MANAGEMENT OF TECHNOLOGY

TECHNOLOGY LIFECYCLE

by

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Chapter Outline

- Introduction
- Technology Life Cycle
- S-Curve
- Market Growth
- Product Life Cycle
- Multiple-Generation Technologies
- Technology and Market Interaction
- Diffusion of Technology

Lesson Outcome

- Understand the context of technology life cycle
- Explain the importance of technology life cycle for organization planning and strategic analysis
- Know the process of technology diffusion

Introduction

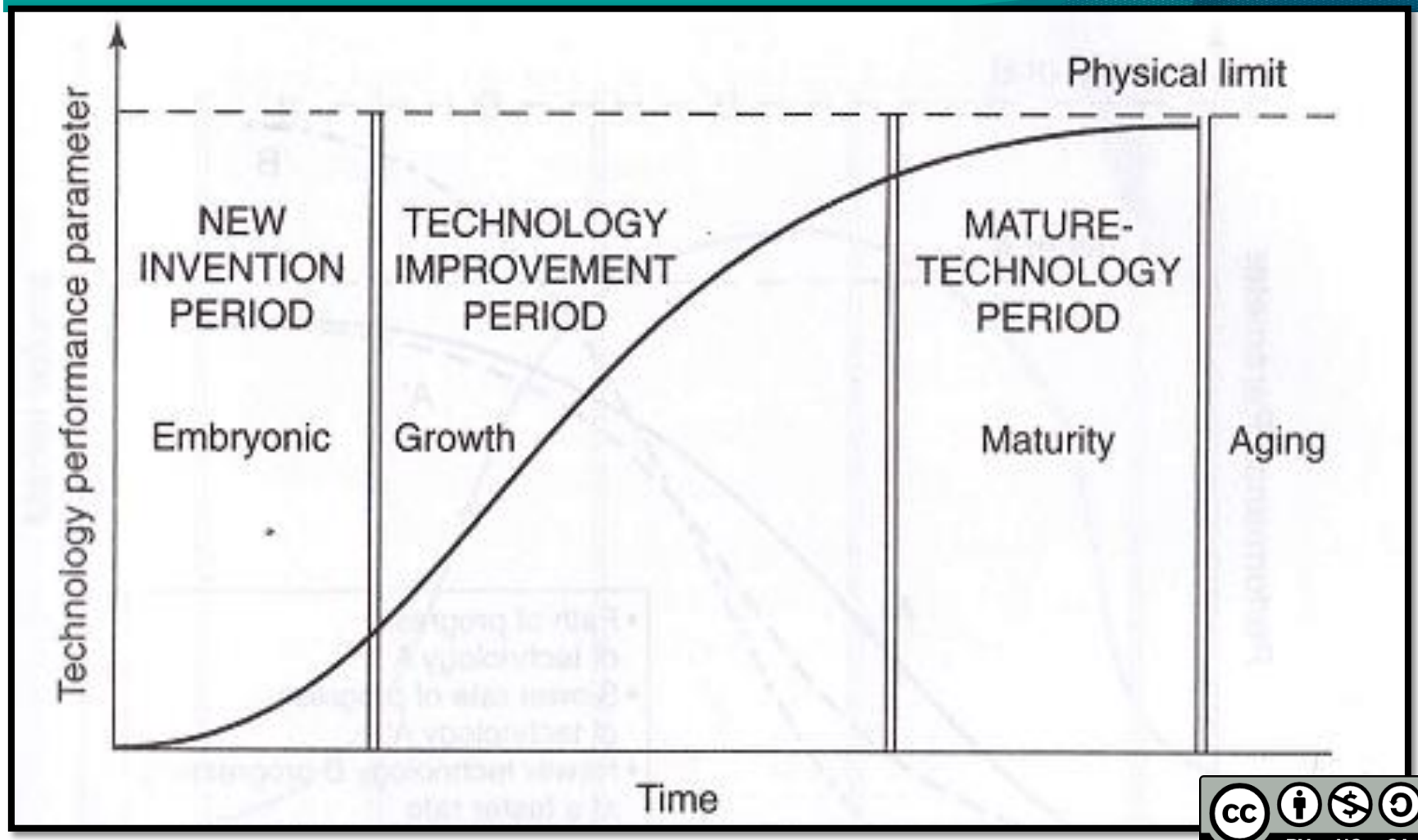
S- Curve : performance of a technology progress

