

# Developing Technology and Innovation

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## WHAT'S COVERED

In this lesson, you will learn how organizations develop technology and innovation. Specifically, this lesson will cover:



## BEFORE YOU START

There are a number of ways that organizations can develop and manage technology and innovation. We will focus on organization-level activities and the three strategic processes in this section.

## 1. Organization-Level Activities

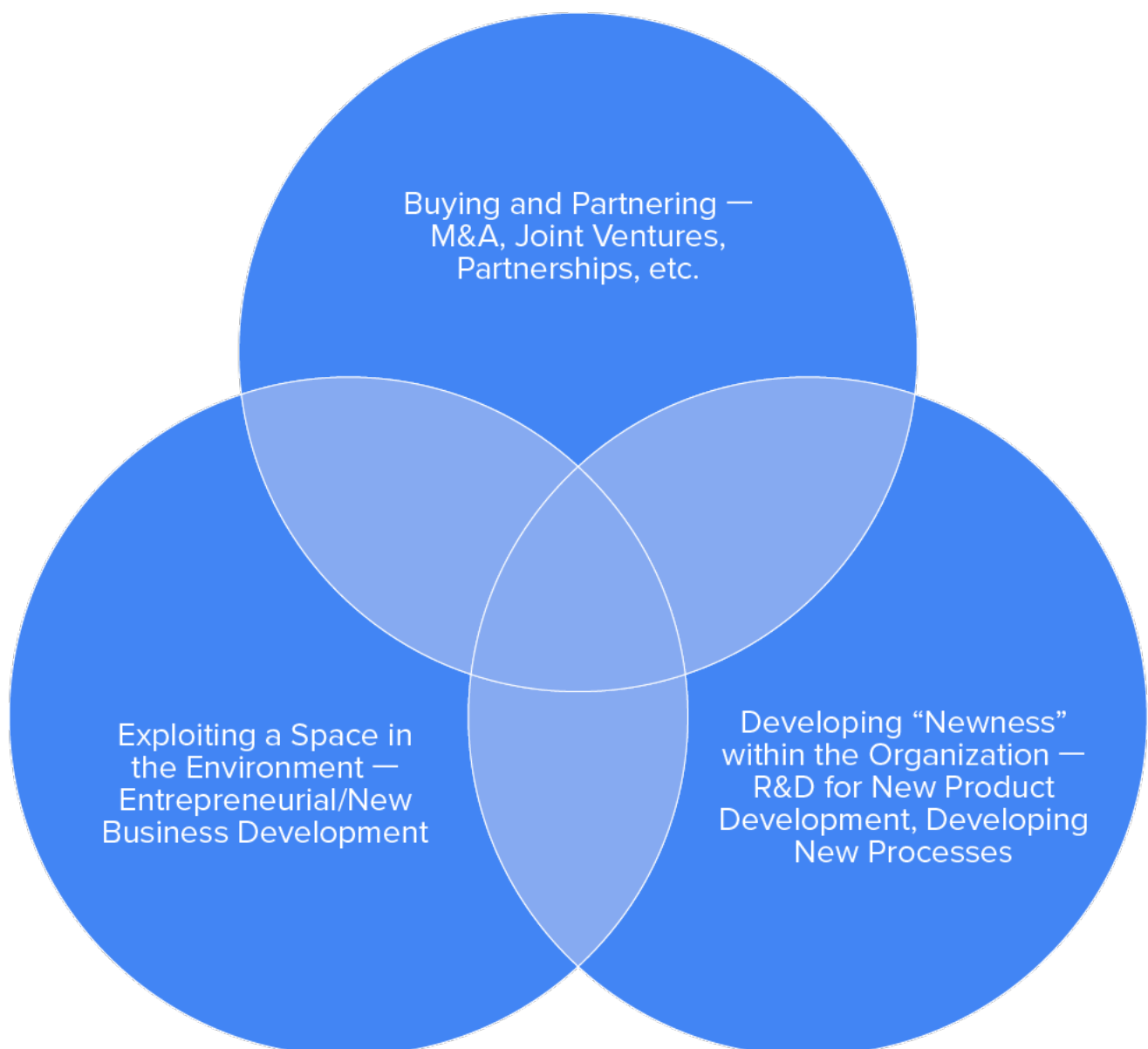
In order for a firm to develop a successful management of technology and innovation strategy, it is imperative that the organization be readied for the effort. This requires agility because changes and adjustments to products and processes are filled with risk and uncertainty. However, agility is inherently less efficient if it is to be effective. Therefore, the management of technology and innovation must balance short-term efficiency with long-term effectiveness in the market if the firm is to add value and thrive in a changing environment. Strong dynamic capabilities are needed if the organization is going to be able to address the challenges of innovation and dynamic competition (Teece et al., 2016).

