

## UNIVERSITY INDUSTRY LINKAGES: NEED, CHALLENGES AND ENABLERS OF UNIVERSITY SPINOFFS

**DR. PINAKI NANDAN PATTNAIK\*; SATYENDRA C. PANDEY\*\***

\*ASSOCIATE PROFESSOR,  
CENTRE FOR MANAGEMENT STUDIES,  
NALSAR UNIVERSITY OF LAW,  
HYDERABAD.

\*\*ASSISTANT PROFESSOR,  
CENTRE FOR MANAGEMENT STUDIES,  
NALSAR UNIVERSITY OF LAW,  
HYDERABAD.

---

### ABSTRACT

The idea that universities should go beyond education and research and undertake a third mission of direct interaction and contribution to the industry has found increased attention in past decade. This direct interaction and contribution in the form of university spinoffs provides a win-win situation for both universities as well as the industry. However, it is not easy to manage these university start-ups. This paper makes an attempt to explore the challenges faced by university spinoffs and present incubators as a potential enabler to overcome such challenges. The study identifies some of the important challenges that university spinoffs face such as product development, technology push problem, finances, market uncertainty, human capital and business strategy.

**KEY WORDS:** university industry linkages, spin-offs, product development, technology, human capital.

---

### References

- Ali, A. (1994). Pioneering versus incremental innovation: review and research propositions. *Journal of product innovation management*, 11(1), 46-61.
- Aldrich, H. (1999). *Organizations evolving*. Sage.
- Allen, D. N., & Rahman, S. (1985). Small business incubators: a positive environment for entrepreneurship. *Journal of Small Business Management*, 23(3), 12-22.
- Allen, D. N., & McCluskey, R. (1990). Structure, policy, services, and performance in the business incubator industry. *Entrepreneurship Theory and Practice*, 15(2), 61-77.
- Applegate, L. M., & Gogan, J. L. (1995). *Electronic Commerce: Trends and Opportunities*. Harvard Business School Pub.

- Atlan, T. (1987). Bring together industry and university engineering schools. In *Getting More Out of R&D and Technology, The Conference Board, Research Report* (Vol. 904).
- Bee, E. (2004). Small business vitality & economic development. *Economic Development Journal*, 3(3), 7-15.
- Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1), 20-28.
- Carayannis, E. G., Rogers, E. M., Kurihara, K., & Allbritton, M. M. (1998). High-technology spin-offs from government R&D laboratories and research universities. *Technovation*, 18(1), 1-11.
- Casson, M. (1982). *The entrepreneur: An economic theory*. Rowman & Littlefield.
- Chrisman, J. J., Hynes, T., & Fraser, S. (1995). Faculty entrepreneurship and economic development: The case of the University of Calgary. *Journal of business venturing*, 10(4), 267-281.
- Cohen, W. M., Nelson, R. R., & Walsh, J. P. (2002). Links and impacts: the influence of public research on industrial R&D. *Management science*, 48(1), 1-23.
- D'Este, P., & Patel, P. (2007). University–industry linkages in the UK: What are the factors underlying the variety of interactions with industry?. *Research Policy*, 36(9), 1295-1313.
- Dollinger, M. J. (2003). *Entrepreneurship*. Prentice Hall.
- Doutriaux, J., & Barker, M. (1995). *The university-industry relationship in science and technology* (No. 11). Gouvernement du Canada-Industry Canada.
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. *Research policy*, 29(2), 109-123.
- Feeser, H. R., & Willard, G. E. (1990). Founding strategy and performance: A comparison of high and low growth high tech firms. *Strategic Management Journal*, 11(2), 87-98.
- Görling, S. (2006). *Methods for assessing technology transfer-an overview* (No. 31). Royal Institute of Technology, Department of Industrial Economics and Management.
- Grimaldi, R., & Grandi, A. (2005). Business incubators and new venture creation: an assessment of incubating models. *Technovation*, 25(2), 111-121.
- Hackett, S. M., & Dilts, D. M. (2004). A systematic review of business incubation research. *The Journal of Technology Transfer*, 29(1), 55-82.
- Heirman, A., & Clarysse, B. (2007). Which Tangible and Intangible Assets Matter for Innovation Speed in Start-Ups?\*. *Journal of Product Innovation Management*, 24(4), 303-315.

Huffman, D., & Quigley, J. M. (2002). The role of the university in attracting high tech entrepreneurship: A Silicon Valley tale. *The Annals of Regional Science*, 36(3), 403-419.

