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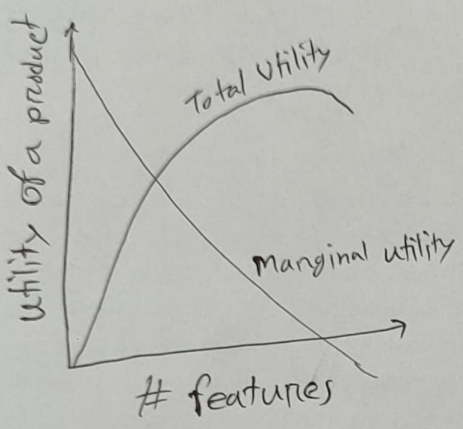
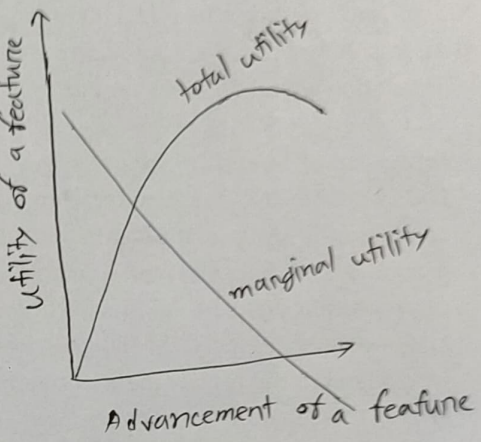
Recap

- 72% of all new product & service introductions fail to live up to expectations.





- General equilibrium theory:

model of rational behaviour of consumers:

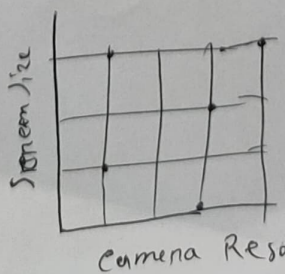
$$\sum_{i=1}^{n} p_i x_i \leq M$$

$$x_i \geq 0 \quad \forall i \in \{1, 2, \dots, n\}$$

p = market price

x = amount of commodities consumed

- Consumer Preference:
  - Trade off and Optimization in Product enhancement
  - Whenever we choose something, we need to trade off.



⇒ You need to trade of for various customer. Someone need camera or screen or both. Need to optimize for various customer behaviour.

✱ Knowing Consumer Preferences:

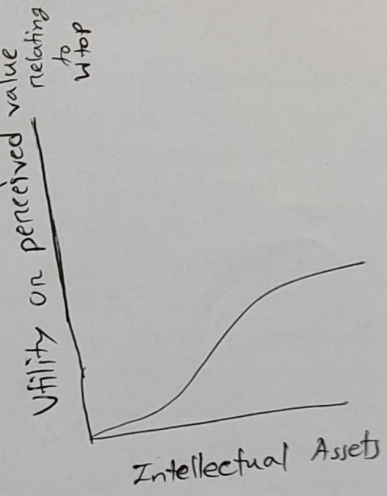
- Observe
- Silently Feel
- Articulate with Empathy

⇒ Customer don't know, what they want. They ~~att~~ always give misleading information.

- consumer expectation keep changing.

✱ Factors Influencing Consumer Behavior:

- Psychological
- Social
- Cultural
- Personal
- Economic



✱ Markets always expanding with growing utility.

- creating a flow of ideas is a must for expanding the market.

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✱ Growing number of jobs to be done in an integrated manner: Raising Policy issues: three major trends

(i) number of jobs to be done is increasing

(ii) creating increasing utility in getting each of them done

(iii) getting discreate jobs done in an integrated manner.

