely valuable	Quite Valuable	Valuable	Somewhat valuable	Not at all valuable	Not applicable
58.1	FOUR YEAR COLLEGES AND UNIVERSITIES	30 23.8%	22 17.5%	31 24.6%	26 20.6%	9 7.1%	8 6.3%
53.7	COMMUNITY / TECHNICAL COLLEGES	21 16.7%	24 19.0%	33 26.2%	23 18.3%	13 10.3%	12 9.5%
46.5	Public or private RESEARCH ORGANIZATIONS	15 12.0%	22 17.6%	23 18.4%	27 21.6%	20 16.0%	18 14.4%
55.5	PROFESSIONAL SERVICE FIRMS	16 12.7%	37 29.4%	31 24.6%	25 19.8%	9 7.1%	8 6.3%
27.9	FEDERAL LABS in the area	4 3.2%	9 7.1%	18 14.3%	28 22.2%	37 29.4%	30 23.8%
64.2	REGIONAL CUSTOMERS	36 28.6%	33 26.2%	26 20.6%	21 16.7%	7 5.6%	3 2.4%
54.2	OTHER BUSINESSES in your industry	13 10.3%	37 29.4%	36 28.6%	25 19.8%	9 7.1%	6 4.8%
55.3	REGIONAL SUPPLIERS	22 17.5%	27 21.4%	29 23.0%	25 19.8%	11 8.7%	12 9.5%
56.7	BANKS	28 22.2%	22 17.5%	35 27.8%	24 19.0%	11 8.7%	6 4.8%
38.1	VENTURE CAPITAL firms	10 7.9%	15 11.9%	27 21.4%	27 21.4%	30 23.8%	17 13.5%
39.8	ANGEL INVESTORS	15 12.0%	14 11.2%	19 15.2%	24 19.2%	31 24.8%	22 17.6%
36.2	BUSINESS INCUBATORS	10 8.0%	12 9.6%	25 20.0%	29 23.2%	31 24.8%	18 14.4%
49.6	INDUSTRY or CLUSTER ASSOCIATIONS	13 10.4%	28 22.4%	36 28.8%	22 17.6%	17 13.6%	9 7.2%
40.9	NON-PROFESSIONAL ASSOCIATIONS (alumni clubs, etc.)	9 7.4%	21 17.2%	26 21.3%	29 23.8%	25 20.5%	12 9.8%
53.5	ENTREPRENEURIAL NETWORKS	20 16.3%	24 19.5%	31 25.2%	28 22.8%	10 8.1%	10 8.1%
48.5	BUSINESS ASSISTANCE CENTERS	17 13.9%	22 18.0%	29 23.8%	27 22.1%	18 14.8%	9 7.4%

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Section 3: Regional Norms and Attitudes

The third section of the survey determined opinions regarding regional norms and attitudes on issues important to the general business climate of the region. Twelve items were used to determine respondent’s opinions. **Table 9** provides the top five factors and the bottom five factors for norms and attitudes. Given an index score of 50 is the midpoint that determines favorable or unfavorable opinion on the dimension, the elements are generally but not overwhelmingly positive. The overall average index score for all items in this section of the survey was 56.4 which is slightly less than the average index score for the business climate section and significantly more positive than the average index score for the capacity to innovate section (48.7) of the survey.

Table 9
Regional Norms and Attitudes Top Five and Bottom Five rated factors

For each of the following statements, please rate your opinion of our REGIONAL NORMS AND ATTITUDES	
Index Score	Top five Norm and Attitude factors
62.6	The region is a welcoming, tolerant and attractive place for people of diverse backgrounds
61.0	New residents can easily integrate into the regional business community
59.7	Successful business people in the region actively invest in economic development projects and startup ventures.
57.9	People from different industry and economic sectors frequently interact in the region (e.g., bankers and engineers, manufacturers and tourism).
57.6	The region celebrates the growth of companies, not just the absolute size of companies.
Bottom five factors	
57.2	Business leaders proactively share information and resources when possible.
56.4	The business culture in the region understands failure as part of the learning and innovation process.
50.6	Local government institutions eagerly partner with the private sector to promote new business development.
49.8	Business leaders in the region treat entrepreneurs, startup, and new companies as full partners in all aspects of industry cooperation.
49.4	Artists and business people frequently interact in the region.

Table 10 contains the complete index score, response profile, and percentage responses to each of the response categories included in the capacity to innovate section of the regional survey.

Table 10
Regional Norms and Attitudes complete response data and percentages

For each of the following statements, please rate your opinion of our REGIONAL NORMS AND ATTITUDES.						
Index Score		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
61	New residents can easily integrate into the regional business community	8 6.80%	53 44.90%	41 34.70%	15 12.70%	1 0.80%

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For each of the following statements, please rate your opinion of our REGIONAL NORMS AND ATTITUDES.						
62.6	The region is a welcoming, tolerant and attractive place for people of diverse backgrounds	13 10.90%	60 50.40%	25 21.00%	16 13.40%	5 4.20%
57.2	Leaders in the region are responsive to the needs of all the regional residents, irrespective of ethnicity, cultural heritage, gender, or lifestyle.	8 6.80%	49 41.50%	34 28.80%	23 19.50%	4 3.40%
56.4	The business culture in the region understands failure as part of the learning and innovation process.	5 4.20%	42 35.60%	51 43.20%	18 15.30%	2 1.70%
57.9	People from different industry and economic sectors frequently interact in the region (e.g., bankers and engineers, manufacturers and tourism).	7 6.00%	52 44.40%	32 27.40%	23 19.70%	3 2.60%
57.6	The region celebrates the growth of companies, not just the absolute size of companies.	11 9.30%	44 37.30%	35 29.70%	26 22.00%	2 1.70%
49.4	Artists and business people frequently interact in the region.	5 4.20%	32 27.10%	39 33.10%	39 33.10%	3 2.50%
50.6	Local government institutions eagerly partner with the private sector to promote new business development.	4 3.40%	40 33.90%	36 30.50%	31 26.30%	7 5.90%
49.8	Business leaders in the region treat entrepreneurs, startup, and new companies as full partners in all aspects of industry cooperation.	3 2.50%	33 28.00%	47 39.80%	30 25.40%	5 4.20%
57.2	Business leaders proactively share information and resources when possible.	6 5.10%	50 42.40%	38 32.20%	20 16.90%	4 3.40%
57.4	Regional residents actively participate in community development organizations and projects.	6 5.10%	46 39.00%	45 38.10%	19 16.10%	2 1.70%
59.7	Successful business people in the region actively invest in economic development projects and startup ventures.	6 5.10%	56 47.50%	38 32.20%	14 11.90%	4 3.40%

Section 4: Demographics

The demographic information provided in **Table 11-13** indicate that a well-balanced sample of respondents representing organizations across the spectrum of size, industry focus, and scope of sales provided responses to the questions in this survey.

Table 11
Employment level 2012-2014

What is the approximate number of people employed by your organization in the region?

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	2012		2013		2014	
Less than 100 Employees	65	75.6%	61	71.8%	75	70.8%
100 to 299 employees	10	11.6%	11	12.9%	14	13.2%
300 to 2,000 employees	10	11.6%	12	14.1%	15	14.2%
Over 2,000 employees	1	1.2%	1	1.2%	2	1.8%
	86	100.0%	85	100.0%	105	100.0%

Table 12
Primary Industry Focus of respondent's organization

Which best describes the PRIMARY INDUSTRY FOCUS of your organization?		
Aerospace	8	6.9%
Manufacturing	11	9.5%
Finance/Accounting	12	10.3%
Insurance/Real Estate/Legal	11	9.5%
Medical/Dental/Health	2	1.7%
Telecommunication Services	3	2.6%
Transportation/Utilities	1	0.9%
Construction/Architecture/Engineering	8	6.9%
Data Processing Services	3	2.6%
Wholesale/Resale/Distribution	4	3.4%
Education/Marketing/Advertising/Entertainment	8	6.9%
Research/Development Lab	4	3.4%
Business Service / Consultant	13	11.2%
Computer/Network Consultant	5	4.3%
Hospitality/Tourism	1	0.9%
Food Services	0	0.0%
Agriculture	4	3.4%
Other	18	15.5%
	116	100.0%

Table 13
Percentage of sales derived from the South-Central Kansas region

What percentage of your company's sales is to customers in south central Kansas?		
100 percent	27	22.9%
75 to 99 percent	34	28.8%
50 to 74 percent	11	9.3%
10 to 49 percent	18	15.3%
Less than 10 percent	22	18.6%
Don't Know	6	5.1%
	118	100.0%

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Tables 14 through **20** provide other demographic information about the respondents to the survey and the organizations they represent.

