

به نام خدا



مدیریت انتقال تکنولوژی

سیستم ملی نوآوری و ساختار و توان صنعتی کشور برای جذب فناوری

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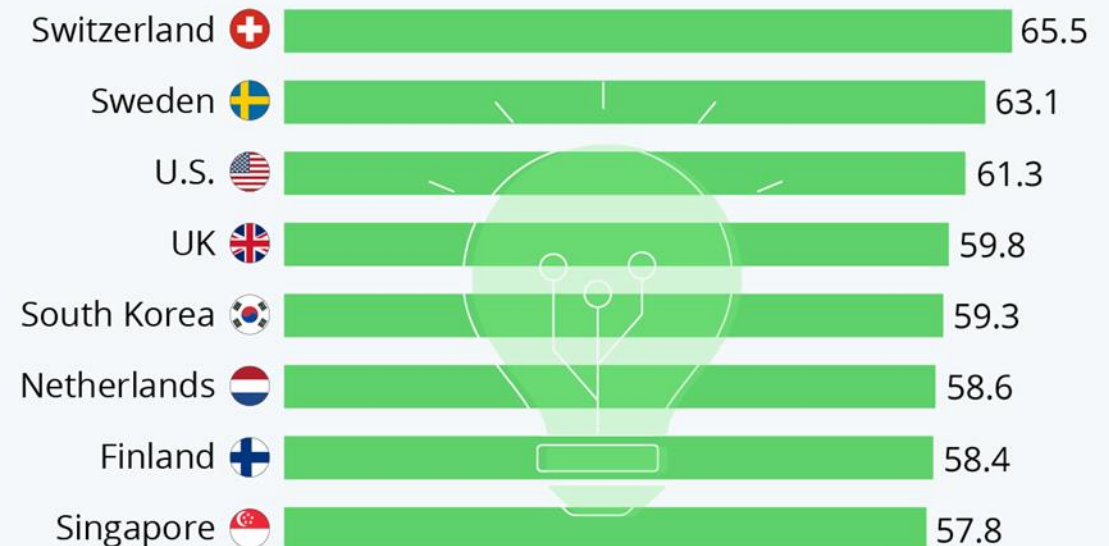
**Why some countries are better at
innovation than others**

Why some countries are better at innovation than others

- Innovation System
 - Industrial
 - Regional
 - National (NIS)
 - international
- Each country has particular National Innovation System (NIS) which can
 - either encourage innovation
 - or constrain innovation

The World's Most Innovative Countries

2021 ranking of the Global Innovation Index
(100 = most innovative)



Takes into account human capital, institutions, technology and creative output, market and business sophistication, among others

Source: World Intellectual Property Organization



The NIS is a broad concept which aims to achieve

a network of
institutions



in the private and
public sectors



whose activities
and interactions



results in
importing,
generating,
diffusing, changing
and developing
technologies.