- Utilized to plan strategically
- If not followed, high cost in the planning stage
- Very useful to forecast their technology

Stages in Technology Life Cycle

3-Stages	4-Phases	6-Phases
Embryonic	Innovation	Technology Development Phase
	Syndication	Application Launch Phase
Growth	Diffusion Stage	Application Growth Phase
Maturity	Substitution	Mature-Technology Phase
		Technology Substitution Phase
		Technology Obsolescence Phase

Technology Life Cycle : S-Curve



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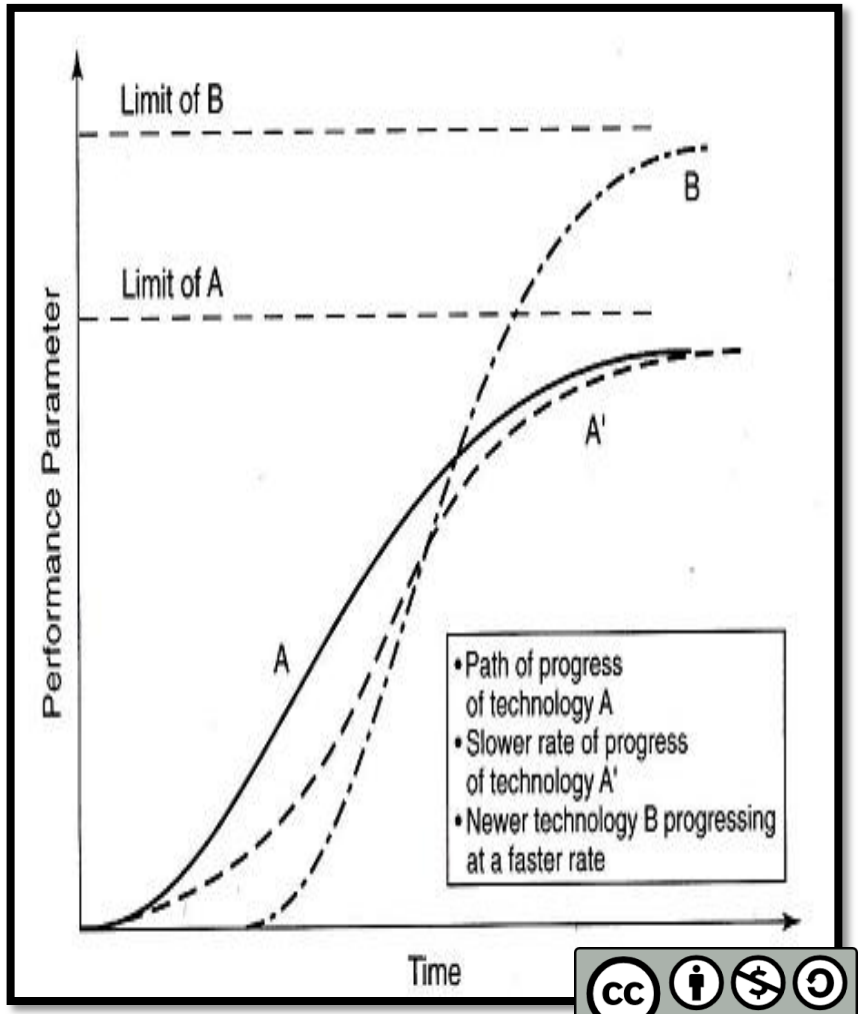
Technology Life Cycle : S-Curve

The progress is dependent on:

-The type of technology
-The time and cost to develop the technology



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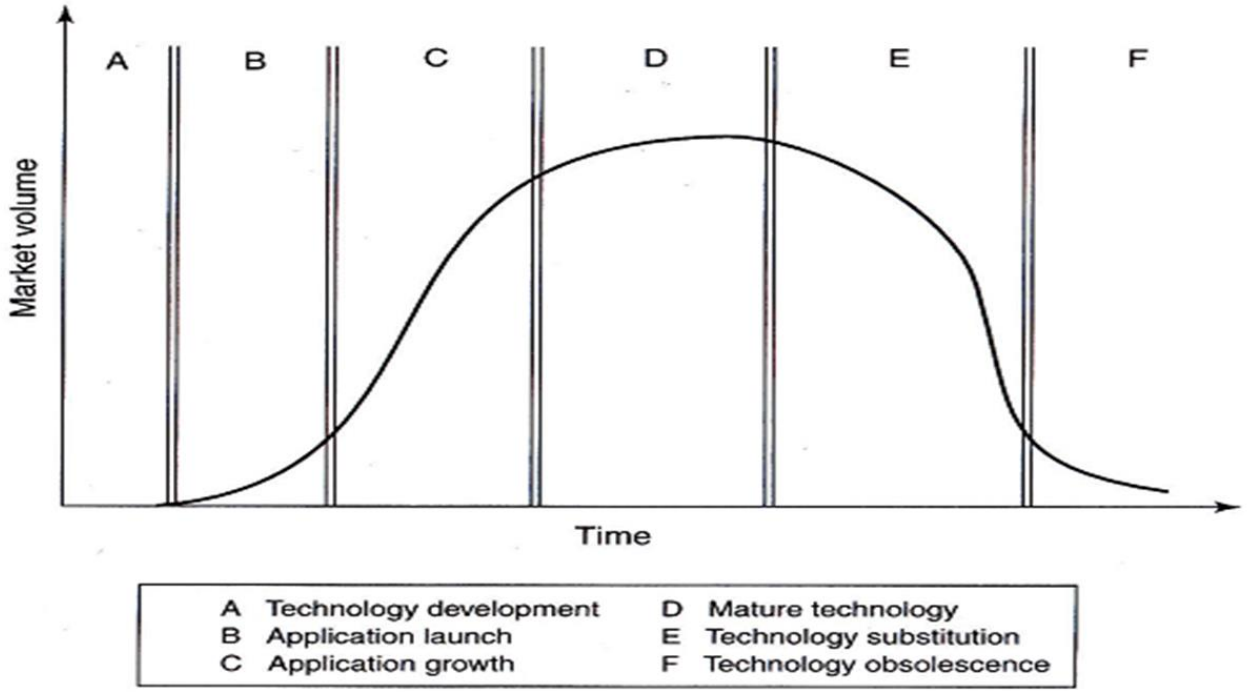
TLC & Market Growth

Income will be generated when the technology reaches the market



Market Growth at Different Stages of the Technology Life Cycle

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What is MARKET?

The Market is seen as a group of customers, who actually or potentially, have similar interest in the product and they have interactions with each other which cause influences on their decisions (Geoffrey Moore, 2002).

TLC & Market Growth

1. Technology Development

The technology is not recognized by the market

High cost and so much effort for technology creation, prototype development, and testing.

2. Application Launch

- grows slowly then rapidly

3. Application Growth

- to penetrate the market, it depends on the innovation rate and the demands of the market