Table 14
Location of business headquarters

Where is your business headquartered?		
In the region (south central Kansas)	110	93.2%
Elsewhere in the United States	6	5.1%
Outside the United States	2	1.7%
	118	100.0%

Table 15
Year of organizational founding

What year was your organization founded?		
Before 1990	60	55.6%
Between 1990 and 2000	16	14.8%
After 2000	32	29.6%
	108	100.0%

Table 16
Year of first presence in South-Central Kansas region

What year did your organization first establish a presence in the region?		
Before 1990	56	52.3%
Between 1990 and 2000	18	16.8%
After 2000	33	30.8%
	107	100.0%

Table 17
Estimate of past three years revenue growth

Please ESTIMATE your establishment's average annual revenue growth during the PAST three years.		
Negative	10	9.0%
0 percent	7	6.3%
1 to 5 percent	35	31.5%
6 to 10 percent	20	18.0%

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Please ESTIMATE your establishment's average annual revenue growth during the PAST three years.		
11 to 20 percent	24	21.6%
21 to 100 percent	8	7.2%
More than 100 percent	5	4.5%
	111	100.0%

Table 18
Estimate of next three years revenue growth

Please ESTIMATE your establishment's average annual revenue growth during the NEXT three years.		
Negative	10	9.0%
0 percent	7	6.3%
1 to 5 percent	35	31.5%
6 to 10 percent	20	18.0%
11 to 20 percent	24	21.6%
21 to 100 percent	8	7.2%
More than 100 percent	5	4.5%
Don't Know	2	1.8%
	111	100.0%

Table 19
Respondent's organizational position

Which best describes your position in your organization? (2014)		
Owner/President/CEO	69	60.0%
Senior Executive or Senior Officer	13	11.3%
Director/Vice President	16	13.9%
Manager	8	7.0%
Engineer	1	0.9%
Marketing	1	0.9%
retired senior	1	0.9%
Sales	2	1.7%
Sales Representative	1	0.9%
SBA	1	0.9%
Service Representative	1	0.9%
Shareholder / Advisor	1	0.9%
	115	100.0%

Table 20

The South-Central Kansas Innovation and Entrepreneurship Ecosystem

Length of residency in the region

How long have you lived in the region?		
Less than 2 years	3	2.6%
2 to 5 years	5	4.4%
6 to 15 years	22	19.3%
More than 15 years	84	73.7%
	114	100.0%

Table 21 provides respondents' assessment of the South-Central Kansas region as a place where their business can succeed and **Table 22** summarizes respondents' views regarding the prospects for the future of the region as a place for businesses to succeed.

Table 21

Region as a place for business to succeed

Considering all the factors presented so far, how would you currently rate your region overall as a place for your business to succeed?		
Excellent location	6	4.6%
Very good location	41	31.3%
Good location	54	41.2%
Fair location	28	21.4%
Poor location	2	1.5%
	131	100.0%

Table 22

Future prospects of region as place for business to succeed

In five years, do you believe the quality of the region as a place for your business to succeed will:		
Improve	51	38.9%
Stay the same	62	47.3%
Decline	18	13.7%
	131	100.0%

Section 5: Responses to Survey open questions

Tables 23, 24 and **25** tally the responses the open-ended requests for specific critical issues regarding state and local governmental programs and policies that should be addressed

Table 23

The South-Central Kansas Innovation and Entrepreneurship Ecosystem

Open ended responses to Critical Issues regarding STATE and LOCAL GOVERNMENT PROGRAMS and POLICIES

Specifically with regard to STATE and LOCAL GOVERNMENT PROGRAMS and POLICIES, please list and explain the most critical issues that should be addressed to improve your business' prospects for success .

1) Improving infrastructure would be one of my first priorities, i.e. putting people to work and repairing/building infrastructure while labor, materials and interest is relatively cheap. / 2) Education at all levels has to be a priority. There should be incentives to convince students to graduate and what is in it for them as well as the community at large. / 3) We need some type of prison reform and rehabilitation-too many in for too long with no prospects to succeed. Maybe a Kansas CCC. / 4) There needs to be a focus on middle and lower economic echelons. The top , including corporations need to pay their share of tax for services and opportunity provided.

Affordable airfares.

Any reduction in regulations would help encourage business growth. Building regulation reduction would definitely help with expansion and new building. Lower property tax rates would keep business in Wichita.

Better public transportation system

Better state funding of educational, social, infrastructure, and cultural services in the region; better work towards removing the current economic inequality in the region

Burdensome and time consuming compliance measures to address local policies of enforcing federal regulations. These regulations (EPA in particular) generally well beyond the reasonable and logical. This applies to some extent to federal energy use regulations.

Carry out and enforce the laws set by the state of Kansas.

Continue to follow the WSU lead in developing new technologies that will bring new enterprises and opportunities to the area

Continue to simplify the local government regulation between city and county. / Increase incentives available. / Fix loopholes in newest income taxation so it does not penalize start-ups.

Create more rail served industrial parks.

Decrease taxes and increase availability of office and training locations for SMBs

Develop support for traditional farming practices. / Reduce restrictions for on-farm processing operations.

Enterprise zones need to be put back into place that contain tax incentives for business investment that does not penalize / small business with taxes; the HUB-zone issues need to be loosened and promoted and facilitated instead of placed / under high levels of scrutiny that prohibit qualification of legitimate applicants who's businesses reside within the HUB-zone; the university-sponsored out-reach programs need to send prospects into the field that can understand beyond the text book so they can be more helpful when they arrive on the business premises; the local chambers of commerce need to stop promoting and benefitting those "retail driven" privately owned sports ventures and spend those efforts and dollars on industrial based local businesses.

Export Compliance /

feel local economic development person is not helpful, so don't know how to connect with available programs at local and state level.

For our business, we need the level of commercial and retail development to improve. Although we see some signs of life, it is far from booming. The primary thing I think of is to have the public

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Specifically with regard to STATE and LOCAL GOVERNMENT PROGRAMS and POLICIES, please list and explain the most critical issues that should be addressed to improve your business' prospects for success .
sector encourage, and open doors for new development, instead of some past history of layering on fees and restrictions that may cause development \$\$ to find other places to invest.
Government needs to get involved.
Government needs to stay out of business. Low taxes and regulations for everyone provides the venue for everyone to excel.
Governor Brownbacks' Tax cutting/tax free initiatives are crucial
Health care access and price. / DOT and KDHE regulations and the amount of time and money to determine the requirements and fulfill them.
Increase the promotion of the state & cities as a place for innovation. Offer more incentives to businesses and start-ups.
Infrastructure. Export planning/education. Networking opportunities to promote collaboration.
K-12 education is being gutted in Kansas. This will have long-term very serious effects on the quality of the workforce and the ability of businesses to attract employees to this state.
Kansas is not a business friendly state. Try establishing a business and you will quickly learn you must access three different web sites for one state. That is just a simply example to show the lack of integration of state agencies. In addition to that, the state needs to have a strategy on how to attract businesses across various vertical markets. We must diversify. I have not seen any programs or policies that support any such vision to support innovation or entrepreneurs.
Kansas must stop cutting investment into it's educational systems. Starting with USD 259 ,WATC and WSU , these investments are critical to obtaining a trained workforce.
Less focus on aircraft manufacturers, recruiting companies to the area and large firms in general. / / More emphasis on the fast growing 50-500 employee companies that produce 106% of the job growth, since large companies shed employees each year.
Less red tape is desired. More responsiveness and agility is needed.
Less regulation and the State legislature needs to think about the impact the changes to the laws they are implementing. The legislature seems out of control and the regulation the state is implementing is almost as harmful as the Federal level.
Locally put in a sales tax to build a war chest
Mine's not an essential business; it's paid for by people's discretionary income. Most helpful would be for people to have jobs with a living wage. Most people around here do not make enough money to support a family on a single income, so both parents work full time and leave their kids with low-wage childcare workers. Those not lucky enough to have a full time job have two or three jobs, which together hardly cover their expenses. My business caters to "rich" people, despite my low prices. I wish I could offer my services to the majority of people in the community.
More tax incentives - we are investing in Nebraska instead of Kansas because of their Nebraska Tax Advantage program. Kansas lost out on being able to add hundreds of jobs here.
Need properly funded K-12 education

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Specifically with regard to STATE and LOCAL GOVERNMENT PROGRAMS and POLICIES, please list and explain the most critical issues that should be addressed to improve your business' prospects for success .

need to away with the idea that only the rich can benefit for from government action; need to undo the mess with public education and quit giving taxpayer benefits to those who favor private education. I am personally contemplating a state move to avoid the consequences of the ignorant attitudes on health care which are purely politically driven with little or no regard for the elderly or the poor citizens which may collapse part of our health care, if the changes become law. i.e. the state compacts.

New transportation regs are hurting small businesses / Just not enough help to small businesses , they only care about give breaks to large companies

Opportunities for state assistance to bring college interns to assist with short term labor requirements

PLEASE don't raise sales or property taxes!!!

Political decisions such as the teachers due process bill and Kansas taking over administration of my Medicare are both very detrimental. I may move out of state myself if the Medicare action takes place. Too many stupid governmental edicts regarding voting, etc. are causing everyone to question the intelligence of Kansans.

Programs are too conservative. Should be willing to take on more risk.

Quality of workers needs to improve.. / regulations hinder banking support

Quit offering Tax Incentive Business Districts

REASONABLE EMMISIONS STANDARDS

Regulations and unnecessary paperwork

Removal of the State Income Tax will be a continuing benefit for KS.

Require Farm Credit and Credit Unions to pay income tax and other taxes/fees required of commercial banks. / Continued support from local and state government supporting commercial and industrial development. / Fight federal regulations increasing the cost of doing business.

Safety, infrastructure, open spaces

Sales Tax Exemptions should be reinstated for business construction projects - both retail and commercial.

Stay "right to work" state. Not letting union leaders make it easier to organize unions. / OSHA - Making OSHA more of a helping company's attitude rather than a policeman. Same with EPA. / Stop talking about "Small" business being a company of 50 employees making \$1,000,000 a year.

Taxes

Technology for Aircraft manufacturing / Urban enhancement for new Koch Employees (art, museums, amusement)

The shifting of the tax burden away from state income tax will place greater and greater pressures on county and local governments just to provide basic services, reducing their ability to invest in long-term initiatives that can bring prosperity. Such long-term initiatives often have a component that is a service my business provides.