The creation of NIS

can play an
important role

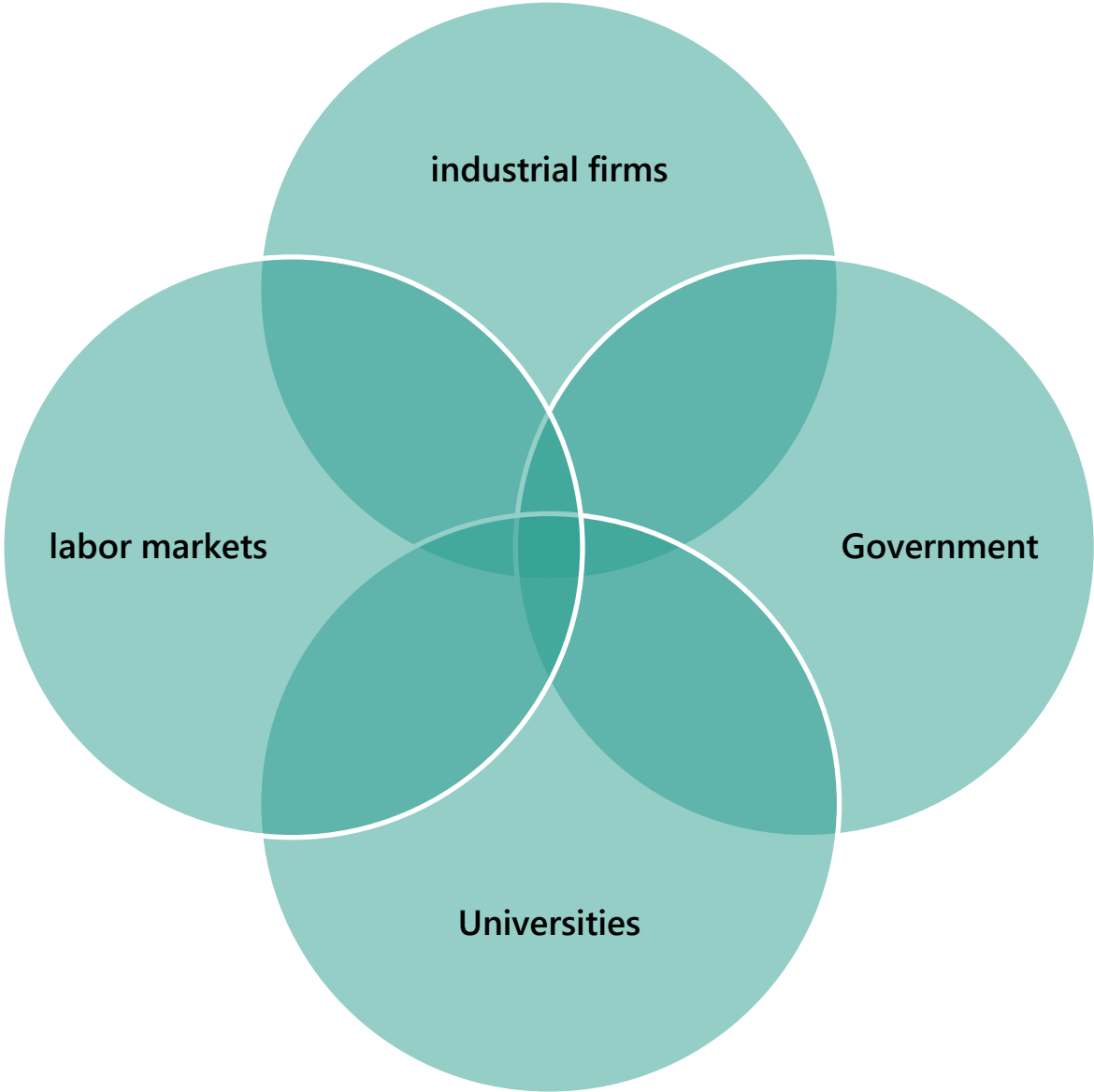


in the process of
technological
development

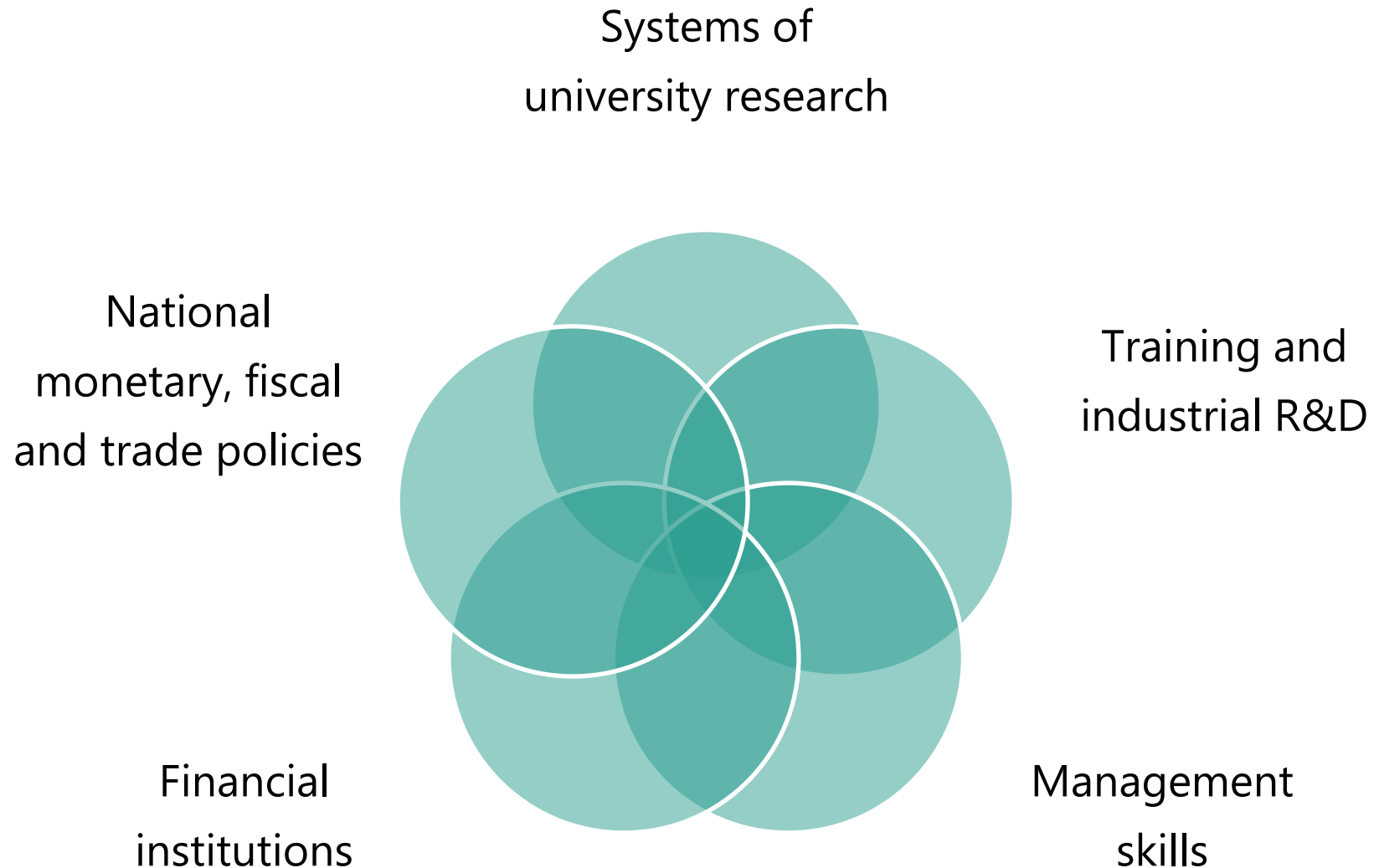


