

# **Chapter 4 – Technology Acquisition**

# Technology Acquisitions

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# Introduction

- **By its nature, technology acquisition is a technology transfer, with transaction costs associated with the various stages of the acquisition process.**
- **Technology can be acquired in a number of ways like**
  - **Internal research and development**
  - **Joint ventures, subcontracting, alliances, joint R&D and industry-university collaboration**
  - **Organizational change**
  - **Project management**
  - **Licensing**
  - **Technology transfer**
  - **Technology Insertion**

# **Technology Acquisitions**

**In its most simple form, technology acquisition requires:**

**Identification of attractive technologies or partners with technological capabilities;**

**Assessment of these opportunities, selection of the most promising ones and consideration of the terms of the acquisition;**

**Negotiation of the terms of acquisition between acquirers and sellers;**

**Transfer of the technology to the acquirer, if these negotiations have been successful.**

# **Acquisition Context**

**A structured approach will help to reduce the complexity of all the possible scenarios and ensure that those involved remain objective and focused on the most important questions.**

**Why do we want to acquire the technology?**

**How mature is the technology and how might this affect our acquisition options?**

**Who are we going to acquire the technology from?**

# Acquisition Context (Cont.)

*Why do we want to acquire the technology?*

**Organization's motives for wanting to acquire a technology affects the kind of technology they are looking for. These motive may be of four types:**

**M1: Developing new technological capabilities**

**M2: Increasing strategic options**

**M3: Gaining efficiency improvements**

**M4: Responding to the competitive environment.**

# **M1: Develop Technological Capabilities**

**Is acquisition sought to:**

**Overcome technology exhaustion?**

**Fill holes in an existing product line?**

**Create and establish a new product for the firm?**

**Fill gaps in firm's own R&D base or capabilities?**



# **M2: Increase Strategic Options**

**Is acquisition seen as:**

**Away of overcoming internal technological constraints in order to enhance strategic flexibility?**

**A means to access the best available technology in the future?**

**An opportunity to increase capabilities in light of changes in the firm's environment?**

# **Gain efficiency Improvements**

**Is the acquisition seen as a means to:**

**Reduce costs?**

**Reduce development time?**

**Increase customer interest (particularly in periods of rapidly changing demand)?**

# **Respond to the Competitive Environment**

**Is acquisition important because:**

**Environments are more hostile?**

**Technology markets are emerging?**

**There is rapid technological change?**

**There are fast-moving competitors in the market  
area?**

# *Who are we going to acquire the technology from?*

**Technology can be acquired from a number of different kinds of sources including private companies, universities and government agencies.**

## **Potential Partners**

**Universities**

**Start-up companies**

**Consortia**

**It is very important to understand the characteristics of your potential partner(s) as these will determine their expectations and behaviour during collaborations.**

*How mature is the technology and how  
might this affect our acquisition  
options?*

**The maturity level – and the amount of work  
needed to bring it up to the level your firm  
requires – are obviously highly significant  
factors to consider in the context of any  
acquisition.**

**How to Measure Technology Maturity Levels?**

# STAM (Science, Technology, Application, Market) Model.

- **Science (S):** Development of understanding of scientific phenomena (and/or underpinning technology platform)
- **Science/Technology transition (S/T ):** Demonstrating the feasibility of a scientific phenomenon (and/or underpinning technology) to support a new market-directed technology platform, showing the feasibility of the supporting science and technology to be integrated into an application-specific functional technology system.
- **Technology (T)** Technology emergence. Improving the reliability and performance of the market-directed technology to a point where it can be demonstrated in a market-specific environment.
- **Technology/Application transition ( T/A ):** Developing the technology and application to a point where commercial potential can be demonstrated through revenue generation.
- **Application (A ):** Improving the price and performance of the application to a point where sustainable business potential can be demonstrated.
- **Application/Market transition (A/M ):** Translating price-performance demonstrators into a market with mass growth potential.
- **M= Market** Marketing, commercial and business development leading to sustainable industrial growth.

# Useful questions to ask

**What types of organizations could be considered as a source for the technology?**

**What are their key characteristics?**

**What are their motivations in selling/giving the technology to us?**

**What alternative partnering options could we consider?**

**What degree of maturity characterizes the technology currently?**

**What degree of maturity will the technology have at the end of the acquisition?**

# Acquisition Evaluation

**Once the technology is identified you need to thoroughly assess whether the proposed acquisition is likely to meet your needs. Three main factors:**

**Your company's ability to absorb and use the technology**

**Compatibility of you and your potential partner**

**Suitability of the technology for your needs**



# A Firm's Absorptive Capacity

- Its level of technical knowledge concerning the technology to be acquired.
- Its level of experience in acquiring technology and its own R&D capabilities.
- Its stock of intellectual property (IP) relating to the technology to be acquired.
- Its willingness to accept new ideas and technologies from outside the organization.
- The 'not-invented-here' (NIH) syndrome is a risk for acquisitions when external ideas and technologies are rejected by in-house engineers and managers.
- Its flexibility in adopting new routines.
- Internal support.
- Sharing knowledge with external partners.
- Applying acquired technology in new products.
- Exploitation of the technology.

# Partners: how compatible are those involved?

- **A shared strategic vision on alliance aims.** Do the partners understand each others motives and what they stand to gain from the transaction?
- **Compatible alliance and corporate strategies.** Will the alliance work in ways compatible with the needs of those involved?
- **Shared view of the strategic importance of the alliance.** Is the alliance equally important to the partners?
- **Mutual dependence.** Are the partners mutually dependent on each other for the alliance to succeed?
- **Potential for the alliance to add value for clients or partners.** Will the alliance meet the needs and expectations of other stakeholders?
- **Market acceptance of the alliance.** Will customers, competitors or government bodies see the partnership in a positive light?
- **Technical capability.** Does the potential partner have the necessary technical capability to make the partnership a success?

# Technology: is it suitable?

- Does the acquisition meets set objectives?
- Potential commercial value?
- Uncertainties surrounding the transaction
- Intellectual Property
- Know-how: the skills of employees and the ability to make use of these skills.
- Know-what: specific technical and market knowledge relating to the technology, including technical details, procedures, manuals.
- Know-who: the knowledge and understanding of technically expert contacts and organizations along the supply chain who can make the technology work.

# Acquisition Options

- **Future technology development**
- **Contracts and relationships**
- **Ownership of intellectual property (IP)**
- **Technology exploitation**
- **Rights to use a technology**
- **Exchange 'currency'**
- **IP protection**

# **Future Technology Development**

- **Internal development**
- **Outsourcing R&D**
- **Co-development**
- **External development**
- **Technology licensing & transfer**
- **Technology purchasing**

# Future Technology Development

- **Contracts and relationships**
- **Contractual options**
- **Contractual relationships**
  - **joint venture or merger/acquisition**
  - **short-term contracts for R&D services**
  - **Corporate Venture Capital**

# IP Protection Clauses

- *Parties changing their minds*
- *Lack of good faith*
- *Underperformance*
- *Knowledge leakage*
- *Third parties' rights*
- *Procrastination and delays in reaching agreements*

# **Ownership of Intellectual Property**

**Ownership can take one of three different forms:**

**Individual Ownership:** The IP can belong to one party only

**Joint Ownership:** The IP can be shared between the parties who collaborated to develop it.

**Public Ownership:** The IP can be owned by everyone and is donated to the public. In this case nobody has the legal right to exclude others from using the IP.