

Chapter 02 Sources of Innovation

True/False

1. Sometimes knowing a field too well can stifle creativity.

Answer: True

Difficulty: Moderate

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2. The organization's structure, routines, and incentives can thwart individual creativity, but *not* amplify it.

Answer: False

Difficulty: Moderate

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3. Sometimes paying people for suggestions undermines creativity because it focuses their shift on extrinsic motivation.

Answer: True

Difficulty: Hard

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4. Though a generalist by nature, inventors are specialists in the field in which they invent.

Answer: False

Difficulty: Moderate

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5. Innovation often originates with those who create solutions for their own needs.

Answer: True

Difficulty: Easy

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6. The qualities that make people inventive do not necessarily make them entrepreneurial.

Answer: True

Difficulty: Moderate

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7. Manufacturers typically create new product innovations in order to profit from the sale of the innovation to customers.

Answer: True
Difficulty: Moderate
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8. Firms consider their in-house R&D to be their least important source of innovation, but still feel it is necessary to possess.

Answer: False
Difficulty: Easy
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9. The most frequent collaborations are between firms and their customers, suppliers, and local universities.

Answer: True
Difficulty: Moderate
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10. A complementor is a company or individual that produces goods or services that enhance the value of another product.

Answer: True
Difficulty: Easy
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11. The creation of university technology transfer offices accelerated rapidly in the United States after the Bayh-Dole Act was passed.

Answer: True
Difficulty: Easy
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12. The Small Business Technology Transfer (STTR) program facilitates partnerships between small businesses and nonprofit research institutions.

Answer: True
Difficulty: Moderate
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13. Science parks often give rise to technology clusters that have long-lasting and self-reinforcing advantages.

Answer: True
Difficulty: Moderate
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14. Collaborative research is especially important in high-technology sectors.

Answer: True
Difficulty: Moderate
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15. Technology clusters may span a region as narrow as a city or as wide as a group of neighboring countries.

Answer: True
Difficulty: Moderate
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16. A cluster of firms with high innovation productivity will discourage other firms from establishing themselves in the same area.

Answer: False
Difficulty: Easy
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17. The degree to which innovative activities are geographically clustered does not depend on the national differences in the way technology development is funded or protected.

Answer: False
Difficulty: Moderate
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18. The likelihood of technological spillovers varies across countries.

Answer: True
Difficulty: Moderate
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19. A knowledge broker puts existing information to use in new and profitable ways.

Answer: True
Difficulty: Moderate
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20. Research suggests that most innovation is due to the discovery of something fundamentally new.

Answer: False
Difficulty: Hard

Multiple Choice

21. Which of the following products would be considered novel?
- a. A detergent advertises that it can remove spots.
 - b. A company announces it has produced a recreational hovercraft for sale in toy stores.
 - c. A cell phone company announces that it now offers text messaging.
 - d. A college announces it will install artificial turf on its football field.

Answer: b

Difficulty: Hard

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22. Which of the following persons is most likely to come up with a new way of manufacturing socks for a textile company?
- a. Bill, who has been the mechanic working on the current socks manufacturing equipment for the last 15 years. He proudly states that he is a true expert on every aspect of these machines.
 - b. Kate, who knows the basics of how the socks are now manufactured and how the machines work, but comes from a completely different background as far as training and experience are considered.
 - c. Frank, who has been newly hired because of his mechanical knowledge, but has no real knowledge or understanding of how socks are manufactured.
 - d. Lisa, who is the Plant Manager and is known as being impatient with her subordinates.

Answer: b

Difficulty: Hard

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23. Which of the following will probably have the *least* influence on organizational creativity?
- a. The creativity of the individuals in the organization
 - b. The organizational structure
 - c. Incentives provided for creativity
 - d. Location of the organization

Answer: d

Difficulty: Moderate

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24. The difference between Honda's employee-driven idea system (EDIS) and a traditional suggestion box is that Honda's system
- a. does not pay employees for ideas.
 - b. screens ideas for practicality before paying employees.
 - c. requires those who submit ideas to follow through with the suggestion, overseeing its progress from concept to implementation.
 - d. only ends up accepting about 10 percent of the suggestions submitted.

Answer: c
Difficulty: Moderate
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25. Southeaster Athletic Mats, Inc. produces gym mats for school and health clubs. The company recently put a metal box near the time clock and asked employees to submit ideas in writing for improved productivity. It offered \$10 for every idea it implemented. This is an example of a(n)
- a. employee-driven idea system (EDIS).
 - b. suggestion box.
 - c. legal bribe.
 - d. applied research.

Answer: b
Difficulty: Easy
Page: 20

26. According to studies, which of the following tends to be true of prolific inventors?
- a. Inventors tend to have specialized almost solely in one field.
 - b. Inventors tend to be curious, and question the assumptions made in a field.
 - c. Inventors typically patent and commercialize most of their inventions.
 - d. Inventors tend to interact socially and seek local solutions to problems.

