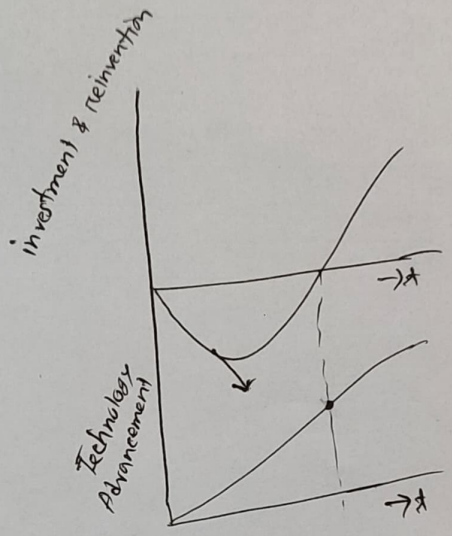
EEE 452 / L-11 / 20.03.2024 /

- Growing Challenges to Exploit Ideas:
  - Growing investment need for idea production and exploitation
  - ⇒ investment need for idea production has been exponentially growing.



- killing the opponent thru subsidis.
  That's why startup is called as dark age.

- Increasing Decision Making Challenge to Profit from ideas:
  - The challege is to look for discontinuity, find ways to keep building capacity, and keep trading and generating revenue.
  - ⇒ One company make mistake, another company gain profit.
    IBM stop making processor, Intel take the chance and gain profit.

- Everyone need to be honest for idea stablishment. Can't end up like Dr. Rafiquzzaman.

Quiz-2
L-2, 3
25.03.2024

Lecture Slide-4

H-D-A

What do Engineers do?

⇒ Apply the principles of science and mathematics to develop economical solutions to technical problems.

- Design products and service
- Build and test these products
- Design plants in which those products are made.
- Design system that ensure the quality and efficiency of the manufacturing process.
- Analyze systems to evaluate their performance
- Develop software to control systems.
- Innovate to improve performance of existing system.

But engineers should also contribute to-

- Create & Design
  - Engineering Project
- Analyze
  - Production method
  - Engineering safety
  - Environmental impact
  - market assessment

- Evaluate
  - Expected Profitability
  - Timming of Cash Flows
  - Degree of Financial Risk

- Evaluate
  - impact on financial statements
  - firm's market value
  - stock price

Rational Decision making necessity!

- Decision of Engineers are highly optimized - based on proven science.
- Engineering is increasingly required to take decisions in an uncertain situation. often, the reality will be known after long time, even decades.
- Technology possibility exploitation journey begins at loss.
- Now, engineering is increasingly facing the challenge of taking rational decision in the midst of uncertainty over prolonged period in nurturing faint technology possibilities into wealth creation reality.
- Rational decision making is at the core in taking advantage of unfolding technology possibilities and also countering threat.

Rational Decision Making:

⇒ For increasing and sustaining profitability, some of the decision making challenges are,

(i) should we add or remove this feature

(ii) should we develop this technology for rolling out certain type of innovation.

(iii) should we change the technology core, and so on....

$$Y = F(K, L, H, A, D)$$

Here,

D is the output of rational decision making process.

D provides guidance about what ideas should be produced and how those should be converted into economic value.

Rational Decision making process for exploiting technology possibilities:

Step-0:

- select and adapt appropriate framework in the form of ~~rece~~ recurring patterns to comprehend and predict wealth creation dynamics out of technology possibilities in a competitive market.
- This framework is vital to support remaining steps.

Step-1:

- identify the problem
- a failure to identify the problem clearly can derail the entire process.
- it can sometimes require serious thought to find the central issue that must be addressed.

Step-2

- Establish Decision Criteria
- it needs to determine what is relevant in making the decision.
- this step will bring the decision makers, and any other stakeholders, interests, value and preferences into the process.

Step-3:

- Weigh Decision Criteria
- the criteria identified will be seldom be equally important, you will need to weigh the criteria to create the correct priority in the decision.

Step-4:

- Generates alternatives
- once issue is identified, and relevant information gathered, then its time to list potential options for how to decide what to do.

Step-5:

- Evaluate Alternatives
- after creating a somewhat full list of posible alternatives, each alternative can be evaluated.
- which choice is most ~~der~~ desirable and why?
- are all of the options equally feasible, or some unrealistic or impossible?
- It is the time to identify both the merits and the challenges involved in each of the possible solutions.

Step-6:

- Select the best alternative
- after a careful evaluation of alternatives, we must choose a solution. We should clearly state our decision so as to avoid confusion or uncertainty.

⇉ Data, Logic, Theory, and Facts:

- Rational decision making is defined not only by adherence to a careful process, but also by a logical, data-driven manner of following steps of that process.
- The process can be time consuming and costly.
- it is generally not worthwhile on everyday decisions.
- it is more useful for big decisions with many criteria that affect many people.

* Theory plays a vital role in rational decision making to pursue an unclear mission.

⇒ Step-0 is important and unknown.

* Pervasive Uncertainties:

- Technology possibilities are fraught with pervasive uncertainties. Some of them belong to:

(i) Technology progression
(ii) Consumer preferences
(iii) Competition response
(iv) Public policy and regulation
(v) Ecosystem formation
(vi) Externalities and Infrastructure
(vii) Spillover effects.

* Technology Uncertainty:

- Primitive emergence of technology possibilities
  - every powerful technology emerges in primitive form.
  - if you don't improve it, you have to face destructive effect like IBM.

⊛ Loss making beginning and uncertainty in reaching profitability:

- Virtually, all technology possibilities begin at loss.
- This is on of the reasons is for the need of further R&D work before innovations are rolled out.
- To turn the loss making revenue towards positive, technology possibility should be improved further.

⊛ Disruptive innovation:

- suffer for not taking the decision to improve technology.

Like,

Codak invented digital camera lense but not ~~im~~ try to improve it.
Sony take the decision and succes. Hence, ~~he~~ Codak faced disruptive innovation.