The ultra-conservative local and state governments and elected Federal officials are harmful to sound economic development and makes this area a punch line for the rest of the nation. This approach is harmful to growing local businesses or attracting jobs from elsewhere. When I seek

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Specifically with regard to STATE and LOCAL GOVERNMENT PROGRAMS and POLICIES, please list and explain the most critical issues that should be addressed to improve your business' prospects for success .
business from outside this area I am hesitant to say where I am from because the area is so wacko right wing.
There are no programs which really say if a local company & out of state company are equal in quality, service, etc., we will go with the local - they always choose the out of state.
There is a small businessperson which has an improved transportation system to move materials and travelers which would not only save money in the long run, speed up transport, increase the economy of this region, and much, much more.
Training employees
Transportation solutions to improve flow of goods in/out of the region. Our business is penalized relative to company-internal competition for work because of the costs of freight out of our distribution center in Winfield. We need a solution to this problem in order to remain viable in our current location.
Use regulations to keep business in line, but reduce the punitive spirit of regulators. Regulators should be driven to help business improve, not prosecutorial to create defensive responses.
We move a lot of wide load hauls on trucks. Recent KS interpretation of existing laws has driven our cost of doing business up dramatically as well as making it much less efficient.
We need better economic development tools to enable existing business to expand here
We need to encourage new business startups and bring new businesses and existing businesses looking to relocate to this Region/Market. Then we need to find a way/organization that will develop a lasting relationship with these companies so that they will stay and grow their business in this market.
We operate a family farm, most government programs we utilize are through the Farm Service Agency. Some program money has been cut but that was a federal policy decision. We still utilize range management programs called equip.
Wichita needs to continue to diversify our industrial base
WSU's initiatives to create a Innovation Center have to be supported to the fullest extent possible by the state and local governments. While there may be informal circles of support within local start-up businesses, there is no formal mechanism for start-ups to help one another with the myriad details that all businesses have to address, and grow in a symbiotic manner. In addition, access to really trivial amounts of technical and business support, but at the right times (as and when required), in a reliable manner, and over a wide-ranging variety of issues, may be the critical differentiator between business success and failure.

Table 24

Open ended responses to Critical issues regarding UNIVERSITY, COMMUNITY and TECHNICAL COLLEGES

Specifically with regard to UNIVERSITY, COMMUNITY and TECHNICAL COLLEGES , please list and explain the most critical issues that should be addressed to improve your business' prospects for success .
1. Become more efficient and affordable. / 2. Offer industry specific education and training, i.e. banking, retail development, real estate management, etc. by real world standards and practices. / 3. Continue to reach out to industry to coordinate joint benefits from each other's resources,

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Specifically with regard to UNIVERSITY, COMMUNITY and TECHNICAL COLLEGES , please list and explain the most critical issues that should be addressed to improve your business' prospects for success .
mechanical and human.
Affordable programs that produce a skilled work population.
Align mentor programs with current SMBs and provide on the job training while or reduced paid internships with follow on assignments.
As stated above, the Innovation Center should be set up as a one-stop center to help start-ups and small businesses. In addition to a variety of manufacturing and test equipment and technical staff (and student interns) that can help companies make and test prototypes, it should also provide access to business faculty (entrepreneurship, accounting, law, government contracts, etc.) and their students to provide advice. It should also have people from WTC, SBA/Score, etc., located there to provide advice and help. However, it will take a critical mass of companies interested in these for this to become self-sustaining. Till that time, the university, government, and benefactors should be prepared to bleed money to keep this going. They should also find a way to attract seasoned professionals, such as Terry Klein of Murdoch (who seems to know about every business in Kansas), to provide advice on where businesses can find the other companies that could be their suppliers or customers.
Attraction of white collar jobs
Based on a clear understanding of our economic landscape I would suggest that we constantly innovate the educational offerings available through the regional universities and community and technical colleges to reflect a competitive advantage that we have being based in the SC region of Kansas.
Better funding for universities, community colleges, and technical colleges
Computer Science teachers funnel students to big companies. There is no push to make something of your own. "Play safe and be a cog" mentality. Mind set smothers and ideas of a startup community of note /
Continue to diversity and increase education and support for industries outside aviation so we diversify our economy.
Continue to educate students well and ensure that ALL students know how to write well (irrespective of their major).
Continued collaboration between universities and business community
continuing collaboration between business and universities - encouraging hiring locally
Coordinate the research and the business opportunities to get everyone headed in the same direction for best use of both.
Every other business owner I know needs quality sales professional. There is absolutely nothing in any curriculum that explains the reality of sales and the basics of selling techniques. Everyone in most businesses needs to be able to sell - if only themselves.
Factory labor skills.
For Wichita State: / Campus improvement - Scrape the golf course and build a dorm/frat/sorority based main street with shops / mix that with private/public partnerships for research facilities. /
Greater emphasis on skills. / Better academic prep for those going the technical route and better skill development for those going the academic.

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Specifically with regard to UNIVERSITY, COMMUNITY and TECHNICAL COLLEGES , please list and explain the most critical issues that should be addressed to improve your business' prospects for success .

I appreciate the technological advances in programs at WSU. I question some of the technical college tactics. Hopefully, they are teaching people and not just taking their money.
I cannot think of any field that does not require the use of computers. All educational institutes need to not only embrace technology, but be on the cutting edge so the students leave school with innovative ideas and an absolute competence with the use of computers within their given field.
I don't feel that our business is very directly impacted by the work of the universities and colleges, but the indirect effect is huge. We need strong business, service and manufacturing sectors to drive the retail and development fields that DO help our business. So anything they can do to improve business climate - job readiness, specialized training, and so forth will help us, albeit indirectly.
I see a "trickle-down" effect, rather than a direct effect from excellence of local colleges. College grads staying in the area who can develop successful new businesses, or, as employees, help to increase the productivity of local businesses, will put more money in the pockets of my potential customers.
Improved Finance, Accounting and Sales courses.
In our instance need help with training costs for technical skills because we have no training close by
In question 30's answer, WSU could assist in the development of a new transportation system which would improve the economy of this region.
Increase the quality and availability of high technology & computer science programs
Keep the cost reasonable and the connections with business more solid
Local universities and colleges need to focus on other sciences, in addition to aviation and engineering.
Management Training
More attention needs to be paid to recruiting Engineers and IT professionals. Technical colleges need to work with the manufacturing sector to better prepare their graduates for work on or with CNC machines, Catia, Solidworks etc. For both the Aviation industry and the agricultural industry in this market.
More involvement on training programs that fit our industry (Agriculture).
More opportunities in the rural areas.
Need easier access and more clarity on how to do business with Universities.
Need more collaboration between the different education entities, including K-12 to ensure a seamless transition and robust pipeline of employees
Not applicable to me but I believe that WSU is on the right aeronautical track.
Preparing for the REAL world issues. Not just a text book case.
Regional colleges should be focusing on trying to get students to return to rural areas with incentives.
Strengthen partnerships and collaborative efforts to grow business together. Just in time training and adaptive instruction should be available on business' schedules, not on traditional academic calendars. Not many students help with harvest anymore and business operates around the calendar without regard to season.

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Specifically with regard to UNIVERSITY, COMMUNITY and TECHNICAL COLLEGES , please list and explain the most critical issues that should be addressed to improve your business' prospects for success .
Supply and training of tradespeople, carpenters, roofers, tile and flooring installers, painters.
Technical skills development is the most critical element that we need assistance with. A pool of available technical talent does not exist in the area...technicians must be hired based on core technical ability and completely developed from scratch to fill the roles we have in our business. Also...there is a lack of talent at the first-line supervisor level that needs to be remedied. When post open positions for these positions the quality of candidate that we receive is sub-par at best.
The State should continue to reflect the importance of the Regent's Universities as they appropriate state funding. The University system should be recognized as the economic driver that it is and will be. / Continued emphasis on the part of the Universities and technical colleges on developing the "Interstate 35 Corridor." The old adage that a rising tide carries all boats will be illustrated in a generally improved business climate.
These colleges must be adequately funded. Kansa has cut higher education to the bone. Terrible for our image for attracting workers. We've cut taxes enough! Invest more into education.
They just need to continue to develop a talented workforce
Training of employees, welders
Universities and colleges should be working closely with the business community to figure out how to provide degree programs to meet local needs, and how to incentivize young people to stay in our state with good-paying positions and advancement opportunities. Our population decline is a dire prospect.
University and technical college offering assistance via college interns as resources for short term resource requirements
We have so many transplants in Wichita. It is nice when someone can go to college here and stay here. That does not seem to be the case.
We need more encouragement for young people with ideas. A test platform that allows the product to make it to the market place without a great deal of investment but with encouragement to try. We must eliminate the road blocks to get product test marketed.
We need to build structures that can change with the times and adapt their use. / Kansas needs to continue to build on its heritage and convince people we are a great place to live and work and visit. / Improve our cost of travel by airlines. / If we use tax abatement, to help business, then let government share in the growth of those companies, not by taxation, but by equity sharing.
We've made it a rule to no longer hire people with conventional farming experience. Virtually everyone needs to be untrained and retrained. It takes too much time and too much money.