Answer: b
Difficulty: Moderate
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27. The Smith brothers were trying to come up with a new cough drop but Alvin Smith kept saying to his brother, Frank, "I really would like to understand more about what makes a person cough in the first place." Frank kept saying, "We need to quit worrying about theoretical stuff and just focus on how to stop the coughing." Which of the brothers is most likely to be a successful inventor?
- a. Alvin
 - b. Frank
 - c. They are equally likely to be successful inventors
 - d. Neither is very likely to be a successful inventor

Answer: a
Difficulty: Hard
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28. Which of the following is *not* true regarding user innovators?
- a. They have a deep understanding of their unmet needs.
 - b. They have an intention to profit from the sale of their innovation.
 - c. They have an incentive to create solutions for their own needs.

d. Their innovations can lead to the development of new industries.

Answer: b

Difficulty: Moderate

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29. Susan works for a large chemical company in the Research and Development department. Her degree was in Biology and the company is encouraging her to study the mating habits of various insects to develop a better method of controlling insect damage to crops. The type of research Susan is engaged in is called _____ research.

- a. basic
- b. applied
- c. development
- d. primary

Answer: b

Difficulty: Moderate

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30. Which of the following is the correct sequence of steps for the science-push approach to research and development?

- a. Customers express an unmet need, R&D develops the product to meet that need, the product is produced, and the Marketing team promotes the product.
- b. Scientific discovery leads to an invention, the Engineering team designs the product, it is manufactured, and the Marketing team promotes it.
- c. Marketing does research to discover a need, R&D comes up with the product concept which is refined by engineering, the Manufacturing team produces it, and the Marketing team sells it.
- d. Manufacturing sees a way to improve a product, R&D takes the suggestions and expands on it, the Engineering team redesigns it, the Manufacturing team implements the change, and the Marketing team sells it.

Answer: b

Difficulty: Hard

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31. The demand-pull approach to research and development refers to

- a. research and development that focuses on developing products that are expected to increase demand in a particular market segment.
- b. research and development that begins by examining the outputs of the firm's basic research, and considering what potential commercial applications may be constructed from those outputs.
- c. research and development that greatly overextends the development budget of the firm.
- d. research and development that originates as a response to the specific problems or suggestions of customers.

Answer: d
Difficulty: Moderate
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32. Which of the following is *not* a source for successful innovation?
- a. In-house research and development.
 - b. Customers.
 - c. External networks of firms.
 - d. Government funding

Answer: d
Difficulty: Easy
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33. Organizations that produce products such as light bulbs for lamps, or DVD movies for DVD players are examples of
- a. competitors.
 - b. inventors.
 - c. complementors.
 - d. incubators.

Answer: c
Difficulty: Easy
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34. The president of Mountain Home University has been asked by her board of trustees to set up a mechanism for the commercialization of technology developed at the university. Such a mechanism is typically called a
- a. business department.
 - b. commercialization office.
 - c. technology transfer office.
 - d. royalty department.

Answer: c
Difficulty: Moderate
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35. According to the text, The Bayh-Dole Act of 1980
- a. made the transfer of technology to enemies of America illegal.
 - b. allowed universities to collect royalties on inventions funded with taxpayer dollars.
 - c. made it impossible to patent inventions developed at universities.
 - d. made it legal for private companies to invest in research and technology.

Answer: b
Difficulty: Easy
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36. Regional districts that are set up by the government to foster R&D collaboration between government, universities, and private firms are typically called
- a. government alliances.
 - b. research collaboration areas (RCAs).
 - c. incubators.
 - d. science parks.

Answer: d
Difficulty: Easy
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37. In 2001, Shanghai's Municipal Government set aside 13 square kilometers area near the Huangpu River for university laboratories, and start-up firms in microelectronics, digital technology, and life sciences. It was hoped that the area would foster strong research ability, the development of an advanced technology labor pool, and foster the creation of new industries in Shanghai. This area would best be termed a(n)
- a. industry
 - b. incubator
 - c. science park
 - d. knowledge broker

Answer: c
Difficulty: Moderate
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38. Institutions designed to nurture the development of new business that might otherwise lack access to adequate funding or advice are called
- a. government alliances.
 - b. research collaboration areas (RCAs).
 - c. incubators.
 - d. science parks.

Answer: c
Difficulty: Easy
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39. The objective of the Small Business Technology Transfer (STTR) program is to
- a. more fully leverage the innovation that takes place in research laboratories by connecting research scientists with entrepreneurs.
 - b. help small businesses develop and commercialize a new innovation.
 - c. to provide financial assistance to small business that have significant innovation capabilities.
 - d. to aid technology entrepreneurs by offering them financial and advisory services.