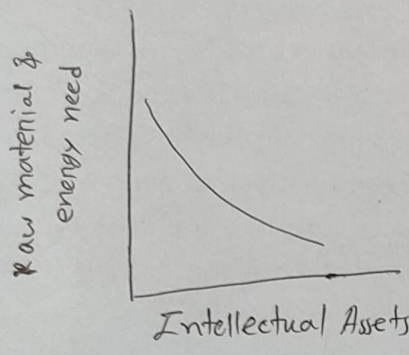
Higher Quality at Less Cost:

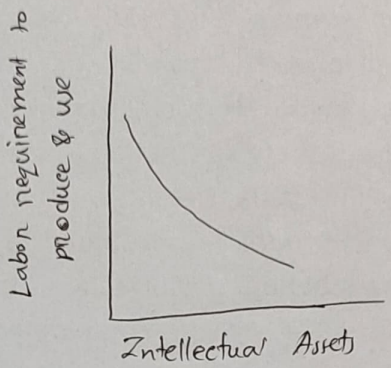
Q↑ C↓ — Best

Q↑ C→ — Good

Q↑↑ C↑, — Acceptable

Q↑ C↑, — avoid → BD scenerio





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Increasing Fitness to Purpose for Maximizing Utility!

- most popular approach is design thinking. Like, our keyboard, mouse, phone everything has an unique design.
- its involve, creative thinking, sketching, and drawing, modeling, prototyping, testing and evaluating.

⇒ Another one approach is Systematic Inventive Thinking (SIT)

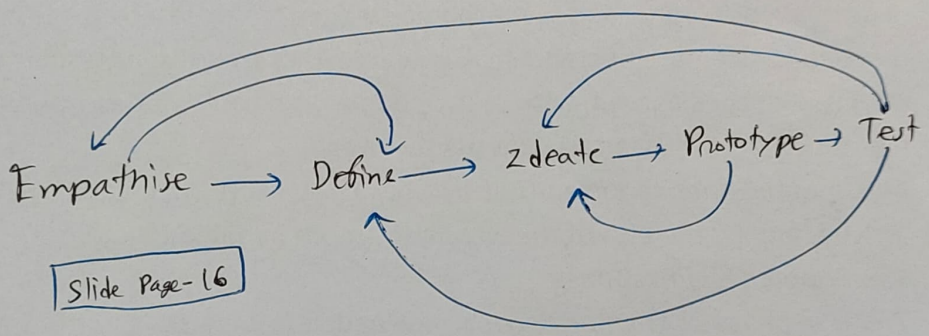
- this thinking method developed in Israel, 1990 and derived from Genrich Altshuller's TRIZ engineering discipline.
- Routine engineering design deals with this situation by searching for the "best fit" compromise, a trade off that maximized the utility and ~~min~~ minimized the negative impact.

- analysed over 200,000 patents to identify the 40 common inventive principles of his unique formula, named TRIZ.

⇒ SIT have five thinking tools:

(i) Subtraction
(ii) Multiplication
(iii) Division
(iv) Task Unification
(v) Attribute dependence

✱ Design Thinking: A Non-Linear ~~Past~~ Process



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✱ Expanding the Economies of Scale and Scope:

Cost = F(material, labor, energy, N)