Table 25

Open-ended responses to Issues that should be addressed regarding the REGIONAL BUSINESS ENVIRONMENT

Considering your entire REGIONAL BUSINESS ENVIRONMENT, please list and explain the most important regional issue or issues that should be addressed to improve your business's prospects for success.
1. downtown improvement / 2. future water supply
A change of culture that focused on Growth

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Considering your entire REGIONAL BUSINESS ENVIRONMENT, please list and explain the most important regional issue or issues that should be addressed to improve your business's prospects for success.
A Strong educational system & pathways into college to Tech Design collaboration
Brain drain to big established companies. Angels do not understand tech.
Diversification - both economically and culturally
Don't understand the use of "Regional" in most of these questions - how big, how small??
Education of Kansas Students
Filling positions
Focus on technology and less on the aircraft industry. Foster start-ups and growing small businesses.
Focusing on selfish pursuits and competing with locals as opposed to collaborating and exporting value to bring new wealth to the region.
Funding of the oil & gas reserve fund for the counties to use as a backdrop. All too often the taxes flow to the East and the assistance does come back. Difficult to get qualified people to stay in small communities.
generally government policy. An example is the EPA's new waterway controls. They would want control of private waterways, ditches and streams, which could create permitting expenses for fertilizer and chemical applications. Also the cost of real estate, we compete now with doctors, lawyers and developers for farm ground. Most non farmer buyers are speculators in real estate or they buy land for recreation.
Greater support (mentoring, capital) for entrepreneurs and second stage companies.
Greater support of smaller fast growing companies.
High speed internet at an affordable cost. Airline transportation at affordable rates.
Immigration Tolerance
Infrastructure upkeep, neat, clean and crime-free cities and towns, and low crime rates. First impressions and "curb appeal" will contribute to a positive attitude for both long time residents and new arrivals. Inspired individuals will believe the area is worth the investment of their time and money. Positive "can-do" attitudes encourage economic growth. /
Internet Technology - Software Development resources needs to be stronger and more available. Talent leaves for the West Coast.
Investments in education that will produce a trained workforce
Jobs, Promoting diversity of our economic base away from Aerospace dependence
Keep the lid on taxation and do not raise taxes on a routine basis.
Larger, established businesses need to be more open to utilizing smaller businesses for the services they need. Often, the approved vendor process is so complicated, and requirements too excessive, that small businesses have no chance to prove themselves. Just because we're a very small business doesn't mean we're not competent, qualified professionals in our field.
Less govt. red tape to encourage small businesses to expand
Lower property taxes
Lower the cost of Health care for our employees.
Marketing

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<p>Considering your entire REGIONAL BUSINESS ENVIRONMENT, please list and explain the most important regional issue or issues that should be addressed to improve your business's prospects for success.</p>
Medical Funding
More communication about services available locally. Would like to see more "buy local" campaigns.
More investment from community / government in non-force development & growth of local companies
More Technical Employees
Need more incentives to encourage investors to revitalize the downtown - need grocery stores, more shopping, etc. The downtown is a dump and I am embarrassed when I have to drive someone through our down-town. We need so much more work to make it more attractive - start on the inside of the city and work your way out.
Obtaining qualified staff for the salary paid by the State
Open market for SMB with low rent offices.
Our business prospers when our community grows jobs.
Promote the effort to purchase goods and services locally. Keep our dollars local.
Promotion of new business and social activities and quit wasting money on frivolous activities
Prosperity drives our business
Quality of life
Reduce overly-burdensome regulation, reduce tax rates (sales, property, and income), and let entrepreneurs succeed or fail on their own with minimal government intervention.
Regional cooperation, rather than territoriality, should be the organizing principle. Small cities should stop competing and start partnering. Outside entities don't care about the history or amenities of a particular city, or why it's "better" than the one 20 miles down the road. Regional initiatives allow a pooling of resources and more innovation, which will be absolutely essential in the very near future.
Shovel Ready Sites
skilled craftsmen
Start-up Funding
Technical skills development and career mapping, regional transportation enhancements, affordable housing for employees
The "leaders" are the same leaders as ten years ago with the same bias, ideas, habits. Why can't we get some new leaders? Because the old leaders won't allow it. Most of the leaders are not leaders really - they just have money enough or friends enough to hold onto the power.
The area is way too politically, socially and culturally too conservative.
The electronic and print media needs to work on presenting our region in a more positive manner.
The Kansas Bioscience Authority was a MASSIVELY CORRUPT AND TOTAL WASTE OF THE TAXPAYER \$\$\$, EXCEPT FOR the University of Kansas, and the KBA gave them 75% of all available funds-- major rip off for south central Kansas Bioscience companies.
The ultra-conservative politicians are hurting the economy.

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Considering your entire REGIONAL BUSINESS ENVIRONMENT, please list and explain the most important regional issue or issues that should be addressed to improve your business's prospects for success.
There should be a formal support structure that is vested in the success of small businesses they are supposed to help. Their raises, funding, etc., should depend on quantitative and qualitative (survey) metrics related to their work.
Too much government regulations, particularly from Federal Government
Tools for economic development to allow businesses to expand locally / Quality of life enhancements / Community image campaign
Water / Reduction of economic inequality / Reduction of carbon emissions & ozone /
We continue to struggle with our love-hate relationship with the aircraft base. We love them in boom cycles, but long for diversification in the bust cycles. I often feel that the aircraft community can be the tail wagging the dog, which can result in other industries not getting the attention they deserve.
We design buildings. Therefore the building of new structures or the repurposing of old structures could help us economically. / Would appreciate less competition.
We need new business and industry in the Market/region. We need to help grow the businesses that are already here. We need to support a business community that is focused on growth.
Wichita needs to diversify its manufacturing base using the strengths it has developed in aircraft manufacturing. It needs options beyond aircraft to avoid dependence on cyclical ups and downs in the air industry and the impacts of governmental decision making on defense spending or tax treatment of aircraft.
With this region representing the primary manufacturing resource in the state, more support from Topeka needs to be returned to the taxpayers here. Service industries are important in NE Kansas, but the primary job base is here. Airline travel is an important infrastructure issue for this region, too.

TABLE 26 contains the open-ended question responses pertaining to institutions most valuable to business innovation.

Table 26
Open-ended responses to INSTITUTIONS most valuable to business innovation

Please list by name, the INSTITUTIONS most valuable to your business' innovation
4 year Universities
Agri-business
Alliance partners such as Cisco, NetApp, Microsoft, etc.
Available Computer / Internet Skills, App Development and Design
Bethany College's Mindfire & its spinoffs / SCORE Wichita Chapter & Kansas District / NAIR / WSU's Engineering Department (composites research, in particular) / WSU's Small Business Development Center / Inter Faith Ministries / /
Businesses expanding to take advantage of the good business climate

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Please list by name, the INSTITUTIONS most valuable to your business' innovation
C of C / WSU / AIA / WABA / CSI
Chamber of Commerce
City of Winfield, Kansas State Department of Commerce, Kansas State Department of Transportation, Cowley First, Kansas Chamber
Commercial Banks, Local Private Businesses, Regional uses of real estate
Construction Specifications Institute (CSI) / American Institute of Architecture (AIA)
Farm-to-Consumer Legal Defense Fund /
GWEDC
Indoor Air Quality Association and IICRC
Kansas Credit Union Association
Kansas Economic Gardening Network, Center for Economic Development and Business Research, Kansas Technology Center, National Institute for Aviation Research, Patent and Trademark Depository Library, Advanced Manufacturing Institute, Innovation Engineering, WSU Center for Entrepreneurship, NetWork Kansas, etc..
Kansas State University extension. We have used their guidance for chemical issues to fight chemical resistance in certain weed species. It has helped us to make decisions in adopting precision farming, like auto guidance on tractors. Also us Ag manager for budgeting and profit and loss.
Kansas State University, Heartland PTAC, Kansas Association of Community Foundations, various chambers of commerce
Kansas State University-Architecture, Engineering, Construction Science / KU-Architecture, Engineering / WSU-Engineering
KFBF
KSBDC, WSU, Economic Development
KSU, PSU
NAHB Green Building Council and Aging in Place Specialists.
NetWork Kansas, Kansas Small Business Development Center
NIAR
NIAR /
NIAR and WSU
NIAR, NCAT
Other states agencies are valuable
Ourselves.
Personal Network
Professional Associations, University
Professional Service Firms
Reduced government regulation.
SBDC
THE SBA, KPTAC and SCORE offices
WAAR, WSU

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Please list by name, the INSTITUTIONS most valuable to your business' innovation
Waichita Independent Business Association
WATC, KGTS
WIBA / Lions Club / Non Profit Chamber of Services
Wichita Area Technical College, National Center for Aviation Training
Wichita State University
Wichita State University
Wichita State University
Wichita State University, Butler Community College, Kansas Neumann
Wichita Technology
World Trade Council of Wichita and Kansas Global Trade Services, Inc.
WSU
WSU Center for Entrepreneurship
WSU, CEDBR, WATC, Friends University, Newman University, KU Medical School, KU, KSU
WSU, NIAR, WATC=Education
WSU, SBPC
WSU's Center for Entrepreneurship/BizInc / WSU's Cessna Manufacturing Lab and other CoE labs / WSU's CIEE / WTC / NIAR
WTC / WATC / NIAR
Youth Entrepreneur

7. GAP ANALYSIS OF REGIONAL INNOVATION AND ENTREPRENEURSHIP ECOSYSTEM

Our report identified several gaps and weaknesses in the entrepreneurial ecosystem in SC Kansas. These gaps can be summarized along four categories: A lack of technology based startups, limited supported services for technology based startups, a general lack of resources for technology based startups, and government policies not favorable to technology based startups.