in developing
countries.

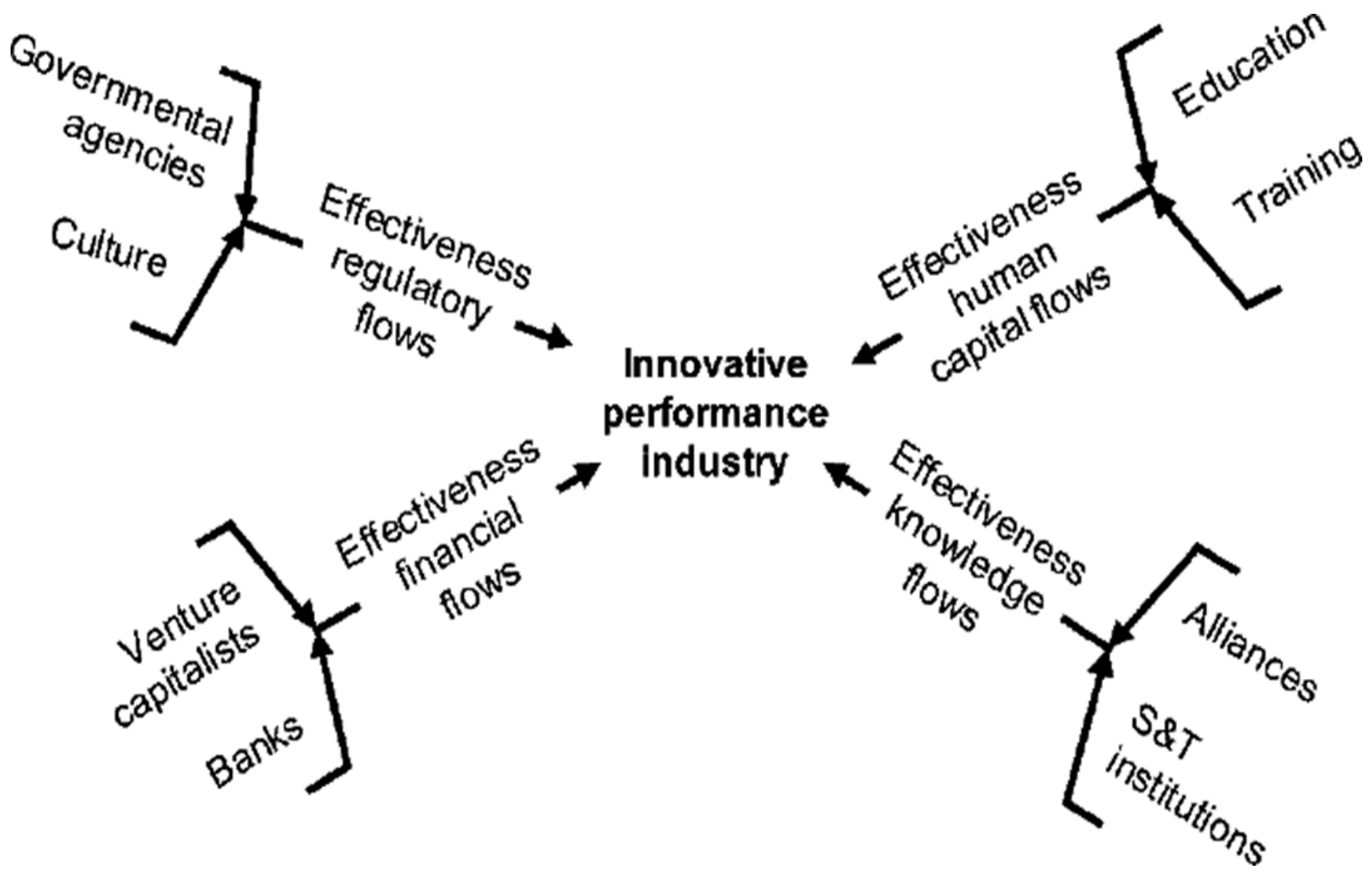
National innovation system include a set of interconnected players such as