TLC & Market Growth

4. Mature technology

Slowly growing until it matures

Volume of market will reach its peak and then starts to drop

5. Technology Substitution

Old technology that is used will have a fall in the market

6. Technology Obsolescence

Value is null

Product Life Cycle

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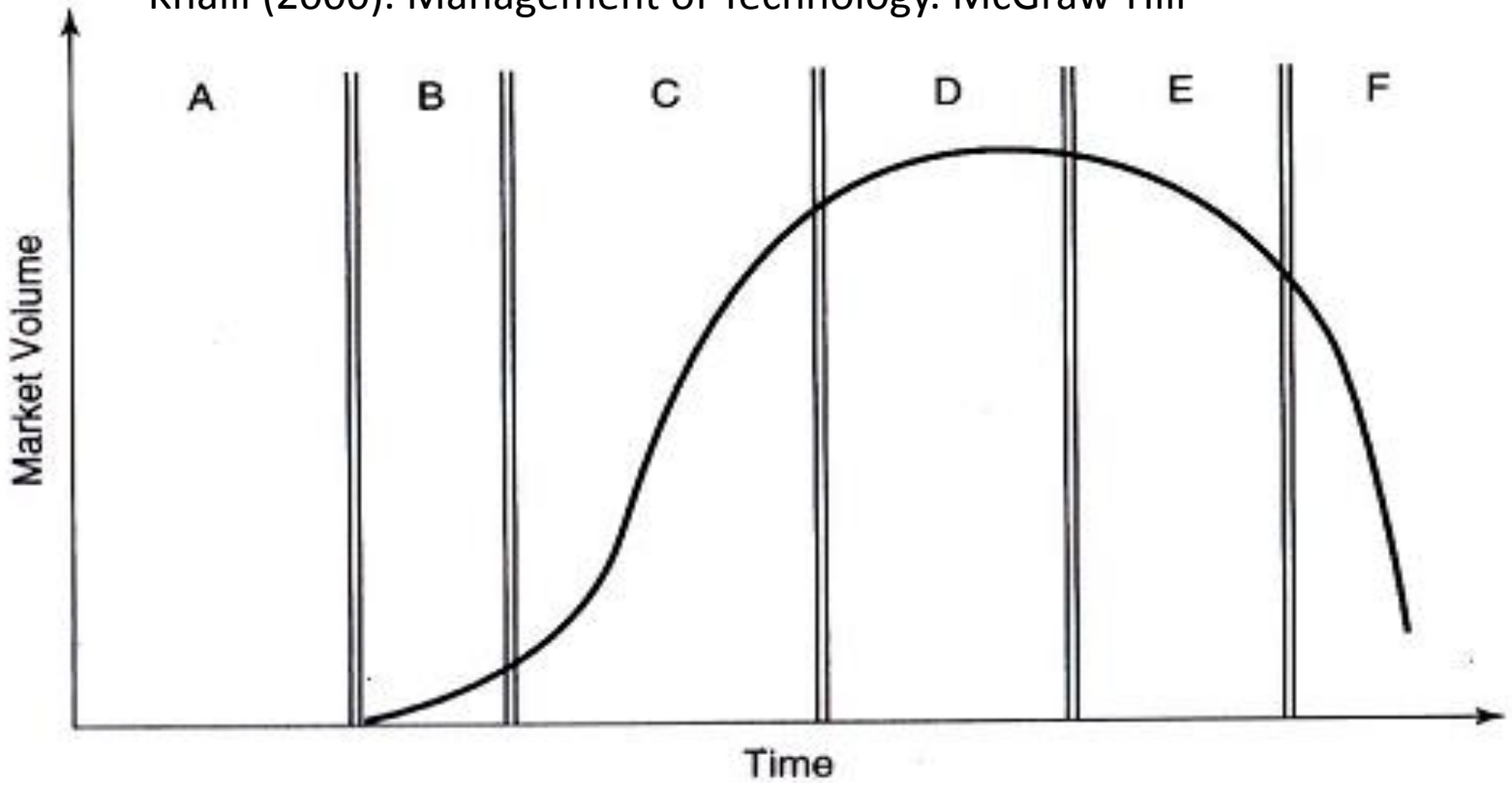

A : Concept Design Prototype
B : Product Launch
C : Product Growth
D : Mature Stage
E : Substitution Products
F : Product Obsolescence

