EXECUTIVE SUMMARY

The Evolution of Entrepreneurship in Kansas City:
A Visual Approach to Analyzing Entrepreneurial Development

Data collection and analysis: Heike Mayer, University of Bern, Switzerland
Data visualization: Stuart Armstrong, Maryland, USA

Kansas City followed a markedly different path of economic development than more prominent entrepreneurial regions such as Silicon Valley or Boston's Route 128. Kansas City's life sciences and technology industries evolved primarily through entrepreneurial spin-off processes, and a few large firms and institutions played key roles in these processes. We have conducted an analysis of and visualized the entrepreneurial dynamics in the Kansas City region in a unique way. Key results are highlighted in this executive summary.

Methodology

Through an online survey, which was conducted using a snowball method in late 2012 and early 2013, data were collected, and the responses from a total of 214 companies were used. The survey incorporated questions about firm founders, their prior employer(s), regional advantages and disadvantages, and the regional cooperation ecosystem. In a second step, survey data were complemented by extensive secondary research involving corporate reports, websites, and newspaper articles. Survey results and secondary data were merged in a database on the entrepreneurial genealogy of life sciences and technology firms and institutions in the Kansas City metropolitan region. The data were then visualized.

"Kansas City Tech Galaxy" Map

A resulting map visualizes the entrepreneurial heritage of 582 firms and institutions in the Kansas City metropolitan region.

- The data visualization incorporates time and genealogy dimensions.
- Five firms and institutions (Marion Laboratories, MRI Global, Sprint, University of Kansas, and University of Missouri-Kansas City) have their origins before the 1970s. Throughout the years, the five firms have spawned the most spinoffs.
- During the 1970s, 1980s, 1990s, and 2000s, five more firms were founded that have yielded four or more spinoffs each. These firms are Cerner, Innovative Software, Perceptive Software, Proteon Therapeutics, and Archer Technologies.

Survey Results *(see tables that follow on p. 3-5)*

A total of 214 valid survey responses were analyzed. The average firm age was 10.6 years, and the median founding year was 2009. Most responding firms can be categorized as small businesses. Among the responding firms, there was a bias toward information technology. Relatively few life sciences firms participated.

- **Financing:** 70 percent of the entrepreneurs who responded to the survey utilize personal savings; 25.9 percent receive financial support from friends and families; and 24.1 percent indicate they access angel investments. A small percentage

(9.4 percent) utilizes venture capital. The survey results show Kansas City follows a pattern similar to other regions not typically known for concentrations of high-tech industry when it comes to sources of business financing.

- **Sources of New Ideas**: As for accessing new ideas for innovation that help companies in the Kansas City region compete, the survey data show interesting results related to geography. Within Kansas City, the most important source of new ideas is mentors that give advice (52.5 percent). Also within Kansas City, other important sources are customers and users, informal networks with friends, internal R&D units, and/or consultants. Within the states of Kansas and Missouri, informal networks with firms and mentors that give advice are cited as important sources (35.2 percent and 34.6 percent, respectively). Widening the geographic focus to the entire United States, entrepreneurs noted that customers and users (56.8 percent) are the most important source of new ideas. Overseas, the most important source also is customers and users (17.9 percent). Location is not relevant or not applicable for manufacturers as sources of new ideas (19.1 percent). Overall responses, not dependent on geography, indicate the most important sources of new ideas in general are customers and users. Informal networks, however, are highly valued as sources of new ideas in closer geographic proximity.
- **Relationships with Universities:** The survey asked about the relationship between firms and Kansas/Missouri-based universities. Overall, the results show firms value the opportunity to hire graduates from the states' universities, seeing it is an important way of connecting with higher education institutions.
- **Region-specific Advantages:** Kansas City entrepreneurs value a range of aspects for which similar regions may have an advantage. 84 percent of respondents ranked informal local access to innovative people, ideas, and technologies as somewhat or extremely important. 76.8 percent think supportive local entrepreneurship organizations and initiatives are somewhat or extremely important region-specific advantages. Also ranking high were such factors as local quality of life for staff and management, local availability of managerial and professional staff, access to local business services, and access to Midwestern markets. Less important were aspects related to research, including research links with other firms and organizations, quality of local research staff, and research links with a university.
- **Region-specific Disadvantages:** Responses regarding Kansas City region-specific disadvantages also show a pattern similar to other like regions. Entrepreneurs responding to the survey find accessing local sources of capital difficult. In addition, the shortage of local technology, marketing, and sales talent was seen as a somewhat or extremely important disadvantage. Lack of a world-class university, lack of appropriate premises, and lack of local suppliers were not cited as significant disadvantages.