Lack of technology based startups

- ✓ The number of start-ups in the South Central region lags the rest of the State of Kansas and the State of Kansas lags the nation. Per capita, the south central region has an index of 85% of the state average. This is also true with INC 5000 firms. Per capita, the state of Kansas has only about 80% of the national average of INC 5000 firms.
- ✓ Aside from aviation, there is no other cluster of technology firms in the South Central Kansas region. The INC 5000 firms in the area are not technology firms. Only two of the INC 5000 firms in the South Central region are manufacturing firms. Over the last decade there has not been one SC Kansas firm on the Deloitte Fast 500 Technology firm roster.

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Limited support services for technology based start ups

- ✓ Absent a cluster of technology-based firms, there is also a shortage of services in support of technology businesses. Those services that exist, such as the Wichita Technology Corporation often go outside of the region to find deals because they are not bubbling up in the region.
- ✓ The services provided by organizations that support start-up firms in the state reach only a small portion of business start-ups.
- ✓ There is not a forum for entrepreneurs to network and support one another in the region. Kansas City has “KCnext” or the Technology Council of greater Kansas City, Chicago has the “Built in Chicago” group, and Boston has the Route 128 Model but Wichita does not have a formal organization through which entrepreneurs and innovators can network and help one another grow.

Lack of resources for start ups

- ✓ Lack of investment funds for early seed stage tech firms. While there are funding sources in the region some entrepreneurs of early stage technology firms are struggling to obtain the funding they need to grow. This may stem from a variety of factors but it appears that the depth, breadth, and knowledge of funding sources or investment opportunities is limited in the region.
- ✓ Lack of incubator and accelerator space to encourage and support high tech entrepreneurship.
- ✓ Lack of knowledgeable entrepreneurs in the region capable of positioning a technology-based startup for high growth or mentoring would-be entrepreneurs to the same goal.
- ✓ There is no Venture Capital presence or interest in the region at this point.

Policies not favorable to innovative tech startups

- ✓ Relatively high property taxes and the inability of LLCs to receive a net operating loss tax write off on income taxes.
- ✓ Job growth policy and actions in the region center on attracting established businesses and growing existing firms rather than encouraging technology based startups. For example, the Greater Wichita Economic Development Coalition is working to compile a \$90 million fund to use to grow jobs in the region. This money will be used to support existing tech companies to relocate to the area instead of funding technology based startups. The focus on this initiative suggests that job growth through fostering innovative tech startups is not a priority for economic development efforts in the region.

The issues illustrated above will need to be effectively addressed if the region is going to seriously develop the capability to generate high-technology advanced manufacturing enterprises from scratch to grow and diversify the region’s economy.

8. BEST PRACTICES OF VENTURE DEVELOPMENT ORGANIZATIONS

Venture Development Organization Characteristics

The following is a brief description of the ideal characteristics of a venture development organization provided by the Regional Innovation Accelerator Network (RIAN) on their website at <http://www.regionalinnovation.org/content.cfm?article=vdo-fundamentals>.

“Strong Venture Development Organizations (VDOs) work to ensure their regional economy is running as smoothly and efficiently as possible in support of innovation-based entrepreneurship. A VDO makes strategic investments of time, talent and other resources toward innovation, entrepreneurship, and technology – helping grow promising companies one step at a time.

This expert care and attention is repeated hundreds of times over at VDOs across the country, transforming regional economies to be more competitive in the global market and resilient in the face of inevitable changes in the business cycle.

Ideally, VDOs are designed to:

- exploit the existing innovation assets of a region; and
- whenever necessary, address the unmet needs of the high growth, innovation-oriented startups in the region.

Properly structured, VDOs have the ability to work with a wide cross section of the key assets of their particular regional innovation system and the flexibility to adapt the VDO portfolio of services to meet the specific needs of an individual commercialization opportunity or venture.”

Benchmarking Best Practices

According to the RIAN website VDO performance should be measured using four key metrics—jobs created, revenues earned, wages paid, and investments attracted—plus a fifth to benchmark its own activities by tracking its performance over time. RIAN’s fifth metric is designed to measure the change the VDO is making in its region over time. “With this approach, benchmarking can be accomplished by comparing VDO client growth to more appropriate standards: national/state/regional averages, statistics for industry sector, control groups, or other normalized measures for the four impact metrics.”

RIAN suggests a better alternative that results in a more meaningful understanding of performance and progress: tracking performance in the four key metrics over time.

This is RIAN's fifth important metric: time in place – the change the VDO is affecting in its region over time.

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The best practices of venture development organizations are extremely difficult to identify because each organization has a unique set of circumstances in their region and each region has a unique set of circumstances relative to industries, institutions, and individuals present. However, there are a finite set of general practices which can be discerned from the metrics enumerated above to evaluate VDO performance. The metric prescribed—Jobs created, revenues earned, wages paid, and investments attracted—imply a set of practices that may lead to these specific outcomes.

- *Jobs created*—the practices and skills necessary to identify and coach small startup firms to grow to sufficient levels that talented individuals are employed requires the VDO to be comprised of advisors and coaches that understand the growth process. Year to year jobs created is necessary but year over year job growth in client firms is more important.
- *Revenues earned*—the revenues generated by VDO client firms is
- *Wages paid*—while jobs created and revenues earned are important metrics, wages paid is the metric that measures the quality of the jobs created. The VDO is more effective if these numbers are all high and therefore the practices that one should consider is the ability to identify startups or investment opportunities that have a high likelihood of generating high metrics.
- *Investments attracted*—the amount of investment dollars attracted can show the effectiveness of the VDO in identifying quality prospects for the local angel investor group or, if grown to sufficient size, quality prospects for venture capital firms. The knowhow and skill involved with identifying prospective companies in which to invest time, effort, and dollars is a key performance aspect of any VDO.

It is extremely important for the VDO to benchmark itself over time to effectively demonstrate the impact the organization is having on economic development in the region. Absent the metrics and the change in the metrics over time there is no method for evaluating the effectiveness of the VDO to the region's economy.

The research team attempted to obtain information from Wichita Technology Corporation regarding these metrics. A review of many VDO websites around the US reveals that most post an electronic file containing their annual report to a section of the website. However none was available on the Wichita Technology Corporation site. An email request was sent to WTC to obtain the most recent three years annual reports but a response has yet to be received.

Since Wichita Technology Corporation has a vital role to play in the development of technology-based startups in the community and the initiative to create an advanced manufacturing, high-tech business startup environment transparency will be essential. The VDO will play a much bigger role in the development of high-growth firms than simply providing risk capital for the organization. Counseling, advice, and mentoring will be essential elements to grow small technology-based firms to the point that they are attractive to venture capital firms.

9. INNOVATION STRATEGIC PLAN FOR ADVANCED MANUFACTURING AND HIGH-TECHNOLOGY

From the data and research reported above the Wichita/SC Kansas region have several obstacles to overcome to effectively establish an advanced manufacturing and high-technology business cluster in the region. In spite of the rhetoric that holds Wichita in high regard as an “entrepreneurial community,” the title does not apply when it comes to high-growth high-tech startup firms. Therefore, to establish a high-growth high-tech advanced manufacturing cluster in the Wichita/SC Kansas region a comprehensive, coordinated, and sustained long-term effort to reach the goal will be necessary. The comprehensive, coordinated, and sustained effort will require contributions and patience from private, public, for-profit, and not-for-profit entities to be effective.

Given the message that WSU President John Bardo has promoted since arriving in Wichita in 2012 and the effort marshaled to create an “Innovation Campus,” Wichita State University is the organization in the region that is best positioned to play a central role in the long-term effort to create a high-tech manufacturing cluster through startup enterprises in the region. Steady progress toward building and then effectively operating the “Innovation Campus” must be evident early to convince skeptics of the viability of the notion. Evidence will likely need to include commercializable intellectual property, significant research funding gains from companies wanting to partner with WSU researchers, collaborative research lab space occupancy rates by companies located in the region and coming in from outside the region, and a number of startup businesses working to commercialize technologies developed in the region (to include WSU research and non-WSU research developed technology). If momentum is generated early in the process key individuals and organizations will be more patient for positive outcomes that will inevitably be preceded by failure. The biggest threat to the effort going forward is that key parties will be unwilling to stay the course over the long-term that transforming the SC Kansas region will inevitably require. The term for the difficult phase of this transformation is the “Valley of Death” that is commonly referenced in the commercialization process.

A strategic plan for establishing a cluster of advanced manufacturing high-technology enterprises must recognize that such an effort will require 20-50 years to come to full fruition. Given the vagaries of political winds, organizational leadership changes and the inevitable philosophical changes that leader changes bring, along with the relatively short attention span of most individuals, a 20-50 year time horizon is not feasible. If the region does not make substantial progress toward the goal in the next 5-10 years the effort is likely to fail. In essence the initiative to be undertaken is identical to a high-growth startup enterprise. Therefore our recommendations regarding strategic initiatives will focus on the relatively short time horizon of 10 years. The following, in broad brush-strokes, represents the team’s strategic recommendations.

WSU Ventures

Resources need to be directed toward an initial technology development effort. We need an initial success on which the region can build additional tech startups. This effort needs to marshal the expertise and resources of a wide array of entities (university, industry, and funding institutions).

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Significant on-campus discussion has taken place recently regarding the creation of “WSU Ventures.” As conceived in these discussions WSU Ventures’ mission would play the vital role of coordinating such a technology development effort. WSU Ventures should be the core entity around which all other contributors and participants (economic development, Chamber of Commerce, industry representatives, Wichita Technology Corporation) are coordinated.