TLC with Process Innovations

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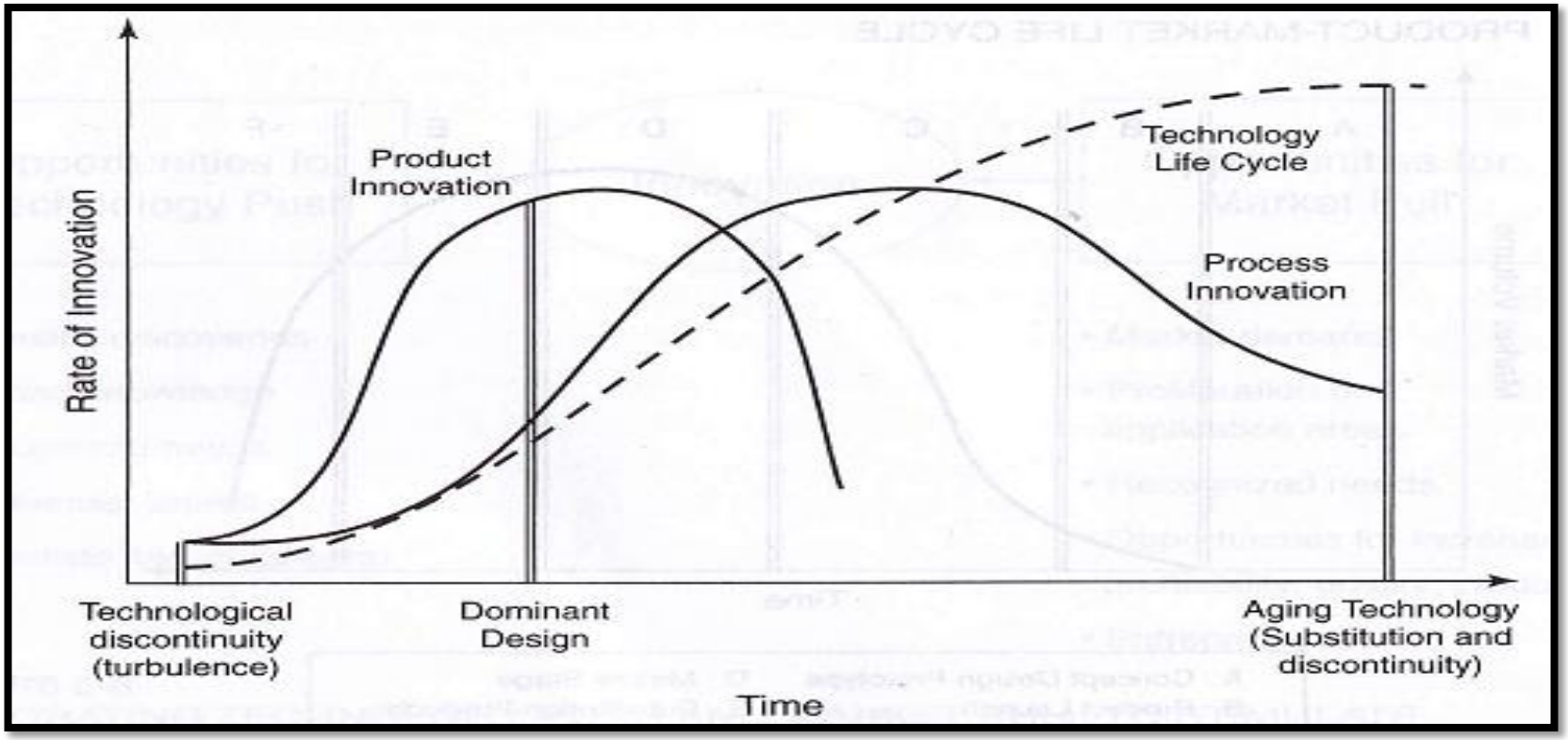
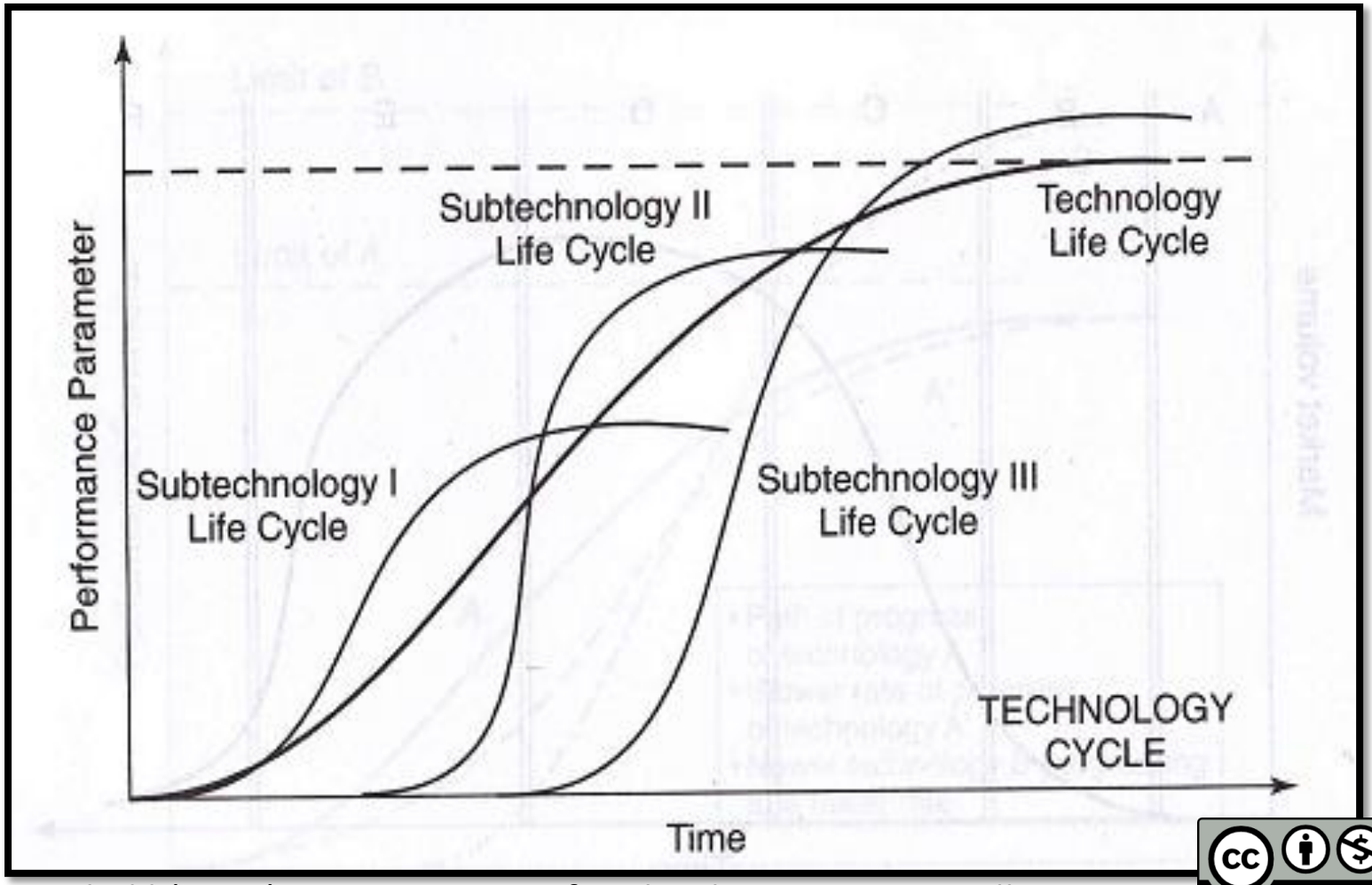