For more information:

Mayer, H. (2012). *Entrepreneurship and innovation in second tier regions.* Cheltenham, UK: Edward Elgar.
Mayer, H. (2012). *Entrepreneurial Community in Kansas City: From Fragmented to Collaborative?*
Mayer, H. (2006). *Completing the Puzzle: Creating a High-Tech and Life Sciences Economy in Kansas City.*

Table 1:
Characteristics of High-Tech Firms Responding to Kansas City Tech Survey

Categories	Responses	Percent
Survey descriptives		
Number of firms responding to survey	214	
Average age of firm (years; N=183)	10.6	
Median founding year	2009	
Employment size		
1–4	88	52.7%
5–9	22	13.2%
10–19	25	15.0%
20–49	9	5.4%
50–99	10	6.0%
100–249	3	1.8%
250–499	3	1.8%
500–999	2	1.2%
1,000 or more	5	3.0%
Valid N	167	78.0%
Sector	**Responses**	**Percent**
Animal health	1	0.5%
Biotechnology research and testing	4	2.2%
Drugs and pharmaceuticals	6	3.3%
Information technology	77	42.1%
Medical devices	7	3.8%
Other	79	43.2%
Telecommunications	9	4.9%
Valid N	183	85.5%
Source(s) of financing (multiple responses were allowed)	**Responses**	**Percent**
Personal savings	119	70.0%
Friends and families	44	25.9%
Angel investments	41	24.1%
Bank loans	29	17.1%
Credit cards	26	15.3%
Other	26	15.3%
I have not used any financing	21	12.4%
Business acquintances	16	9.4%
Venture capital	16	9.4%
Valid N	170	79.4%

Source: Kansas City Tech Survey

Table 2:

Sources of New ideas

New ideas often come from a variety of sources. Respondents were given a list of potential sources for new ideas and innovations that help companies. They were then asked to consider the last three years (2010 to 2012) and indicate the primary location of sources of new ideas and innovations for their business.

	Within Kansas City	Within the states of KS and MO	Within the U.S.	Overseas	Location is not relevant/ applicable
Commercial labs or private R&D institutes	8% (13)	3.3% (7)	10.7% (23)	1.9% (4)	16.4% (35)
Consultants	31.5% (51)	19.8% (32)	33.3% (54)	9.3% (15)	9.3% (15)
Customers and users	43.8% (71)	34% (55)	56.8% (92)	17.9% (29)	9.3% (15)
Informal networks with other friends	42% (68)	35.2% (57)	46.3% (75)	9.3% (15)	8% (13)
Internal R&D units	33.3% (54)	11.1% (18)	12.3% (20)	3.1% (5)	16.7% (27)
Manufacturers	8.6% (14)	6.8% (11)	21% (34)	7.4% (12)	19.1% (31)
Mentors that give advice	52.5% (85)	34.6% (56)	40.7% (66)	4.3% (7)	9.9% (16)
Other firms in your industry	25.9% (42)	23.5% (38)	58% (94)	12.3% (20)	11.1% (18)
Suppliers (materials, services, equipment, etc.)	17.9% (29)	14.2% (23)	31.5% (51)	9.9% (16)	16.7% (27)
Universities or higher education institutions	21.6% (35)	25.9% (42)	20.4% (33)	6.2% (10)	11.7% (19)
Valid N	75.7% (162)				

Source: Kansas City Tech Survey

Table 3:

Linkages with Universities

Respondents were asked to consider which of the following types of relationships their firm had, since first formation, with the specific universities included below.

