

MANAGEMENT OF TECHNOLOGY

TECHNOLOGY TRANSFER

by

Puteri Fadzline bt Muhamad Tamyaz
Faculty of Industrial Management
fadzline@ump.edu.my

Chapter Outline

- Definition
- Classification & Categories
- Significance
- Elements of Transfer Process
- Package
- Modes of Transfer
- Channels of Technology Flow
- Effective Technology Transfer
- Pricing of Technology Transfer
- Summary



Lesson Outcome

- Explain the concept & significance of technology transfer
- Identify the different types of technology transfer
- Describe the modes of transfer



Definition of TT

- New knowledge is transferred from one entity to another
- Once the technical knowledge is put to use, it will be considered as technology transfer
- When there is a buyer and seller of tech, there will be tech transfer
- This process involves manufacturing, marketing, distribution and customer service.
- Buyer : the recipient of the tech
- Seller : the owner of the tech



Classification

1. Horizontal

A transition from one company to another of different countries

2. Vertical

- Transition of tech from an R&D company to another company
- Usually in the same country
- Technologies are brand new
- Focus on commercialization



Categories

1. International Technology Transfer

- Transfer is across national boundaries
Eg. : industrialized to developing countries

2. Regional Technology Transfer

Transferred from one state of the country to another
Eg.: Florida to Alaska

3. Cross-Industry / Cross-Sector Technology Transfer

Transition from any sector to another
Eg.: From army to automobile



Categories

4. Inter-firm Technology Transfer

A transition from one company to another

Eg.: A transition of CAD expertise and its machines from a production firm to a furniture firm