Jaffe, A. B. (1989). Real effects of academic research. *The American Economic Review*, 957-970.

Kerin, R. A., Varadarajan, P. R., & Peterson, R. A. (1992). First-mover advantage: A synthesis, conceptual framework, and research propositions. *The Journal of Marketing*, 33-52.

Leydesdorff, L., & Etzkowitz, H. (1998). The triple helix as a model for innovation studies. *Science and public policy*, 25(3), 195-203.

Lockett, A., & Wright, M. (2005). Resources, capabilities, risk capital and the creation of university spin-out companies. *Research Policy*, 34(7), 1043-1057.

Lundvall, B. Ä., & Johnson, B. (1994). The learning economy. *Journal of industry studies*, 1(2), 23-42.

Martin, M. J. (1994). *Managing innovation and entrepreneurship in technology-based firms*. New York: Wiley.

Merton, R. K. (1973). *The sociology of science: Theoretical and empirical investigations*. University of Chicago press.

Mian, S. A. (1994). US university-sponsored technology incubators: an overview of management, policies and performance. *Technovation*, 14(8), 515-528.

Mintzberg, H. (1979). The structuring of organizations: A synthesis of the research. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.

Mowery, D. C., & Sampat, B. N. (2005). Universities in national innovation systems. *The Oxford handbook of innovation*, 209-39.

Nelson, R. R. (1991). Why do firms differ, and how does it matter?. *Strategic management journal*, 12(S2), 61-74.

Nicolaou, N., & Birley, S. (2003). Academic networks in a trichotomous categorisation of university spinouts. *Journal of Business Venturing*, 18(3), 333-359.

Peters, L., Rice, M., & Sundararajan, M. (2004). The role of incubators in the entrepreneurial process. *The Journal of Technology Transfer*, 29(1), 83-91.

Roberts, E. B. (1991). *Entrepreneurs in high technology*. New York: Oxford University Press.

Roberts, E. B., & Malonnet, D. E. (1996). Policies and structures for spinning off new companies from research and development organizations. *R&D Management*, 26(1), 17-48.

Rothaermel, F. T., & Thursby, M. (2005). Incubator firm failure or graduation?: The role of university linkages. *Research policy*, 34(7), 1076-1090.

Rothberg, R. R. (2005). Managing Strategic Innovation and Change: A Collection of Readings. *Journal of Product Innovation Management*, 22(5), 458-458.

Shane, S. A. (2003). *A general theory of entrepreneurship: The individual-opportunity nexus*. Edward Elgar Publishing.

Shane, S. (2004). *Academic entrepreneurship*. Edward Elgar Publishing.

Shane, S., & Stuart, T. (2002). Organizational endowments and the performance of university start-ups. *Management science*, 48(1), 154-170.

Slaughter, S., & Leslie, L. L. (1997). *Academic capitalism: Politics, policies, and the entrepreneurial university*. The Johns Hopkins University Press, 2715 North Charles Street, Baltimore, MD 21218-4319.

Smilor, R. W., Gibson, D. V., & Dietrich, G. B. (1990). University spin-out companies: technology start-ups from UT-Austin. *Journal of business venturing*, 5(1), 63-76.

Stankiewicz, R. (1994). Spin-off companies from universities. *Science and Public Policy*, 21(2), 99-107.

Stalk, G., & Hout, T. M. (1990). *Competing against time: How time-based competition is reshaping global markets*. New York: Free Press.

Stinchcombe, A. L. (2000). Social structure and organizations. *Advances in Strategic Management*, 17, 229-259.

Tornatzky, L. G., Waugaman, P. G., & Casson, L. (1995). Benchmarking best practices for university-industry technology transfer.

Tushman, M. L., & Anderson, P. (1986). Technological discontinuities and organizational environments. *Administrative science quarterly*, 439-465.

van Gorp, D., & Jagersma, P. K. (2004). Spin-Out Business Model: A Strategic Tool for Innovative Growth, Entrepreneurship and Flexibility in the Service Sector. *technology*, 20(27), 51.

Vohora, A., Wright, M., & Lockett, A. (2004). Critical junctures in the development of university high-tech spinout companies. *Research Policy*, 33(1), 147-175.

Wu, S. Y. (1989). *Production, entrepreneurship, and profits*. Oxford: Basil Blackwell.

Zahra, S. A. (1996). Technology strategy and financial performance: examining the moderating role of the firm's competitive environment. *Journal of Business Venturing*, 11(3), 189-219.