	Kansas State University	University of Kansas	University of Kansas Medical Center	University of Missouri-Columbia	University of Missouri-Kansas City
Being part of a research consortia involving the university	5% (8)	6.3% (10)	1.9% (3)	2.5% (4)	5.6% (9)
Collaborative research project with departments or faculty	5.6% (9)	10% (16)	5% (8)	3.1% (5)	6.9% (11)
Company staff teaching classes at university	2.5% (4)	10.6% (17)	0.6% (1)	3.8% (6)	8.8% (14)
Donations to university	4.4% (7)	7.5% (12)	1.3% (2)	5% (8)	6.3% (10)
Faculty members working part-time in your company	0% (0)	2.5% (4)	1.3% (2)	0.6% (1)	3.1% (5)
Faculty on the company`s board	0% (0)	5% (8)	2.5% (4)	0.6% (1)	0.6% (1)
Hiring graduates	17.5% (28)	21.9% (35)	2.5% (4)	13.8% (22)	22.5% (36)
Licensing or patenting of research	1.3% (2)	3.8% (6)	1.9% (3)	0.6% (1)	3.1% (5)
Taking courses	2.5% (4)	5.6% (9)	0% (0)	1.9% (3)	13.8% (22)
Training programs run by university	0.6% (1)	5% (8)	0.6% (1)	1.3% (2)	13.8% (22)
University staff acting as consultants	1.3% (2)	3.8% (6)	3.8% (6)	1.9% (3)	9.4% (15)
Using small business development or entrepreneurship services offered by university	0.6% (1)	3.8% (6)	1.9% (3)	1.9% (3)	27.5% (44)
Valid N	74.8% (160)				

Source: Kansas City Tech Survey

Table 4:
Region-specific Advantages for Development in the Kansas City Region
(ranked by mean rating)

Respondents were asked to rate the options below based on importance to their firm's development. Options were rated on a scale of 1 to 5, with 5 indicating extremely important.

Advantages	Valid N	Mean rating	Percent indicating somewhat and extremely important	Percent indicating extremely important
Informal local access to innovative people, ideas, technologies	150	4.12	84.0%	34.7%
Supportive local entrepreneurship organizations and initiatives	151	4.03	76.8%	42.4%
Attractive local quality of life for staff and management	149	3.94	77.8%	27.5%
Local availability of managerial/professional staff	147	3.65	61.9%	23.8%
Access to local business services	148	3.63	62.1%	18.9%
Access to Midwestern markets	148	3.44	52.7%	21.6%
Proximity to local customers	150	3.34	37.4%	22.0%
Access to local sources of capital, finance	147	3.23	48.3%	24.50%
Supportive local training organizations	148	3.11	37.8%	14.2%
Local shareholders	144	2.93	34.7%	14.6%
Proximity to local suppliers, subcontractors	148	2.91	33.1%	10.8%
Research links with other firms or organizations in the region	142	2.82	33.8%	4.9%
Quality of local research staff	146	2.75	18.5%	11.0%
Research links with a university	144	2.66	13.9%	8.3%

Source: Kansas City Tech Survey

Table 5:
Region-specific Disadvantages for Development in the Kansas City Region
(ranked by mean rating)

Respondents were asked to rate the constraints below based on significance/importance to their firm's development. Response options were rated on a scale of 1 to 5, with 5 indicating extremely important.

Disadvantages	Valid N	Mean rating	Percent indicating somewhat and extremely important	Percent indicating extremely important
Difficulty in accessing local sources of capital, finance	150	3.26	50.0%	22.7%
Shortage of local technology talent	149	3.19	46.3%	18.8%
Shortage of local marketing and sales talent	147	2.71	23.8%	6.1%
Lack of a local market/customers	148	2.68	22.3%	5.4%
Inadequate local business services	149	2.59	18.8%	3.4%
Shortage of local management talent	144	2.58	19.5%	2.1%
Lack of local networking with other firms in the same industry	149	2.57	22.1%	6.7%
Lack of local subcontractors	148	2.45	20.3%	3.4%
Shortage of local research talent	147	2.42	15.0%	3.4%
Lack of world-class university	148	2.30	14.9%	3.4%
Lack of appropriate premises (facilities, offices, etc.) locally	149	2.21	13.4%	2.0%
Lack of local suppliers	147	2.07	6.1%	2.7%

Source: Kansas City Tech Survey

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