Collaboration and knowledge sharing among these entities will need to be open and transparent in order to develop technologies and subsequent businesses that have the potential to create jobs. The importance of openness is evident in the performance difference between firms embedded in the entrepreneurship culture of Silicon Valley which fosters open collaboration and firms located within the Massachusetts Route 128 culture that supports within firm collaboration but not across firm knowledge sharing. High tech success thrives in environments where there are both trusting relationship across firms but also intense rivalries. (These points are highlighted in a 1994 Inc. magazine article “Silicon Valley versus Route 128” by Annalee Saxenian) <http://www.inc.com/magazine/19940201/2758.html>

According to Christensen (1997) disruptive technologies are best developed when structured within stand-alone organizations separate from the parent entity (e.g., spinoffs). We are not sure how this looks for a university but the effort needs some degree of independence and autonomy from the University bureaucracy in order to be successful. In addition WSU Ventures will need significant funding levels to act as the early seed-stage financing source that the initiative requires. An excerpt from “A Resource Guide for Technology-Based Economic Development” prepared for the Economic Development Administration, US Department of Commerce by the State Science and Technology Institute, pp. 24-27 (<http://ssti.org/sites/default/files/resourceguidefortbed.pdf>) is provided in Appendix 2. This document provides sound recommendations for the execution of initiatives similar to what is being proposed here.

WSU Innovation Campus

The WSU Innovation Campus initiative is related and important but not central to the current strategic proposal. The innovation campus will provide training and education in the development and commercialization of technologies to students involved in the sciences, engineering, arts, education, and business. Research projects involving business organizations, faculty, and students collaborating in lab space may generate intellectual property that can be commercialized but more likely will target the resolution of problems or the development of product line enhancements for these companies involved. Therefore the innovation campus as we understand it currently is a contributor to the WSU Ventures initiative. As a contributor, the effort to involve more faculty in integrating entrepreneurship and self-employment into their courses should be continued. Students at all levels (undergrad to graduate) will be the individuals that populate the startup firms that are to be created. To this end, collaboration and the integration of technical know-how with commercial know-how is vital.

Wichita and South-central Kansas Chambers of Commerce

Industry representation and active involvement is a vital element in the effort to establish the capability to generate high-growth high-tech manufacturing firms in the region. Business leaders

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across industries will need to lend their skills and expertise to help grow the business and industry base of the region. A standing group (committee) of representatives willing to commit significant effort to the initiative and coordinate with the core element will be necessary to move forward in the region.

Wichita Technology Corporation

The involvement of the Wichita Technology Corporation is an essential element to secure late seed stage and development stage funding from WTC's connection to Wichita Technology Ventures, a local Angel Investor group. As the Venture Development Organization in the area WTC needs to provide the connection to other angel networks for investment dollars, and the connection to technology savvy entrepreneurs that can help in the development of the organization in an advisory role or through active management participation.

South-central Kansas Legislators and Local Governments

As noted above there are some serious issues involving governmental tax policies, regulations, and general philosophies regarding the development of startup businesses in the region. It will be necessary to coordinate with municipal and county-level governments to ensure a business environment conducive to high-growth potential startups. As well, the regional legislature delegation will need to be counseled regarding state level tax issues that currently may not be conducive to the formation and growth of high-growth, high-tech businesses. It will be imperative to remove all unreasonable taxation or regulatory roadblocks to the formation of startup businesses.

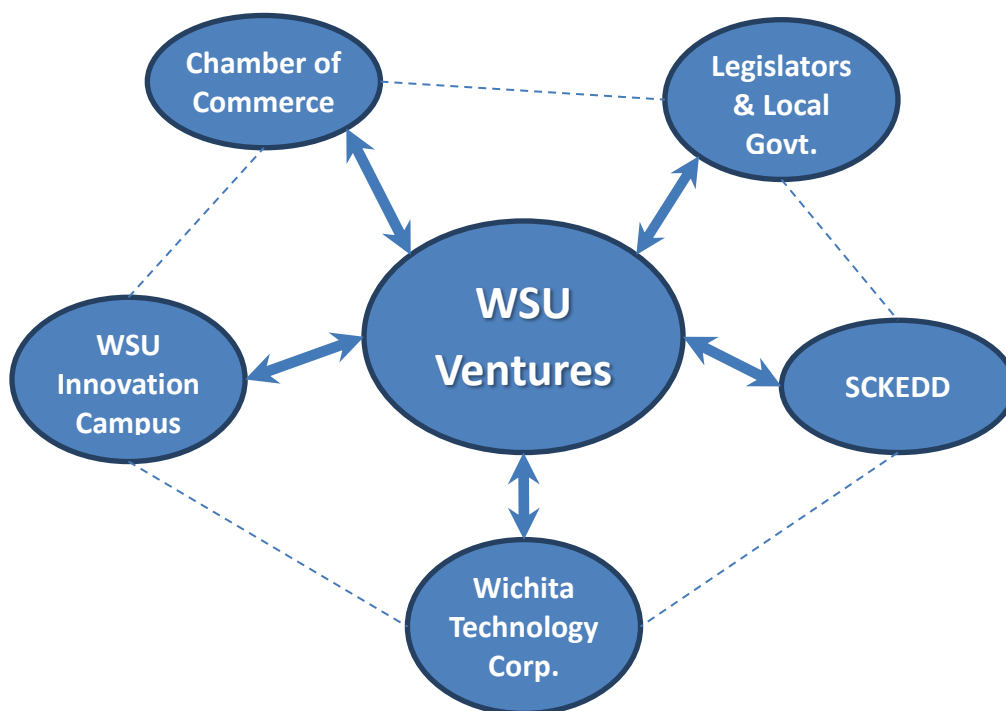
The Kansas net operating loss deduction tax policy change for LLCs is particularly limiting to high-tech startup efforts. This is due to the nature of high-tech startups that require a lot of financial capital to launch and need a relatively long time horizon before they achieve sales and profitability. Thus high-tech entrepreneurs who cannot write off operating losses, in some cases over years, have less money to put back into the business (due to a higher tax liability) which puts them at a disadvantage. Additionally, investors may be less attracted to invest in high-tech startups in Kansas because they are unable to reap the benefits of writing off their ownership stake's share of operating losses on their personal taxes during the early years of the venture. The possible effects of this policy potentially severely limit an entrepreneur's ability to obtain the financial capital needed to effectively commercialize new technologies.

South-central Kansas Economic Development District (SCKEDD)

The net effect of the initiative to create an environment conducive to the establishment of high-growth, high-technology manufacturing startup firms is regional economic development. SKEDD plays a critical role in this effort and must be a contributing participant at the outset.

Figure 10 depicts a simple diagram of the relationships envisioned in the above discussion.

Figure 10



10. METRICS TO TRACK PROGRESS AND IMPACT OF INNOVATION AND ENTREPRENEURSHIP

1. Rate of business formation taken from the State of Kansas business registration database.
2. Number and type of Inc. 5000 firms.
3. Number and type of Deloitte Fast 500 firms.
4. Replication of the Business Climate Survey for which we now have a level of performance documented for the region.
5. Key comparisons with benchmarked SMSAs.
6. SBIR/STTR Grant year over year comparison
7. Tracking the key metrics for Venture Development Organizations
8. Jobs created over time
 - a. Revenues generated
 - b. Wage/Salaries paid
 - c. Investments attracted
 - d. Changes in the above over time
9. Regional GDP growth

11. APPENDIX 1: MSA DATA SHEETS

12. APPENDIX 2: INNOVATION INDEX

Innovation Index (www.Statsamerica.org)

The following copy is derived directly from the Statsamerica.org website defining precisely what is included in the innovation index and why:

About the Index: The Innovation Index consists of five components—

1. Human Capital: 30%
2. Economic Dynamics: 30%
3. Productivity and Employment: 30%
4. Economic Well-Being: 10%
5. State Context (for reference only)

Human Capital

Variables included in the human capital component index suggest the extent to which a county's population and labor force are able to engage in innovative activities. Counties with high levels of human capital are those with enhanced knowledge that can be measured by high educational attainment, growth in younger age brackets of the workforce (signifying attractiveness to younger generations of workers), and a sizeable number of innovation-related occupations and jobs relative to the overall labor force.

- **Education:** Educational attainment measures the skills and knowledge that contribute to a population's capacity to innovate. The research team was particularly interested in individuals in the labor force with tertiary degrees. Thus, educational attainment was divided into two categories:
 1. Some college or an associate's degree
 2. Bachelor's degree or higher

The distinction is made to capture the relative importance of a knowledge differential, together with regional distinctions in the types of degrees earned. In many states, educational funding mechanisms favor 4-year universities. Elsewhere state policy tends to favor 2-year community colleges and vocational schools. An important educational differential is also present within states and counties where higher concentrations of bachelor's degrees tend to surround metropolitan areas, whereas associate degree concentrations tend to be elevated in more rural counties where fewer residents have the resources or ability to travel to distant four-year institutions. Community colleges and vocational schools are more widely dispersed and proximate to rural residents. They also tend to provide education at a lower cost, with easier access, and tend to offer more flexible course schedules, such as evening or weekend courses. Community colleges are also more likely to cater to a region's economic development needs than larger universities.

