

Innovation Issues

A research brief series that examines innovation in rural businesses and communities



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Sources of inspiration matter to business innovation outcomes

A summary of "Sources of innovation and innovation type: firm-level evidence from the United States," by Mehmet Afik Demircioglu^a, David B. Audretsch^b, and Timothy F. Slaper^b.

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What's the Issue?

Innovation is critical to a firm's ability to compete, grow, and overcome challenges. But what sources do businesses¹ tap for their innovative ideas? This question was first raised as far back as 1890, and since then researchers have identified several "innovation sources"—sources of knowledge and creativity that inspire innovation, including employees, suppliers, customers, and universities. However, little is known about which of these innovation sources are most important to a firm's ability to innovate.

Further, because of a dearth of other data, innovation research has mostly focused only on innovations that result in patents. Other types of innovation, such as new processing methods or production practices, new marketing strategies, or new services offered, have not been adequately

Key Takeaways

- Businesses tap different sources of knowledge and creativity to drive their innovation activities. Different innovation outcomes are associated with different sources of knowledge.
- Customers, workers, and universities are sources of knowledge positively associated with all types of innovation activity.
- Universities had the statistically strongest effect, suggesting that they are critical to innovation.

investigated in innovation research. As a result, little is known about the effects that various innovation sources have on different types of innovation, thus limiting the ability of business owners, policy makers, and researchers to develop effective policies and strategies that encourage innovation.

The main reason for these gaps in knowledge is that, until recently, no large-scale dataset on the innovation activity of U.S. businesses has been available. However, in 2015 the USDA Economic

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¹ We use the terms business, firm, and establishment interchangeably.

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About the Rural Establishment Innovation Survey

In 2014, the USDA Economic Research Service (ERS) conducted a Rural Establishment Innovation Survey (REIS) – a comprehensive and nationally representative survey of more than 10,000 business establishments that employ five or more employees. Survey respondents reported on their business's innovation technologies and practices, along with other relevant establishment data such as human resource and finance information. Because the survey over-sampled from rural areas, it provides the researchers the ability to address questions about the ways in which business innovation is happening in rural areas, and its dependence and impact on rural communities and regional economies.

In 2016, through a cooperative agreement with the ERS, the Northeast Regional Center for Rural Development administered a competitive funding program that provided three research teams the opportunity to utilize REIS data to study pressing issues related to rural innovation and economic development. The funded research teams presented papers on their projects at the North American Regional Science Council in Vancouver, BC, in November 2017. This research brief, prepared by Kristen Devlin and Stephan J. Goetz, describes one of the funded research projects.

Research Service released the results of its Rural Establishment Innovation Survey (REIS, see above). Using this new data source, researchers are now able to explore questions related to the innovation activity of a wide variety of businesses, and to identify sources and resources that are most valuable to their innovation efforts.

Research Objectives

The authors of this study used the REIS data to examine the relationship between distinct sources of innovation knowledge—customers, suppliers, universities, etc.—and specific types of innovation. For example, would the knowledge obtained from customer interactions drive one type of innovation more strongly than another? Would knowledge from universities have the same effect on overall innovation as knowledge from customers?

Research Methods

Using the REIS data, the researchers examined the business-level effects on innovation of five main innovation sources: suppliers, customers, other people in the industry, workers, and universities. In addition to these innovation sources, they

considered other business characteristics that might influence innovation, including business type, size, location, and age. Using statistical analysis that examined each of these innovation sources and business characteristics in isolation while holding the others constant, the researchers assessed which of these variables have the strongest relationship with innovation activity.

Specifically, the researchers looked at each variable's effects on four types of innovation activity: product innovation, process innovation, marketing innovation, and overall innovation. Product innovation occurs when a company develops a new or significantly improved good or service. Process innovation results in a change to a company's methods of production, delivery, or procurement processes. Marketing innovations refer to changes or improvements in a product's packaging, promotion, or placement. Because these types of innovation often occur jointly, the researchers also looked at a fourth type of innovation activity — overall innovation — which combines product, process, and marketing innovation activity into a single metric.

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Research Findings

The researchers found that customers, workers, and universities were each positively associated with all types of innovation activity as sources. Universities had the statistically strongest effect, suggesting that they are the most salient driver of innovation. Suppliers had a modest effect, but only with regard to product innovation, while knowledge from other entities within a business's industry had a modest effect only on process and marketing innovation.

The researchers also found that younger businesses, urban businesses, and businesses that employ relatively more people engaged in more innovation activity of all types. Further, those companies in the information, metal, machinery, electronic hardware, and arts and entertainment sectors were more innovative than companies from other sectors.

Conclusion/Discussion

Using a newly available, large-scale dataset this study made several contributions to our understanding of business innovation. First, the study demonstrated that sources of knowledge matter to the innovation outcomes of businesses. Sources of knowledge that are internal to the firm, primarily a business's employees, as well as external sources of customers and universities, are associated with all types of innovation.

"The results imply that both internal and external sources are necessary to develop different types of innovations," the authors wrote in the research paper. "This is particularly important from the perspective of organizational managers, who should encourage their workers to express their views and facilitate their feedback to enhance innovation activity."

Second, the study examined several distinct innovation activities – product innovation, process innovation, and marketing innovation – instead of defining innovation in overly generalized terms or by looking at only one aspect of innovation (e.g., patent activity). The results suggest that distinct types of innovation are affected differently by different knowledge sources.

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Finally, through use of the relatively new dataset, the research offers new insights into which business characteristics and sectors are most strongly associated with innovation: younger, more urban, and larger firms, and those in the information, metal, machinery, electronic hardware, and arts

and entertainment sectors. Opportunities for future studies include exploring the effects of additional knowledge sources on innovation, and determining whether certain types of innovation activities bring more benefits to a business than other type. ❖