5. Intra-firm Technology Transfer

A transition from one department to another

Can be at the same location

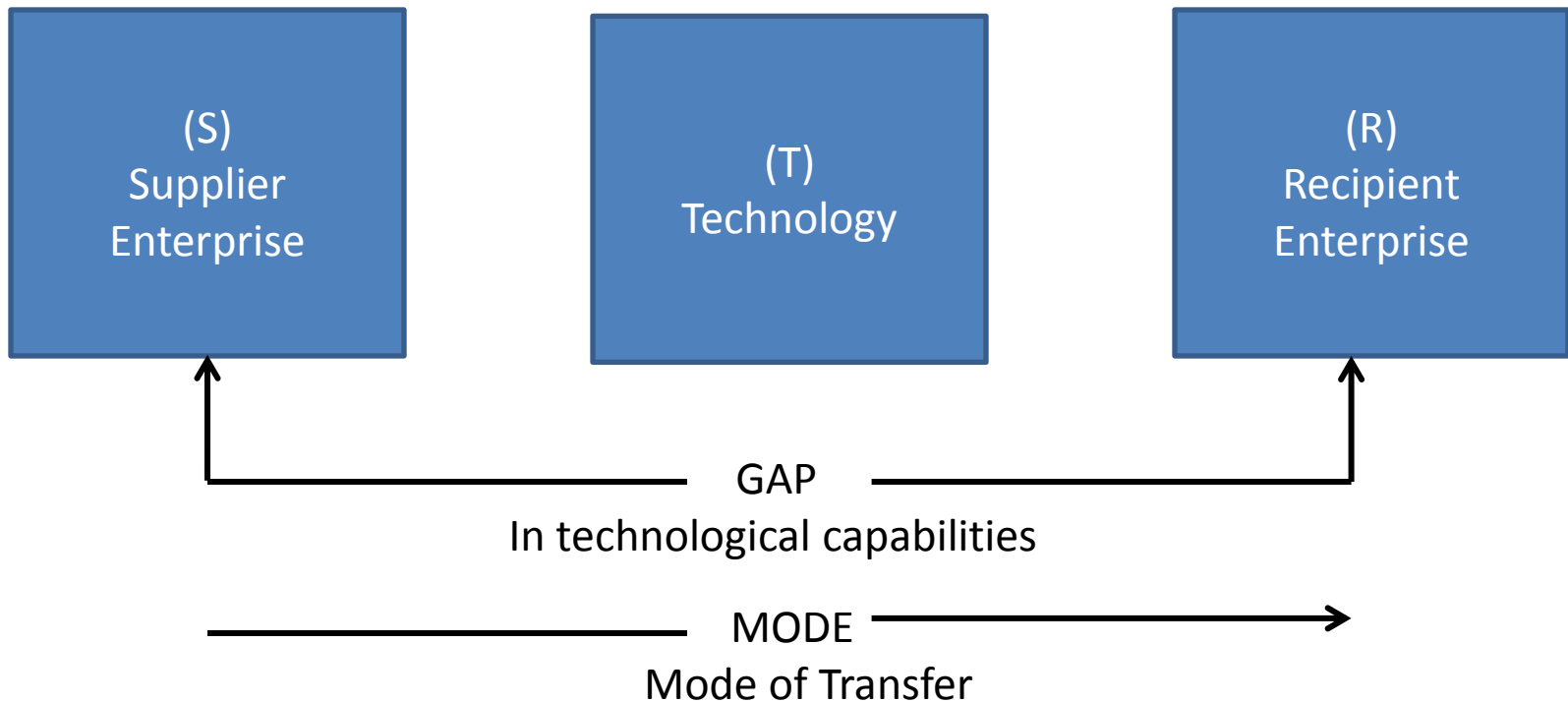


Significance

Buyer/Recipient	Seller
As a solution to someone else's problem	Provides return on investment made on technology development
Avoiding 'reinventing the wheel'	Builds the image of technopreneur
Helps the firm catch up with latest technological and market trends	Encourages the innovators to find new areas of application of the technology



Technology Transfer Model



Elements of Transfer Process

1. Seller capabilities and motivations
2. Buyer
3. Technology gap
4. Technology package
5. Bridging agencies
6. Operational environment
7. Mode of transfer
8. Channels of Transfer
9. Price



Elements of Transfer Process:

Seller capabilities & motivations

- The technology package is easy to be transferred
- The ROI and appropriate mode is a BIG motivation
- The tech being transferred is no longer used



Elements of Transfer Process: Buyer

- Able to absorb from the seller
- How it absorbs is dependent on its resources, technical, managerial skills, financial strength.

Why buyers purchase?

- No need to invest on any R&D;
- Can instantly use the tech
- Less risk in technical



Elements of Transfer Process: Technology Gap

- Developed countries are usually the seller
- They have matured tech which can be transferred to the developing countries



Elements of Transfer Process: Technology Package

- Technology package represents an integration of publication, assisting technicality and training
- 4 elements – product design, production technique, service facilities and management systems

Elements	Description
1 Design of a product	Items can be simple to complex Automotive parts
	Special equipment designs Heat exchangers, pressure vessels, bearing heating elements
	Standardization of major machine components Gear boxes, machine tools, die casting



Elements of Transfer Process: Technology Package

Elements	Description
2 Production Techniques	Material standards and specifications, Manufacturing processing procedures, welding techniques, material substitutes
3 Service Facilities	Material testing, heat treatment, instrument calibration Engineering standards and quality control procedures
4 Management Systems	System in the management Plant design and layout, quality control and testing, material procurement, inventory control, equipment maintenance and repair and machine loading techniques



Elements of Transfer Process: Bridging Agencies

Such as:

- Government agencies
- Banks
- Agencies that deal with tech transfer
- Consultants
- R&D companies

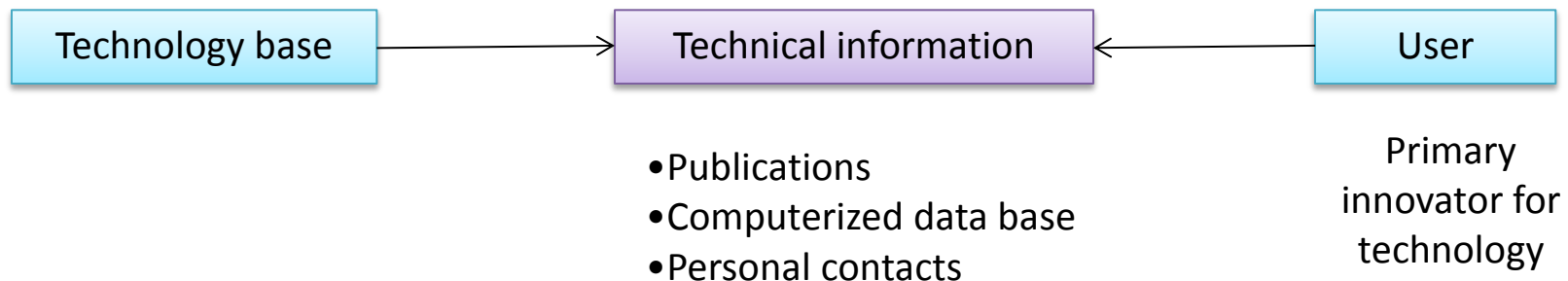


Elements of Transfer Process: Mode of Transfer

Passive Mode

Also called dissemination mode; published literature is used as form of technology transfer