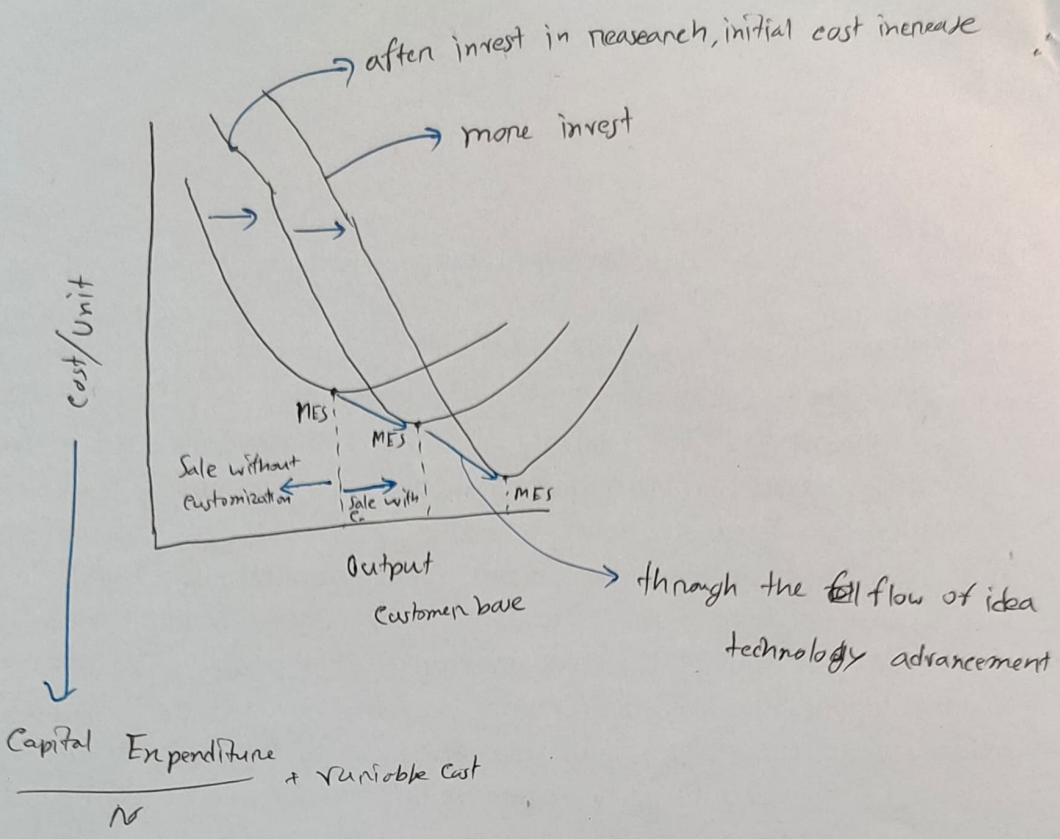
$= \frac{R\&D}{N+} \cdots$ | N increases R&D, R&D/N decreases.

⇒ economies of scale:

- the cost advantages that enterprises obtain due to their scale of operation, with cost per unit of output decreasing which causes scale increasing.

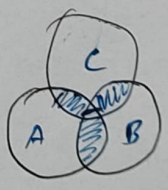
⇒ Minimum Effecient Scale (MES):

- is the lowest point where the plant can produce such that its long run average costs are minimized.

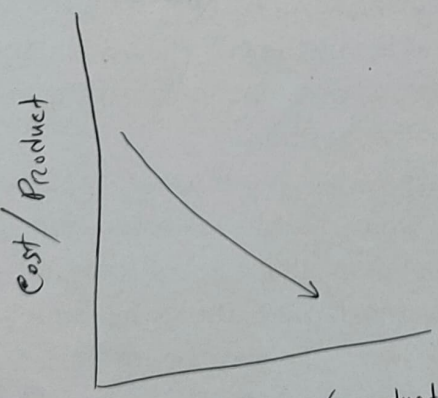


⇒ Economic of Scope effect!

– a proportionate saving gained by producing two or more distinct goods, when the cost of doing so is less than that of producing each separately.



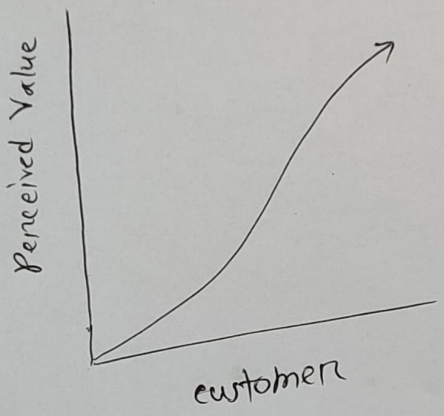
Using some common feature.



Diseconomies of scale are the cost disadvantages that economic actors ~~[illegible]~~ accrue due to an increase in organizational size or input.

Economies of network effect:

- Due to network effect, perceived value of products keeps increasing with the growth of customers base
- Facebook and Google became monopolies for exploiting this aspect of innovation.
- Spotify became monopolies of music device.