differences between national innovation systems of 15 countries



Companies can be innovation, if they receive these flows from the environment.



How to improve the national innovation system

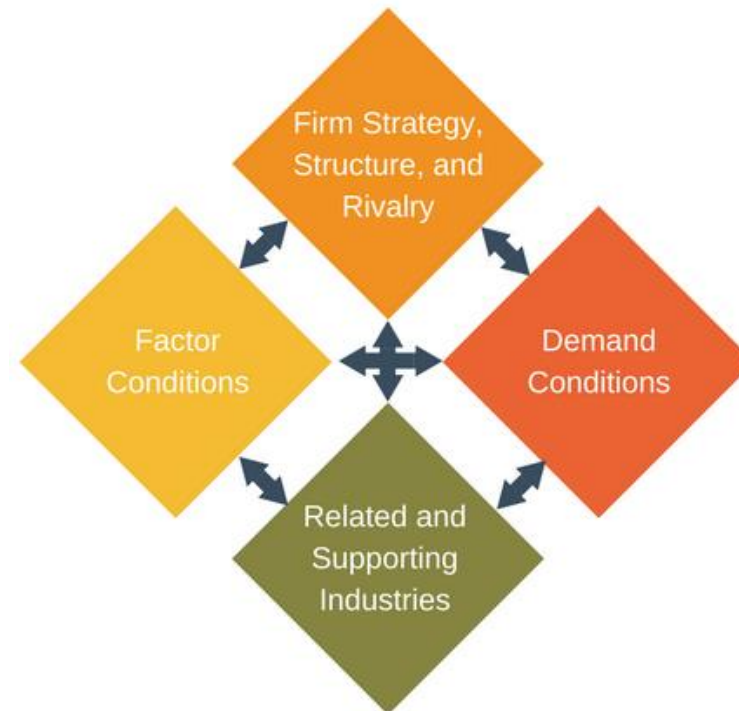
How to improve the national innovation system

we need the innovative
macro environment.

developing a shared vision is important between
industry, the research community and government.

Porters' Diamond Model

- The theory attempts to analyze
 - the reasons for a nation's success in a particular industry.
- Porter studied 100 industries in 10 nations. determinants of competitive advantage of a nation
 - Factor conditions
 - Demand conditions
 - Related and supporting industries
 - Firm strategy, structure and rivalry

