Sources of Technology and Innovation

by Sophia

WHAT'S COVERED

In this lesson, you will learn about some of the sources of technology and innovation development, and when they are best used. Specifically, this lesson will cover:

1. External Processes for Developing and Acquiring Technology and Innovation

The external processes for developing and acquiring technology and innovation include a variety of options. They are most successfully used under the following circumstances:

1. The product line or the processes of the firm have fallen behind those of its competitors.
2. A new entrant into the market of the industry has changed the competitive dynamics.
3. A firm believes that its product mix or way of doing things is not going to be successful in the long run.

The major advantage of using an external process is speed—the time needed to blend an acquired technology or innovation is usually much shorter than the time required to try to make a discovery and bring it to market or implement it within the firm. Often, the external processes are less costly. The disadvantages are tied to the need to blend different firms or bring “others” into the activities of the firm. For example, there may be cultural conflicts in an acquisition or there may be resistance to acceptance of the newness that is brought into the firm.

1a. Common Types of External Processes

The most common types of external processes used to enhance technology and innovation in a firm include:

1. **Mergers/acquisitions (M&A)**, which involve ownership changes within the firms. For an acquisition, one firm buys another; for a merger, the two firms come together and form a new firm. The essence of both of these approaches is that a new, larger organizational entity is formed. The new firm should have more market power (be larger) and should gain knowledge about a technology or domain of activity. The blending of two cultures, two sets of processes, and two structures are all potential disadvantages of M&A activity.
2. **Joint ventures** are long-term alliances that involve the creation of a new entity to specifically carry out a product/process innovation. The entity is usually governed by a contractual relationship that specifies the contributions and obligations of the partners in the joint venture. There are potential culture clashes as well as the potential for **strategic drift**—losing strategic focus on the reasons for the joint venture.

3. **Franchise agreements** are usually long-term agreements that involve long payoffs for the sharing of known technology. Fast food restaurants, such as McDonald's, use franchise agreements with store owners. McDonald's provides R&D for new processes and new products. The store owners (franchisees) pay a fee for the use of the name and the marketing of the product. The contract and monitoring costs associated with franchise agreements are the big disadvantage of this type of alliance.
4. **Licensing agreements** involve technology acquisition without R&D. For example, Dolby contracts with producers of various types of sound equipment to allow them to use their technology to have better sound quality. Licensing agreements are quite common in high-tech industries. The contract costs and constraints are the disadvantages of licensing agreements.
5. **Formal and informal contracts** are used to allow firms to share technology between them. For formal contracts, the length of time the contract is enforceable is a defining characteristic. The more formal a contract, usually the longer it is, and it usually includes more details about the usage and limitations of the technology. For the informal contract, the advantage is that if the activity is no longer beneficial, it is much easier to disband.

TERMS TO KNOW

Mergers and Acquisitions
For an acquisition, one firm buys another; for a merger, the two firms come together and form a new firm.

Joint Ventures
Long-term alliances that involve the creation of a new entity to specifically carry out a product/process innovation.

Strategic Drift
Occurs when a joint venture loses strategic focus on the reasons for the joint venture.

Franchise Agreements
Long-term agreements that involve long payoffs for the sharing of known technology.

Licensing Agreements
Involve technology acquisition without research and development.

Formal and Informal Contracts
Used to allow firms to share technology between each other.

2. Research and Development (R&D)

The most common type of internal process for technology and innovation in the organization is**research and development (R&D)**. R&D involves the seeking and developing of new technologies, products, and/or processes through creative efforts within the firm. The benefits of internal processes include ownership of the technology/innovation that provide legal protections (i.e., patents and trademarks). In addition, the understanding and the knowledge gained from the process of R&D can give the firm a head start on the next generation of technology. Apple's place as a first mover in the technology of laptops and smartphones allowed it to maintain a creative advantage for a number of years. The disadvantages of R&D are that it is usually slower and more costly and can be disrupted by the departure of key personnel.

DID YOU KNOW

The death of Steve Jobs has slowed the innovation of Apple in the eyes of many consumers.

TERM TO KNOW

Research and Development (R&D)
Involves the seeking and developing of new technologies, products, and/or processes through creative efforts within the firm.

3. Scanning the External Environment

To keep pace with changes in technology and to keep up with needed innovation processes, individuals within the firm must keep track of what competitors are doing as well as what inventions or discoveries may usurp an industry's place in the market. This is an external process, and that involves scanning the environment. The information gathered during scanning should inform the firm about the general trends and opportunities to create new value. Internally, the firm wants to understand the task and processes as well as understand the skills that currently exist in the organization.

By identifying potential future scenarios in the external environment and understanding what resources and capabilities the firm has, the task for those managing technology and innovation becomes answering the key questions:

1. Where are we now?
2. Where do we want to be?
3. What do we need to move from here to there?

REFLECT

How do you keep up with a constantly evolving environment of technology and innovation?

SUMMARY

In this lesson, you learned about some of the sources of technology and innovation development, and when they are best used. You learned that there are a variety of options for **external processes for developing and acquiring technology and innovation**; these external process are typically faster and less costly. You learned that **common types of external processes** include mergers/acquisitions (M&A), joint ventures, franchise agreements, licensing agreements, and formal and informal contracts. You also learned that the most common type of internal process for technology and innovation in the organization is **research and development (R&D)**, which involves the seeking and developing of new technologies, products, and/or processes through creative efforts within the firm. Lastly, you learned that to keep up with needed innovation processes, individuals within the firm must keep track of what competitors are doing as well as relevant inventions or discoveries in the market, via an external process that involves **scanning the environment**.

Best of luck in your learning!

Source: Access for free at https://openstax.org/books/principles-management/pages/1-introduction

TERMS TO KNOW

Formal and Informal Contracts
Used to allow firms to share technology between each other.

Franchise Agreements
Long-term agreements that involve long payoffs for the sharing of known technology.

Joint Ventures
Long-term alliances that involve the creation of a new entity to specifically carry out a product/process innovation.

Licensing Agreements
Involve technology acquisition without R&D.

Mergers and Acquisitions
For an acquisition, one firm buys another; for a merger, the two firms come together and form a new firm.

Research and Development (R&D)
Involves the seeking and developing of new technologies, products, and/or processes through creative efforts within the firm.

Strategic Drift
Occurs when a joint venture loses strategic focus on the reasons for the joint venture.