New products emerges in the embryonic phase of a technology and many product innovations occur.

As the rate of innovation reaches its peak and starts to decline, a dominant product design emerges and the industry standard is defined accordingly.

Multiple-Generation Technologies



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Technology and Market Interaction

Science-Technology Push

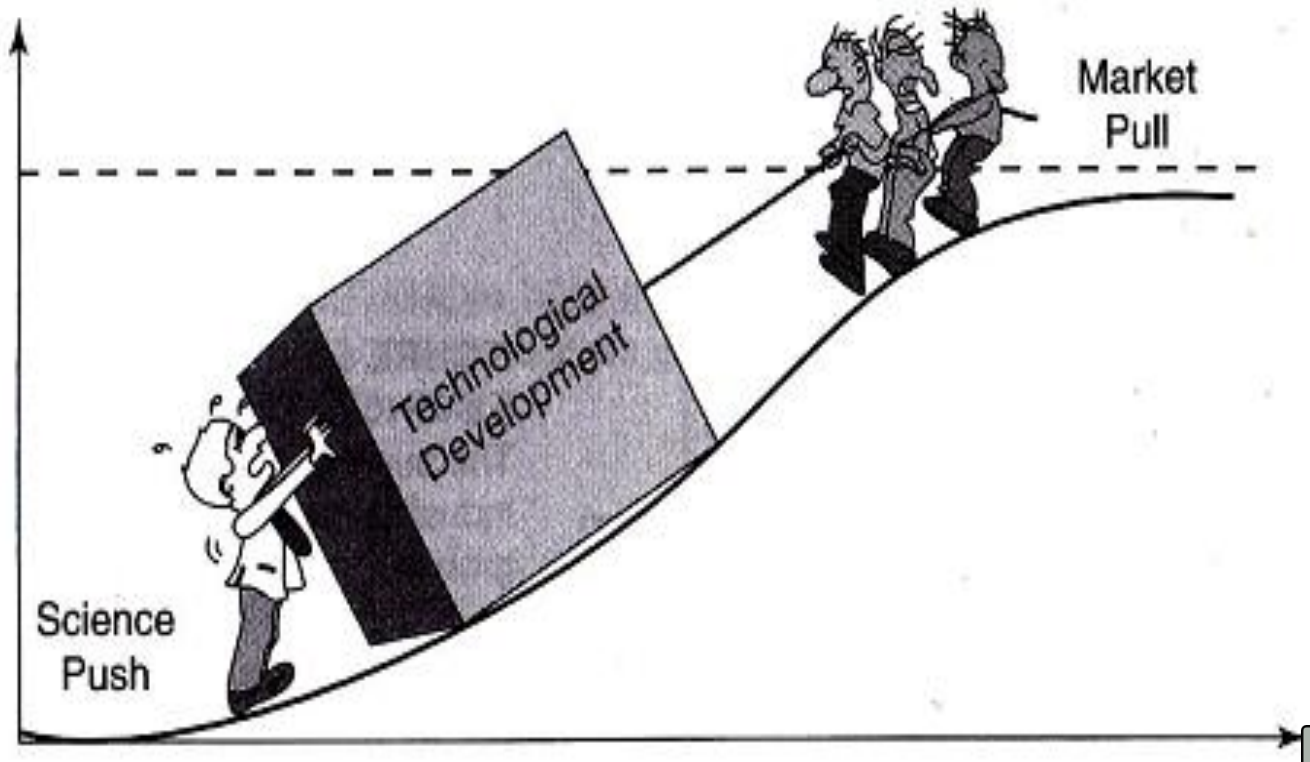
- Science→ Technology → markets
- Markets are changed
- Growing economy