There are four things the firm should do to balance the conflicting demands of being agile in a dynamic environment. These are:

1. Design systems and processes that can identify, assess, and develop technology-based opportunities (or protect from new technology threats). The systems and processes should be able to sense what is coming.
2. Identify communication needs and efficiently turn data into information so that the right information can be available to make the best decision in a timely fashion. The current interest in big data and what it can tell firms is tied to the notion that we have a lot of bytes of data available because of computer technology that is not being used effectively or efficiently.
3. Develop employees through training and learning opportunities. This becomes more critical as the competitive environment for the organization becomes more dynamic. The management of technology and innovation requires that all levels of the organization are involved and that efforts are made to ensure that employees are allowed to enhance their skills for themselves and the organization. The more dynamic the environment, the more important skill enhancement is for the firm and the individual.
4. Use good change management processes to help the firm succeed in introducing newness into the organization.

## 2. Three Basic Types of Organizational Processes

There are three basic organizational processes—buying and partnering, developing newness within the firm, and entrepreneurially exploiting a space in the environment. The diagram below delineates the three types. Buying and partnering includes mergers and acquisitions, joint ventures, contractual agreements, and other forms of acquiring technology/innovation from external sources. Internal sources of new technology/innovation for the organization include research and development of new products as well as reconfiguring or developing new processes, or ways of doing things. This can be organization structure or redesigning an assembly line. Adding robotics to a manufacturing process may be an internally driven process, or a firm may buy a robotics manufacturer to acquire the capability to add robotics to the assembly process.



Creating new technologies/innovations involves exploiting a space in the environment through entrepreneurial or new business development activities.



DID YOU KNOW

Michael Dell started Dell in his dormitory room at University of Texas. He wanted a better computer than he could buy, so he bought parts and assembled his own. Friends asked him to build one for them. He realized there was an innovative process of customizing computers and delivering directly from the manufacturer to the customer. Michael Dell's exploitation of the custom-built, direct manufacturer-to-customer delivery led to a multibillion dollar business.

The following table lists the advantages and disadvantages of each of the technology/innovation creation methods.

Method	Advantages	Disadvantages
<p>External Processes:</p> <p>M&amp;A, joint ventures, contractual relationships, cross-organizational projects, informal relationships</p>	<ol style="list-style-type: none"> <li>1. Quicker</li> <li>2. Blending rather than discovering</li> <li>3. Often less costly</li> </ol>	<ol style="list-style-type: none"> <li>1. Requires bringing different firm cultures together</li> <li>2. Often leads to perception of winners and losers</li> <li>3. Not-invented-here syndrome</li> </ol>
Internal Processes: R&D	<ol style="list-style-type: none"> <li>1. Clear ownership of the technology/innovation</li> <li>2. Legal protections may be stronger</li> </ol>	<ol style="list-style-type: none"> <li>1. Often takes longer</li> <li>2. Key personnel may leave at a critical time</li> <li>3. Can be very costly</li> </ol>
New Business/Entrepreneurship	<ol style="list-style-type: none"> <li>1. Usually more agile and flexible in the marketplace</li> <li>2. Dedicated leadership—it is their “baby”</li> </ol>	<ol style="list-style-type: none"> <li>1. Highest risk factor</li> <li>2. Lack of skills within the firm to do things besides innovation</li> <li>3. Usually have very little slack</li> </ol>



#### REFLECT

1. How do managers develop technology and innovation?
2. What are the advantages and disadvantages of each creation method?



#### SUMMARY

In this lesson, you learned about the ways organizations develop technology and innovation. You learned that there are four **organization-level activities** a firm should perform to develop a successful management of technology and innovation strategy: design systems and processes that can identify, assess, and develop technology-based opportunities; identify communication needs and efficiently turn data into information; develop employees through training and learning opportunities; and use good change management processes. You also learned about the **three basic types of organizational processes**, which are buying and partnering, developing newness within the firm, and

entrepreneurially exploiting a space in the environment.

Best of luck in your learning!

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

## REFERENCES

Teece D., Peterar M., Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California Management Review*. 58(4), 3-35.