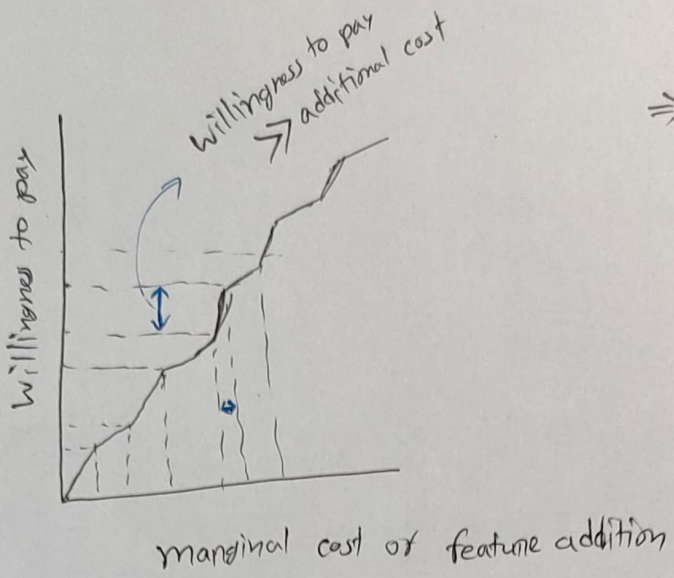
⇒ network externality is an economics term that describes how the demand on perceived value for a product is dependent on the demand of others buying that product.

- Facebook has Like button but not the dislike button, this is for positive impact on network.

Frugal innovation: misleading affordable innovation

⇒ Remove feature to reduce cost is not an good innovation.

⇒ If customer willing to pay then give them more feature in good price, so that perceived value is greater than cost.

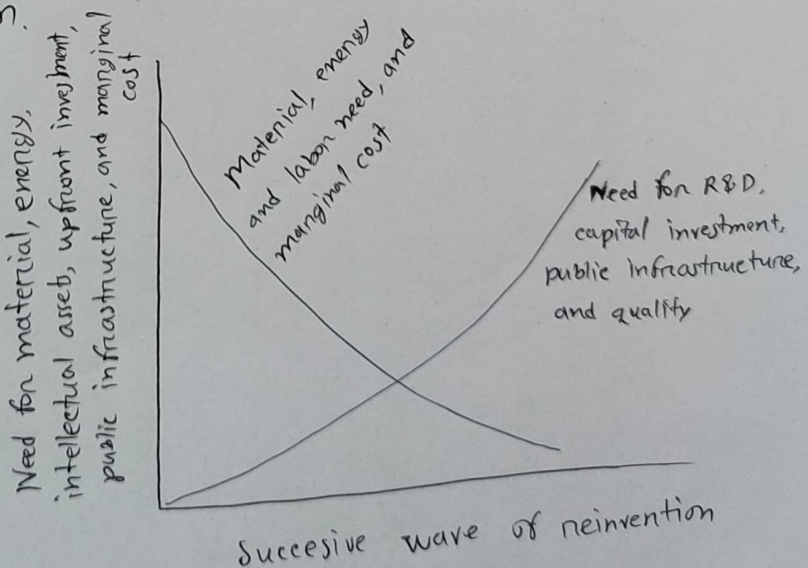


⇒ if cost reduction due to removing a feature is far less than the reduction of willingness to pay, such decision will make the product economically less attractive.

⊛ Upgrade Technology Cone!

⇒ The upgradation of technology cone opens the opportunity of reducing material and energy need. It also increases the quality and lowers the environmental impact.

- The change of technology cone also increases the economies of scale effect. Particularly, zero cost of copying software is a powerful option.



Improve human machine interface : through reinvention

- codify human knowledge and skill needed to operate and produce product.
- Redesign interfaces for making human-machine interface foolproof.
- Apple has been showing innovation magic by reinventing human-machine interfaces by leveraging technology core like GUI, and multitouch.
- Some of the technology cores for reinventing human machine interfaces

(i) switches
(ii) dials & knobs
(iii) keyboard and text command
(iv) point & clk devices, GUI
(v) multitouch
(vi) voice command
(vii) gesture
(viii) AR & VR
(ix) neural interface