- **Population Growth Rate:** A growing population is desirable. But growth in the number of newborns or retirees does little to suggest whether those persons most likely to engage in innovative activities are present. For this reason, population growth rates are confined in this study to ages 25 to 44. The lower bound ensures transient college students typically aged 18

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to 21 become less of a factor in influencing the overall rate of growth, whereas the upper bound signifies a point at which a professional's geographic location would likely remain more stable. The 25-to-44 age bracket is likely to be less risk averse and more entrepreneurial. Moreover, population growth in this age bracket suggests the possibility that new residents are likely to expand the innovative and entrepreneurial characteristics of the base community.

- **Occupational Mix:** Certain occupational mixes favor innovative behaviors. The research team defined six technology-based knowledge occupation clusters that are hypothesized to have a higher probability of developing new and innovative ideas, products and processes that drive economic growth:
 1. Information technology
 2. Engineering
 3. Health care and medical science practitioners and scientists
 4. Mathematics, statistics, data and accounting
 5. Natural sciences and environmental management
 6. Postsecondary education and knowledge creation
- **High-Tech Employment:** In addition to knowledge occupation clusters, there are other occupations linked to high-technology firms and activities that either retain opportunities for the home-grown, skilled and specialized labor force or attract similar workers that are complementary to technology-based knowledge occupations. High-tech firm employment and growth is overwhelmingly found in urban centers, producing a rural-urban technology gap. The high-tech sector is defined by Moody's as comprised of such industries as telecommunications, Internet providers, computer manufacturing, and scientific laboratories, to name a few. Together, the high-tech industry employment and technology-based knowledge occupational data provide a reasonable estimate of the extent to which a county's occupational and industry mix provide either the existing capacity to generate innovative products and processes or the ability to augment local innovative capacity by attracting new firms and new talent.

Economic Dynamics

The economic dynamics component index measures local business conditions and resources available to entrepreneurs and businesses. Targeted resources such as venture capital funds are input flows that encourage innovation close to home, or that, if not present, can limit innovative activity.

- **Venture Capital Investment:** Venture capital (VC) funds are used to launch new ideas or expand innovative companies. In the United States, VC may be responsible for up to 14 percent of all innovative output activity. VC investment firms are highly selective with their investments to maximize the probability of high returns. The return on VC, and possibly the importance of VC, is diminished somewhat by the fact that the VC investments are typically management-intensive. Looking for VC funding may consume a considerable level of effort by the seeking firm's management, just as VC firms exert considerable effort seeking suitable projects to invest in.
- **Broadband Density:** Broadband provides high-speed Internet connections to businesses and consumers. Several state-level studies have attempted to capture the effect of adding broadband capacity to a region's infrastructure. These studies suggest that broadband capacity has an overwhelmingly positive effect on economic performance. High-speed

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Internet access ensures that businesses and individuals can collaborate from virtually any location.

Code	Connections per 1,000 Households
0	Zero
1	Zero < x <= 200
2	200 < x <=400
3	400 < x <=600
4	600 < x <=800
5	800 < x

- The Innovation Index uses 2 measure of broadband density. The first is the number of residential high-speed connections per 1,000 households. The FCC reports these data in ranges, not as a specific number of connections in a particular county (see below). The midpoint in the range is presented within the index output. For a custom region—an aggregation of two or more counties—the midpoint for the region is calculated as the weighted average of the midpoints of all the counties in the region.
- The second measure is the annual average change in number of broadband holding companies. The latter indicator was created because the Federal Communications Commission (FCC) does not have time series data on broadband users. However, a broadband providers time series is available at the ZIP code level, so the base year uses ZIP code level data that has been aggregated to counties.
- **Churn:** Competition is crucial to innovation. Market structures can influence the degree to which innovation is even possible. Specifically, markets with high rates of firm entry have been linked to increased levels of innovation. Conversely, the rate at which businesses shut their doors or reduce their workforce indicates a decrease in economic deadwood. Together the growth and contractions along with births and deaths produce the notion of economic churn, which serves as an indicator of the extent to which innovative and efficient companies replace outdated firms unable to modernize techniques and processes. Churn has been linked to positive employment growth and is not subject to agglomeration effects that often distinguish urban and rural economic structures.
- **Business Sizes:** Small firms, it is thought, are highly adaptable and can easily change their processes to incorporate new ideas. In recent years, high merger rates between small and large firms have coincided with increased technological influence of small firms. Some evidence, however, suggests these acquisitions may not be significant sources of innovation for large firms. Theoretically, a higher proportion of large businesses would positively contribute to innovation through the increased availability of funds for research and development, as well as the resources to directly employ scientists rather than hire out research services. Available data, however, do not identify whether, or the degree to which, an establishment is engaged in innovation activities. Moreover, using data on large establishments, defined as establishments with 500 or more employees, may be of limited

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utility for explaining innovative capacities in rural counties with small economies. Just the same, because the variable has some theoretical merit, the number of large establishments per 10,000 workers remains in the index.

Productivity and Employment

The productivity and employment component index describes economic growth, regional desirability, or direct outcomes of innovative activity. Variables in this index suggest the extent to which local and regional economies are moving up the value chain and attracting workers seeking particular jobs.

- **High-Tech Employment Share Growth:** Just as the share of high-tech employment in a county was an important input, the extent to which that share is increasing relative to total employment is an important performance measure. Firms requiring a highly skilled and specialized workforce are drawn to innovative areas. In a similar way, this measure also registers the degree to which home-grown, high-tech firms have expanded their presence. Growth in the share of high-tech employment suggests the increasing presence of innovative activity and signifies that high-tech firms are growing in the county or region both in relative as well as absolute terms.
- **Job Growth-to-Population Growth Ratio:** High employment growth relative to population growth suggests jobs are being created faster than people are moving to a region. Even though the ratio measures the change in level between jobs and population and, therefore, can't be used to compare rates of growth, it can rank order counties or regions in terms of employment performance. A high ratio between these two variables indicates strong employment growth. A negative value signifies that population is growing while employment is declining or vice versa. In cases for which population is declining while employment is increasing, the absolute value of the ratio is used as that would be considered favorable employment performance.
- **Patent Activity:** Newly patented technologies provide an indicator of individuals' and firms' abilities to develop new technologies and remain competitive. The number of patents produced is a commonly used output measure for innovative activities, but the data can mislead. Patent data are coded to distinguish between the residence of the filer and the recorded location of the employer (if the applicant is not a private inventor), but the recorded location of the employer may or may not correspond to the location of the work that produced the patent, especially if the employer is a large, diversified company with many locations. In addition, the available patent data cover only utility patents and not all patent types. Patent data are recoded from the raw data provided by the U.S. Patent Office and awards patents to any county from which one of the filers reported as their location. This means that for any single patent with more than one filer, a patent may be counted multiple times if filers are located in different counties. Patents can also be an inaccurate indicator of innovation outcomes, particularly in areas where a single firm overwhelms the total patent count, such as Eli Lilly in Indianapolis.
- **Gross Domestic Product:** The final component of the productivity and employment component index is the single most important measure of productivity available—gross domestic product (GDP). The index incorporates both the level of a county's current-dollar GDP per worker today, and also growth in the value over the past decade.

Economic Well-Being

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Innovative economies improve economic well-being because residents earn more and have a higher standard of living. Decreasing poverty rates, increasing employment, in-migration of new residents and improvements in personal income signal a more desirable location to live and point to an increase in economic well-being.

- **Average Poverty Rate:** Innovative economies have greater employment opportunities with higher compensation, thus lowering rates of poverty. Reduced rates of poverty will tend to lag growth in employment opportunities. As a result, the last three years of the most recent data are used. Since a high poverty rate is a negative outcome, the index uses the inverse of the average poverty rate.
- **Average Unemployment Rate:** Innovative economies have greater employment opportunities and lower unemployment rates. Since a high unemployment rate is a negative outcome, the index uses the inverse of average unemployment rate.
- **Net Migration:** Migration measures the extent to which a county or region is broadly appealing and excludes other elements of population dynamics such as fertility rates. While people may migrate into a region for a host of reasons, from employment opportunities to environmental amenities, migration out of a region almost certainly signals declining economic conditions and the inability to keep the innovative talent that will spawn economic growth in the future.
- **Compensation:** Compensation data convey how much workers make based on their place of work. Likewise, proprietors' income is also based on place of work. Compensation and proprietor's income, therefore, probably provide a strong relationship between the activities of innovation and the rewards of innovation based on the location of innovation.
- **Growth in Per Capita Personal Income:** As an alternative to measuring remuneration based on place of work, per capita personal income (PCPI) measure incomes by place of residence. Because PCPI includes other forms of income in addition to wages, salaries and fringe benefits, it is a more comprehensive measure of well-being. That said, the linkage between where innovation occurs (county of work) and the financial rewards of innovation (county of residence) is less direct.

State Context

A fifth category, state context, seeks to capture data that are theoretically important but available only at the state level. It is composed of science and engineering graduates from state institutions per 1,000 residents of the state; private R&D by state relative to worker compensation; and total R&D expenditures as a percent of state GDP, the latter being the National Science Foundation measure for "R&D intensity." The state context category is not given as much attention because it is not used for the index calculation and because the indicator becomes diluted if a region crosses state boundaries."

13. APPENDIX 3: UNIVERSITY TECHNOLOGY COMMERCIALIZATION

Excerpted from “A Resource Guide for Technology-based Economic Development” available at <http://ssti.org/sites/default/files/resourceguidefortbed.pdf>.

University Technology Commercialization Programs

As discussed earlier, universities and other research institutions that are generating new knowledge and discoveries can be extremely important contributors in developing a region’s technology-based economy. But, while a necessary ingredient, it is not sufficient. For a state or region to capitalize on the presence of such “technology generators,” there must be mechanisms that move innovation into the marketplace. This is not something that happens naturally or easily for a number of reasons.