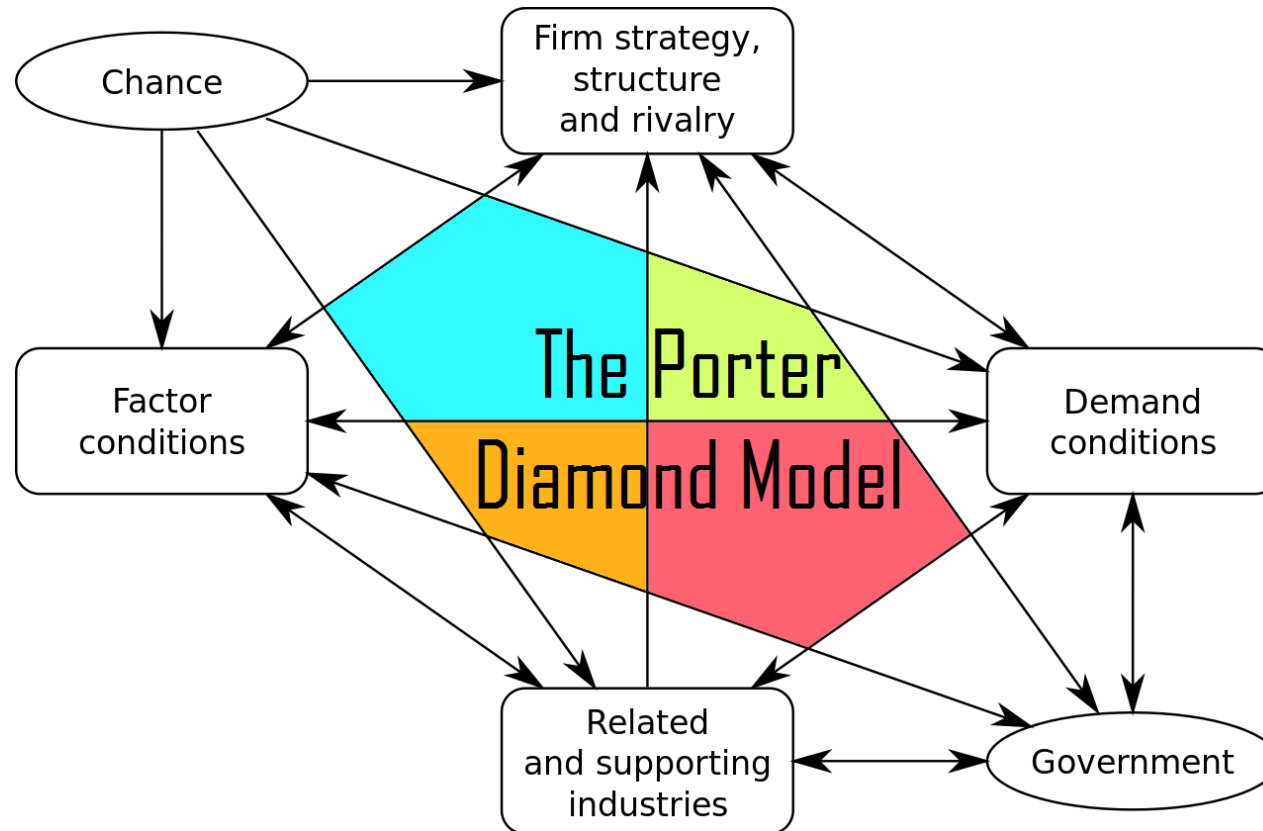


Porters' Diamond Model

Success occurs where these attributes exist.

More/greater the attribute, the higher chance of success.

The diamond is mutually reinforcing.



Factor conditions

Basic factors condition

skilled labor

Natural resources

Climate

Geographic location

Demographics

Advanced factors condition

Sophisticated infrastructure

Labor educated and trained in

Focused research institutions

Communications infrastructure

Technology Institutes

Education infrastructure

Factor conditions

While basic factors can provide an initial advantage

- they must be supported by advanced factors to maintain success.

If a country has no basic factors

- it must invest in advanced factors.

Demand conditions

Demand composition

- A nation's firms gain advantage if the needs of home buyers anticipate those of other nation.

Demand size and pattern of growth

- Large & rapidly-growing home demand

Degree of internationalization

- The more home demand is synchronized with international demand trends, the more it contributes to firms' competitiveness

Related and supporting industries

Creates clusters of supporting industries that are internationally competitive, such as:

Japanese machine tool producers drew on world class supplier of numerical control units, motors and other component.