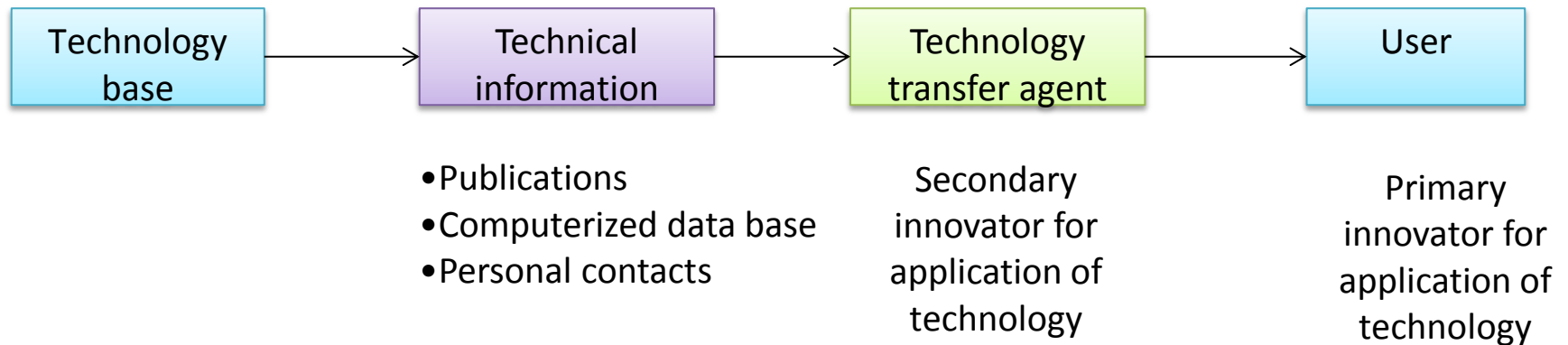
Owner of the tech does not communicate with the buyer



Elements of Transfer Process: Mode of Transfer

Semi-Active Mode

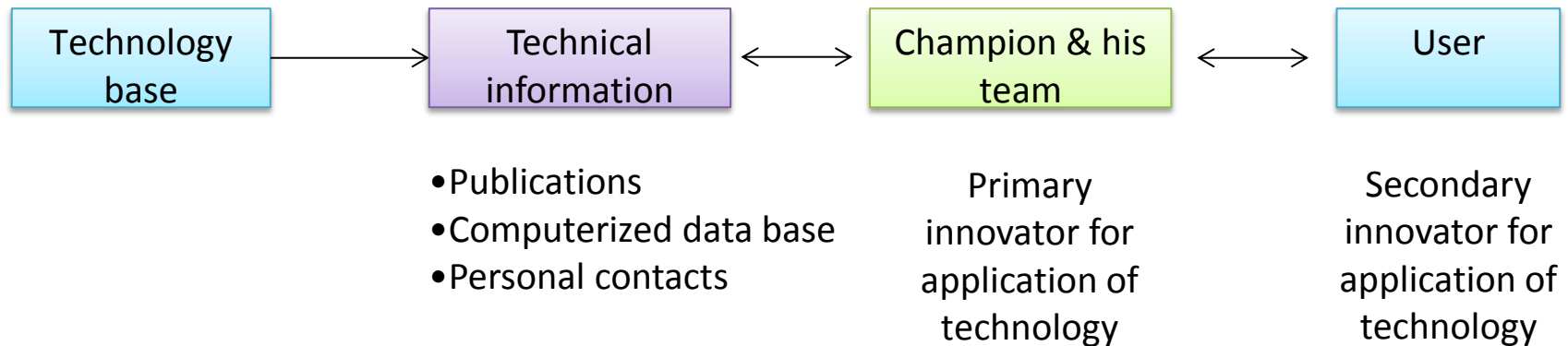
The role of the agent is somewhat limited – participate but not actively



Elements of Transfer Process: Mode of Transfer

The Active Mode

- Gives assistance through demonstration
- Full assistance by the agent to the buyer



Elements of Transfer Process:

Channels of Technology Transfer

General Channels

- The seller is not involved in the process
- The information can be easily found in the public
- Can be applied according to their objectives
- This is usually through training, publications, conferences

Reverse-Engineering Channels

- No active contribution from a source
- duplication on purpose
- learnt the process through product development



Elements of Transfer Process: Channels of Technology Transfer

Planned Channels

With intention to get the approval from the seller
Agreements:

- Suppliers
- Licensing
- Franchise
- Joint Venture
- Turnkey Project
- Foreign Direct Investment (FDI)



Elements of Transfer Process: Pricing

- **Lump Sum Payment**
- **Fees**
 - The reward for technical and managerial expertise provided by the supplier
 - Technical fee – training, set-up R&D
 - Management fee
- **Royalties**



Summary

- Technological forecasting helps managers in improving decision making, by providing knowledge of future changes and provides basis for planning
- Depends on the duration, tech nature, the tech characteristics and the probability
- Forecasting has gained significance in this knowledge era and it continues to be an important function in technology management of organizations



Credit to:
Tarek M.Khalil
Ahmad Nazif Kamar