First, university-developed technologies often require that additional work be conducted to determine whether the technology has commercial potential, but there is little funding available for such proof-of-concept activities. In most regions of the country, it is difficult to find funding to advance the commercialization of technology owned by universities. To commercialize institutionally owned-IP at the highest value—and sometimes to license it at all—it is commonly necessary to perform additional studies, sometimes involving animal trials or, in the case of engineering discoveries, a working prototype. Often, it is also necessary to surround the original discovery with additional patents and protections. This kind of work is usually conducted by faculty members (although sometimes by outside consultants) but at the direction of the professional staff in the university licensing office. It is almost never fundable through conventional, peer-reviewed federal programs and, if it is to take place at all, it must be separately funded under a different set of criteria focused mainly on economic development.

Second, even if commercial potential can be demonstrated, investors and customers are often unwilling to assume the risk that is associated with new technology and small businesses, which are often the most innovative, generally lack the financial resources necessary to identify and promote new technologies.

Third, academic researchers often do not understand the marketplace and therefore do not know what commercial potential exists for their discoveries.

Ever since the passage of the Bayh-Dole Act of 1980 that allowed universities to own patents arising from federally-supported R&D, universities have struggled with how best to transfer university-generated technology to businesses that can commercialize it. Traditionally, universities have used licensing to accomplish this. Today, more and more universities are becoming more directly involved in commercialization taking an active role in seeking out entrepreneurs and companies as partners and, in some cases, spinning off new companies. University commercialization offices and free-standing commercialization centers have been created to assist in this process.

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Technology commercialization programs help researchers and entrepreneurs to transform ideas or innovations into products ready for manufacture, marketing and distribution. Such programs assist inventors and entrepreneurs with patent applications, engineering and testing and development of business and marketing plans. They link entrepreneurs with sources of business and management expertise and help them access capital by linking firms with sources of risk capital, including both angel investors and venture capital funds, or by providing capital directly. Programs focused on entrepreneurs and start-ups are described in more detail in the entrepreneurship section of this report.

Commercialization programs vary in how they are structured, the service they offer, the technologies they target, and how they are funded. Such programs may operate as a unit of a university but increasingly universities are creating free-standing commercialization center that seek to create start-up companies around university-developed technologies. The University of Illinois, for example, created a wholly-owned commercialization company, Illinois Ventures LLC, to work with campus technology transfer offices, faculty and outside entrepreneurs to create start-up companies to which the university can license intellectual property.

It has become increasingly common for technology commercialization programs to operate funds that provide small amounts of very early-stage proof-of-concept activities. Such commercialization funds make awards ranging from \$50,000 to \$250,000. These funds are used to undertake due diligence to determine whether there is any commercial value. In some cases, the researcher may be provided small additional funds to further refine the “proof of concept” of the research. If value is discovered, then university IP procedures will come into play. The intent of this type of fund is to discover additional commercial opportunities unforeseen by the researcher who is untrained in examining market opportunities. The end result of a technology commercialization award will be a prototype, further research that helps determine market value, or other deliverables. Some commercialization programs also provide pre-seed or seed funding to start-up companies.

The objective of university commercialization programs is to identify university-developed technologies with commercial potential and develop that technology to the point at which a commercial partner can be found or a company created to market it. The goal is to advance ideas beyond proof-of-concept thus reducing risk for investors and customers. These programs often include commercialization funds that seek to address the capital gap between basic science, which is most often funded by the federal government, and the development of technology with commercial potential.

KEY SUCCESS FACTORS

Managers of commercialization programs say that having sources of flexible funding is a key factor in being able to move technology into the market place. As discussed above, there are few, if any, sources of very early-stage funding to assess the commercial potential of a new discovery. A small amount of funding, that does not require a repayment, is needed to conduct testing, to validate the technology and to determine whether it meets a market need at a competitive price.

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A second critical factor in the success of commercialization programs is their ability to connect university inventors with investors and commercial partners. Managers of commercialization programs report that their primary role, and the factor that will determine how successful they will be, is their ability to make connections: connecting researchers with promising technology with the entrepreneurs who have the ability to commercialize it; then connecting those entrepreneurs with sources of capital.

A final factor that centers like the Deshpande Center at MIT have identified as critical to successful commercialization is the ability to tie research to market needs. Encouraging interactions between university researchers and industry can help to ensure that researchers are aware of both developments in the marketplace and the technological challenges facing specific industries. If this knowledge drives their research, it is much more likely to lead to discoveries with commercial potential.

Example:

MIT's Deshpande Center for Technological Innovation was created to bridge the gap between ideas and implementation. The center, founded with a \$20 million gift from an alumnus, focuses on getting established industry engaged with researchers so that research is conducted that addresses market needs, provides funding and support to explore new ideas and develop them into new technologies, and links university researchers with investors and commercial partners.

The center provides a variety of types of funding: Ignition grants of up to \$50,000 are used to fund projects focused on novel, enabling, potentially useful ideas in any technology area; Innovation Grants of up to \$250,000 fund projects that have already established proof-of-concept, identified an R&D path and have developed an IP strategy. The funds are used to put together a package that can be taken to a venture capitalist or company to convince them to invest in the technology. The center's i-Teams program, a collaboration of the center, the MIT Entrepreneurship Center, and MIT Venture Capital and Private Equity Club, matches graduate students with grant recipients and business mentors. The students assist the grant recipients in assessing commercial prospects of a technology and identifying product markets.

The center uses a variety of mechanisms to encourage interaction between companies and university researchers including workshops and forums. Ignition Forums, for example, bring in industry to discuss market opportunities and challenges in particular technology areas. These are used to inform faculty and researchers of what is of interest to the industrial community and to identify potential research needs.

The center's Catalyst Program makes use of a group of individuals with experience relevant to innovation, technology, commercialization and entrepreneurship. These experienced business people participate in networking events, provide coaching for faculty entrepreneurs and serve as advisors to the center. They also participate on grant review teams.

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The center also seeks to educate faculty on commercialization and entrepreneurship by holding workshops on topics such as managing faculty member's roles in start-ups, when to seek angel investors and how to split equity.

RESOURCES REQUIRED AND SOURCE OF FUNDS

University commercialization programs can be funded by a variety of sources, including internal university resources, university foundations, state appropriations and philanthropic contributions. Budgets for commercialization programs vary greatly depending, in part, on whether the program makes direct investments in start-up companies. Definitive information on the budgets of these programs is not currently available; however, two points of reference may be useful: the Deshpande Center was created with a \$20 million gift, while in Michigan, the state legislature awarded the Western Michigan University \$10 million to operate a Bioscience Commercialization Center.

CONSIDERATIONS IN CHOOSING THIS APPROACH

Technology commercialization programs operate at the high-risk end of the spectrum. They seek to identify technology with commercial potential and to facilitate its transition into the marketplace. They work with researchers and entrepreneurs prior to company formation. As such, they will usually require a periodic infusion of funding. The majority of technology commercialization awards are grants that do not require any type of payback although some of the funds do require a repayment if a project is successful, usually in the form of a royalty. As a result, such funds often require annual appropriations.

It is also important to ensure that funds are used for commercialization activities not just to continue ongoing research projects.

Conclusion

Universities are important contributors to technology-based economies. They not only generate new discoveries but they provide the talent needed to drive a technology-based economy. But it must be recognized that promoting economic development is not the primary role of universities. Their primary roles are to educate students and produce new knowledge. Efforts to leverage universities to build technology-based economies must recognize and respect this.

At the same time, getting universities involved in technology-based economic development can help ensure that discoveries are used to make people's lives better. It can also provide real-world experiences for faculty and students alike. Much has been learned over the last two decades about how to make university-industry partnerships work. Practitioners who have worked hard to make these partnerships work provide these words of advice:

- **Build on your strengths.** It is important that each state or region examine its university and industry strengths and build on them. Not all areas are alike in TBED and it is the differences that can be most important. Identifying strategic areas in which a state or region can be "excellent" can be a key to success.
- **Find champions.** Support from university administrators at the highest levels is critical, but it is also important to develop support from within the faculty. It is equally important to enlist the participation of senior managers from the private sector. Bring together the top people in industry, academe and S&T fields to provide a legitimate basis for planning for the future.

The South-Central Kansas Innovation and Entrepreneurship Ecosystem

- **Focus on market opportunities.** It is much easier to pull technology out of universities because it meets a market need than to try to push technology out of the lab. Becoming too preoccupied with research and technology and losing sight of industry needs can result in interesting research, but no economic impact.
- **Make funding decisions based on excellence, not politics.** To have an economic impact, these programs must be based on the reality of the institution's research strengths and the economic profile of the region. Selecting funding recipients to focus on particular technology areas, industries, research institutions, or geographic areas because of political pressures, rather than on excellence, is likely to result in failure.
- **Communicate and publicize your success.** Programs that seek to capitalize on university research findings are a long-term undertaking. It is important to work with elected officials so that they understand that this is a long-term process that will require sustained support. Publicizing successes helps to not only build support among key constituents, but also attracts both faculty and industry to participate in partnership activities.
- **Recognize that there will be failure.** Commercializing innovative technologies is a risky business. As difficult as it may be, stakeholders must understand that technologies may not pan out and start-up companies may fail. Educate elected officials to understand that these are long-term investments and their impact should be measured in return on investment, not jobs created.