Answer: a

Difficulty: Moderate

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40. A _____ is a regional group of firms that have a connection to a common technology, and may engage in buyer, supplier, and complementor relationships, as well as research collaboration.
- a. science park
 - b. regional incubator
 - c. research collaboration area (RCA)
 - d. technology cluster

Answer: d

Difficulty: Easy

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41. When companies form a technology cluster it often results in
- a. greater security among the companies to prevent industrial spying from competitors who are now located close by.
 - b. less new startups because people who have interest in this industry would prefer to work for an established company.
 - c. a shrinking supply of trained labor due to the competition for the skills needed by the industry among the companies in the area.
 - d. the attraction of other firms to the area.

Answer: d

Difficulty: Moderate

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42. Which of the following would be considered true about an agglomeration economy?
- a. Helps enhance proximity in knowledge exchange.
 - b. Helps firms understand the drivers and benefits of clustering for developing a strategy.
 - c. Helps overcome the market failure that can result when a new technology has the potential for important societal benefits.
 - d. Helps firms reap benefits by locating them in close geographical proximity to each other.

Answer: d

Difficulty: Moderate

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43. Which of the following would typically be considered a downside to geographical clustering?
- a. Firms may have to lower prices on their products because there are many local competitors serving the same market.
 - b. Firms have to spend more on transportation costs for their inputs because suppliers are located far away.

- c. Firms in a region have lower net income because the tax rate in that region is very high.
- d. Firms may benefit by improvements in local infrastructure such as roads and utilities.

Answer: a

Difficulty: Easy

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44. Which of the following would *not* affect geographic clustering of an industry?
- a. The nature of the technology.
 - b. The degree to which communication and frequent interaction is required for knowledge sharing.
 - c. Population density of labor.
 - d. Profit margins of a technology firm.

Answer: d

Difficulty: Moderate

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45. _____ is a positive externality of research and development efforts.
- a. Knowledge broker
 - b. Agglomeration
 - c. Technological spillover
 - d. Technology cluster

Answer: c

Difficulty: Easy

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Essay

46. You have just been given an assignment within your company to design a creativity training program. Describe the elements you would include in the program and explain the rationale of each one.

Answer: One element of a creativity training program would be to bring in a communications expert to teach managers how to encourage novel thinking and autonomy through the use of verbal and nonverbal cues. The program might also include exercises that encourage employees to consider simpler representations of a problem to avoid getting “bogged down” in the details, and develop rudimentary prototypes. The program probably should not entail extrinsic (e.g., monetary) rewards, and instead should encourage intrinsic rewards such as recognition, giving the employees considerable ownership over their projects, and emphasizing the beneficial impact new solutions have on the welfare of customers.

Difficulty: Moderate

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47. If you were in charge of a Research and Development (R&D) department for a large pharmaceutical company, would you encourage your researchers to do basic research or applied research? Provide the rationale for your answer.

Answer: The Research and Development (R&D) department for a large pharmaceutical company should probably encourage its researchers to do both basic research and applied research. Basic research is directed at increasing understanding of a topic or field. This type of knowledge will help the company to better understand the medical field and to come up with approaches to applied research. For example, research to understand why and how people develop diabetes would provide guidelines into approaches to treatment. Applied research is targeted at increasing knowledge for a specific application. The development of new methods of treatment based on the findings of basic research would be the next logical step to take. This type of research would also require creativity and innovation but would be targeted at treating an illness in a certain way.

Difficulty: Hard

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48. At a retreat by the Salisbury City Council, community leaders held a discussion on attracting and developing new businesses and increasing employment rates in the city. One leader suggested that the city consider sponsoring a business incubator. Explain what an incubator is and how this might help the city meet its goals.

Answer: An incubator is an institution designed to nurture the development of new businesses that might otherwise lack access to funding or advice. It allows companies to share costs and resources until they can stand on their own. If an incubator were started in Salisbury, it would help new businesses to grow and prosper. These businesses could

then move out to locations of their own and hire local residents as employees. The city would not have to offer tax breaks or compete with other cities for the location of existing companies, but would be growing their own businesses.

Difficulty: Moderate

Page: 28-30

49. If you were looking for a location for your software development company why might you consider Silicon Valley? What are the drawbacks to that location?

Answer: A software development company would find Silicon Valley an attractive location because so many other high-tech computer-oriented companies are located there. The software company might be able to share information with complementors or to more easily find new employees who have been trained by other companies. Drawbacks to that location might include the fact that other companies hire away their employees or other companies might find out about proprietary technologies the company is developing. Current employees may follow the examples of others and leave the software development company to start their own company.

Difficulty: Moderate

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50. Explain the concept of technology spillovers.

Answer: Technological spillovers are a positive externality from R&D resulting from the spread of knowledge across organizational or regional boundaries. Technology spillovers are a significant influence on innovative activity. The likelihood of spillovers is also a function of the nature of the underlying knowledge base and the mobility of the labor pool.

Difficulty: Easy

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