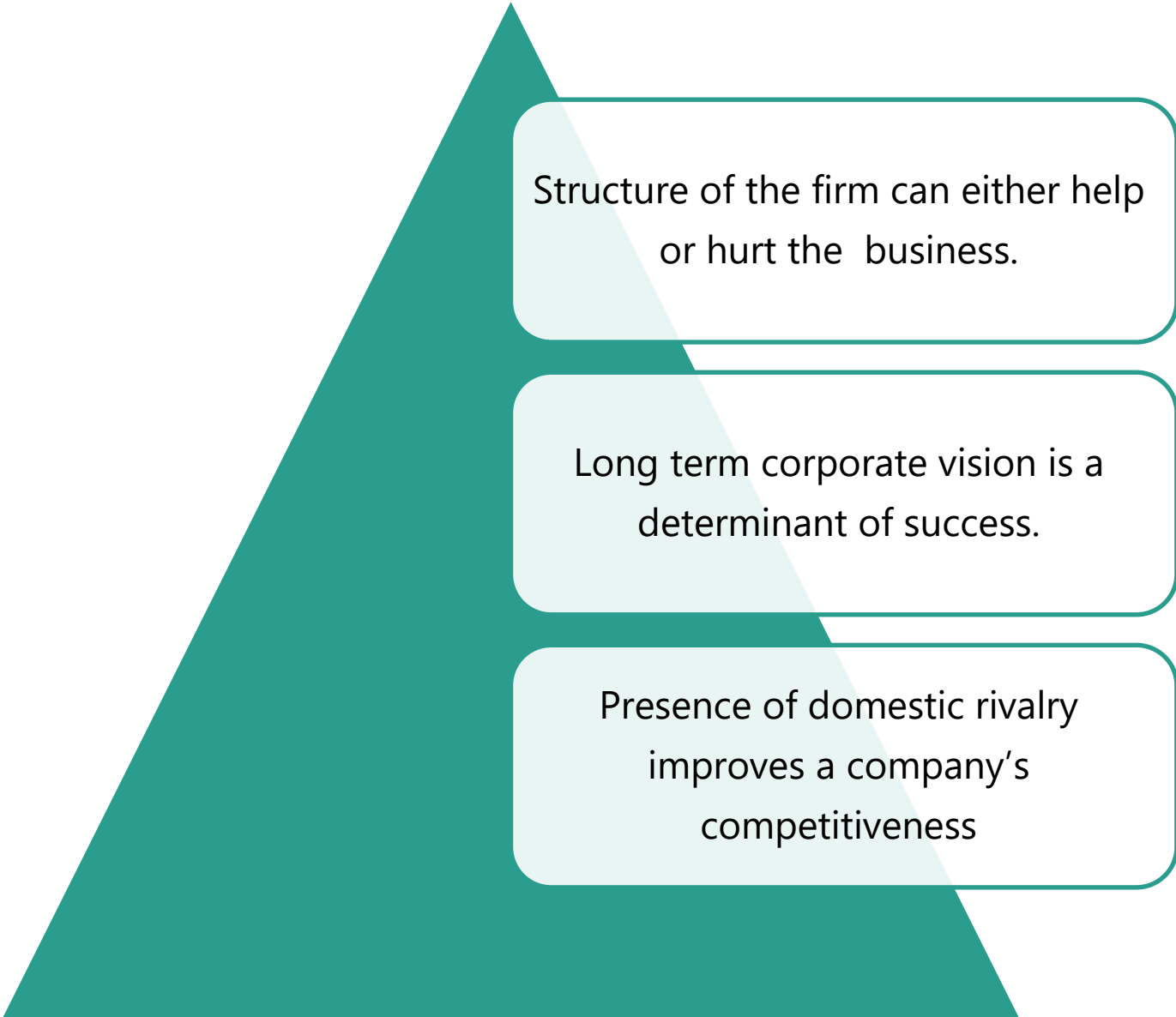
Competitive advantage in some supplier industries confers potential advantage on a nation's firm in many other industries

because they produce inputs that are widely used and important to innovation and commercialization.

International success in one industry can also pull through demand for complementary products or service (related industry).

E.g.: the sale of American computers abroad, has lead to overseas demand for American software

Firm strategy, structure and rivalry



Structure of the firm can either help or hurt the business.

Long term corporate vision is a determinant of success.

Presence of domestic rivalry improves a company's competitiveness

Chance & Government

- **Chance event are often largely outside the power of firm to influence. Such as:**
 - War
 - Oil shock
- **Chance events play their role partly by**
 - altering conditions in the diamond.
 - Major shifts in input costs or exchange rates.
- **Government can influence (can be influenced by)**
 - each of the four determinants either positively or negatively.

NIS of US

Key US industries

- spend more on R&D & Have distinctive management style

US government

- spent more R&D than in Europe, especially military

US university research

- heavily funded

European NIS

Less nationalism

Smaller industries & firms, more trade

Movement towards EU rather than UK

French and German systems

Slowly adopting US NIS model

NIS of China

The role of science sector in China's economic development process has become larger

double skin problem in China's innovation system has been gradually solved by a number of policy actions to facilitate science industry linkages.

In terms of science industry linkages by S&T outsourcing, the share of firms collaborating with science sector increases.

After China's accession to WTO in 2001, several actions to improve IPR (Intellectual Property Rights) system and enforcement mechanism have been taken.