

# How Do Local Resources Drive Innovation in Emerging Technologies?

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## » Research Questions Addressed

Through what mechanisms does the adoption of a nascent technology influence local innovation?

How do pre-existing capabilities among firms or workers affect the potential for innovation when a new technology arrives?

## » Primary Findings

Using statistical analysis and historical investigation, the study examines advances in the early days of the aviation industry to better understand how technology adoption in a geographical region drives local innovation. The results of the study suggest that the establishment of an airmail route in a given U.S. county led to an increase in local aviation patenting by approximately 32 percent.

The authors find evidence that the local availability of user experience and technological feedback benefited inventors, as did the availability of a workforce with relevant skills, such as mechanics and engineers. Market incentives also appeared to drive innovation, as local inventors, entrepreneurs, and companies in other fields clearly diversified their output in response to the commercialization opportunities presented by the arrival of airmail.

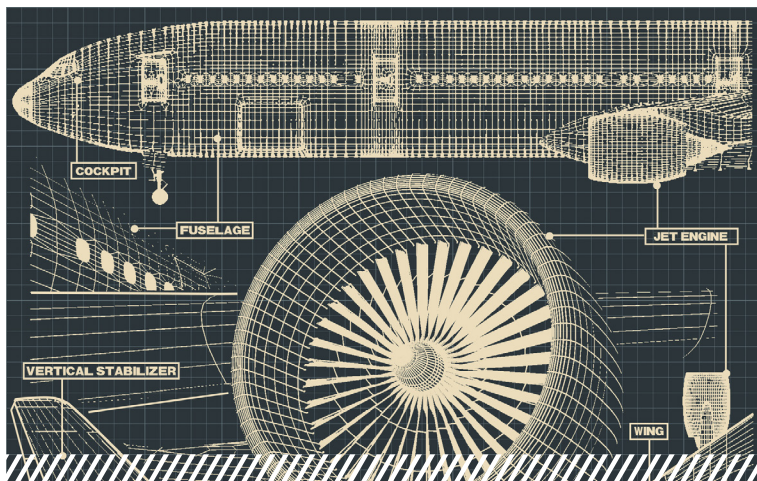
## » Keywords

Aviation industry  
Business and economic history  
Innovation  
Market incentives  
Technological feedback  
Technology adoption

## » Relevant Sectors

Civil sector  
Government  
Military





## » Topic Overview

Understanding the regional sources of technological innovation is an important topic among policymakers and business communities. Cities around the globe weigh the benefits and risks of welcoming emerging technologies such as autonomous vehicles and smart city networks. The spread of airmail service from roughly 1915 to 1935 created a natural experiment that is highly relevant to these ongoing policy and strategic debates. Being an early test bed for aviation had important consequences for future innovation and economic opportunity within a market, and the rate of innovation that took place was shaped by pre-existing local capabilities.

## » Highlights

During the genesis of a technological industry, when user-identified information has not yet been codified for easier sharing, innovation is more likely to take place at the site of technology adoption than at some geographically distant location.

When airmail service arrived in cities where non-aviation companies, like Ford Motor Company, were located, these companies apparently recognized the economic opportunity in diversification. The historical record shows they were soon innovating and supplying aircraft components such as engines, wheels, and tires.

Airmail service locations with larger populations and market size experienced higher rates of innovation.

Corporate patenting by young airmail operations favored innovations for economies of scale and operational efficiency that could improve their competitive bids for new airmail routes.

## » Implications for Sustainable Business

Innovation is a key element for developing sustainable technologies and business models. One conventional innovation pathway is to invest heavily in research and development in an effort to perfect a technology before releasing it to the market and hoping for widescale adoption. Another path is to put nascent technology into the market as early as safety and legal constraints allow. The study shows there are gains to the latter approach that managers and policymakers should consider when navigating the potential costs and benefits of new technology adoption—especially at the nexus of the military, government, and civil sectors, as was the case with the aviation industry.

## » Link to Academic Paper

Sohn, E., Seamans, R. C., & Sands, D. (2021). *Local technology adoption and innovation: The establishment of U.S. airmail and the organization of aviation innovation* (Working paper). Retrieved June 22, 2021, from <https://papers.ssrn.com/sol3/papers.cfm?abstract=3869801>

## » Related Links

Chazen Global Insights. (2021, May 17). *The race to innovate*. Columbia Business School. <https://www8.gsb.columbia.edu/articles/chazen-global-insights/race-innovate>

Chitavi, M., Cohen, L., & Hagist, S. C. N. (2021, February 18). Kenya is becoming a global hub of FinTech innovation. *Harvard Business Review*. <https://hbr.org/2021/02/kenya-is-becoming-a-global-hub-of-fintech-innovation>