Market Pull

- Demand by customers
- Innovation are incremental, improve existing tech
- Effect as total - productivity

Technology and Market Interaction

Combined Effect of Technology Push and Market Pull



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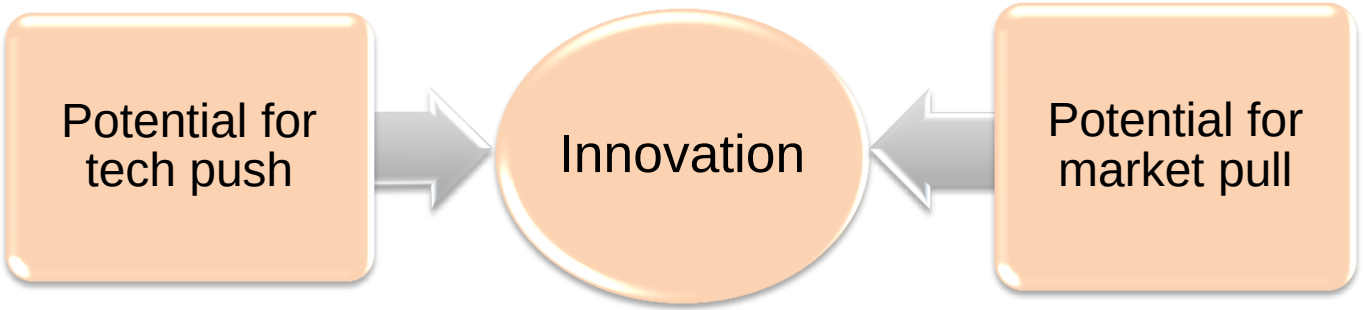
Technology and Market Interaction



- Science
- Knowledge that is applied
- Intellectual capital from engineers and scientists

- Demand from customers
- Search for the needs
- Chances to gain profit, quality and productivity
- Entrepreneurs

Diffusion Of Technology

- *Diffusion* is the process by which an innovation is communicated over time through certain channels to members of a social system [Rogers, 1995]
- Rate of adoption of an innovation by members of a social system is dependent on the degree to which the innovation:

a) More benefits than the current practice
b) Fits the needs of the customers
c) Hard to be applied and sophisticated
d) Can be used first before the tech is being adopted
e) Tangible and the results can be acknowledged by the potential adopters

The Diffusion-Communication-Channel Relationship

Channels of communications;

- WOM

In the early phase – increase number of users

Second half – number of users dropped

- Mass Media

Early stage- great

Throughout the process - continuous

Summary

Technology Life cycles are essential tools for technology planning at the corporate level as well as industrial level.

But the tools can never provide answers.

They aid decision makers in reaching the right conclusions

Credit to:

Tarek M.Khalil

Ahmad Nazif Kamar