WEEK-5

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MARKETING OF INNOVATION:

1. Marketing definition:

2. Definition of Marketing by American Marketing Association (Approved July 2013) says "Marketing is the activity, set of institutions and process of creating, communicating, delivering and exchanging offerings that have value for customers, clients, partners and society at large".

3. An activity is creating, communicating, delivering and exchanging offerings. This thing also has some attached value.

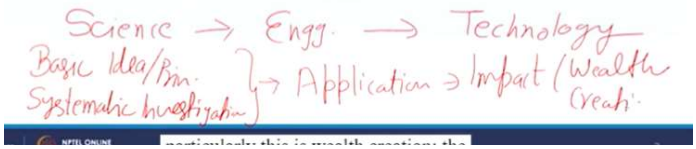
4.
   - If we try and analyze this definition with the view point of making it happen or realizing this we would find out that this only can done through intensity of efforts i.e. commitment, hence marketing may be termed as commitment

5.
   - Apple
   - Google
   - Toyota
   - General Electric
   - Microsoft
   - Procter & Gamble
   - 3M
   - Walt Disney
   - Mitti Cool
   - IBM
   - Sony
   - Wal-Mart
   - Honda
   - Starbucks
   - BMW
   - Samsung
   - Patanjali

6. Other examples: LIC, AMUL
7. Marketing and innovation / marketing of innovation (advertising for a new idea)

TECHNOLOGY INNOVATION PROCESS:

1. Major difference:



2.

Scientific Invention	Technological Innovation
New idea or concept generated by R & D	When invention is transformed into a socially usable product.
Experimental and Theoretical Physics (Faraday, Maxwell, Hertz)	**Radio** (Marconi 1896-1897-1902(Age of Transatlantic wireless communication))

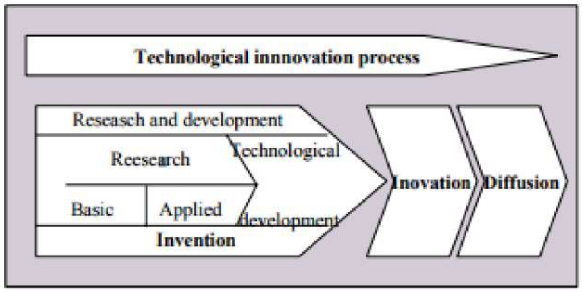
3.

- Technological Innovation is a complex socioeconomic and technological process which often extends over several decades or longer, requiring substantial financial investment.

Technological Innovation Process

4. It is sequence of activities by which technical knowledge is translated into a physical reality and becomes used on a scale having substantial societal impact.

5.



7. Three imp stages:
You have knowledge
Convert this knowledge to product
Scale the product

BRIGHT's 8 stage process

8. **Stage 1**

The innovation begins in one or both of two ways. One is by suggestion and/or discovery . Another way is by the perception of an environmental market need or opportunity.

BRIGHT's 8 stage process

9. **Stage 2**

Synthesis of existing knowledge and techniques to provide the theoretical basis for

technological innovation:
-existing product->competitve->gen new tech knowledge

8 stages:
--> basic reaserch
--> applied reaserch
--> development (to develop product & to be tested by public)
--> engineering (transform prod into something scalable)
--> manufacturing
--> marketing
--> promotion
--> continuos improvement

BRIGHT's 8 stage process

Stage 2

9. Synthesis of existing knowledge and techniques to provide the theoretical basis for the technical concept. This synthesis usually occurs after considerable trial and error.

BRIGHT's 8 stage process

Stage 3

10. The verification of the theory or design concept.

Stage 3: Experimentation

BRIGHT's 8 stage process

Stage 4

11. The laboratory demonstration of the applicability of the concept, such as the development of the "breadboard" model in electronics.

Stage 4: Prototype Making

BRIGHT's 8 stage process

Stage 5

12. Alternative versions of the concept are evaluated and developed to be defined as the full scale approach.

At this stage, a prototype is developed and subjected to field trial.

Stage 5: Backup plans.

BRIGHT's 8 stage process

Stage 6

13. The commercial introduction or initial operational use of innovation.

BRIGHT's 8 stage process

Stage 7

14. The widespread adoption of the innovation when its scale and scope of usage are sufficient to generate substantial cash flows in the producing enterprises and significant societal impact.

BRIGHT's 8 stage process

Stage 8

15. Proliferation, when either the generic product or the generic technology is adapted for use in newly defined markets.

e.g. radar equipment to detect speeding motorists and microwave technology in cooking ovens

TECHNOLOGICAL INNOVATION MANAGEMENT PLANNING:

1. Planning can be divided into different time horizons:
   Immediate: within a week/month
   Intermediate: 3 months-1 year
   Long term: more than a year
2. Normally technological innovation planning is done for intermediate and long term time period.
3. To become a leader in market, you should know how to reduce the time period of innovation otherwise someone else will work on technology and you will be the follower.
4. Planning is a futuristic activity, even we all have prediction disability, thus, it is imp.

Technology Evolution

5.
- •Revolutionary- Radical Technological innovations
- •Micro Radical
- •Generational
- •Incremental

Revolutionary- Radical Technological innovations

6. • Major inventions leading to creation of a new industry.

7. Major innovations, develops an entirely a new industry, Eg. Innovating a machine that could fly. Eg. Creation of computers.
8. These are very rare innovations.
9. They have a huge social impact thus very crucial.

Micro-Radical and Generational

10. • Build upon existing capabilities and are competence enhancing.

11. Competence enhancing innovations, enhance the present ideas, Eg. 2G -> 3G-> 4G-> 5G
12. Upgradation of existing technology

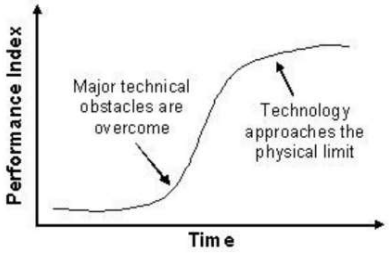
Incremental (Normal) Technological innovations

13. • Incremental performance improving
    • Cost reducing

14. Based on KAIZEN, Japanese technique, small- small innovations that lead major impact.
15. Eg. Increase in milage of car and decrease in in it's price regularly.
16. In short term, we look at incremental innovations

The "S" shaped curve of Technological Evolution

17.



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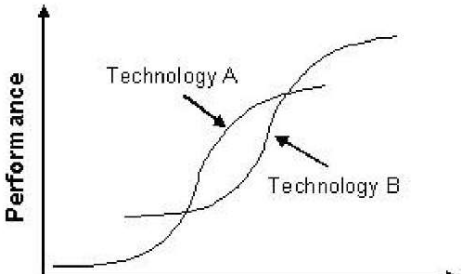
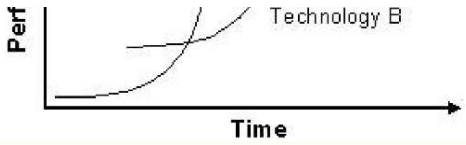




Technology Planning

19.
- In 1st and 2nd generation companies, R & D is treated as an expense. The R&D function is largely left 'to do its own thing'.
- 3rd generation companies has an organizational culture in which R&D planning is embedded in corporate and business planning.

Technology Planning at Business and Corporate Levels

20.
- 3M : Coating Material
- Canon : Microprocessor controlled optical imaging
- Honda : Engines and power trains
- NEC : VSLI and systems integration
- Dupont : Chemistry

SBU Technology Planning

21.
- Superior Products

22. Corporate level planning is like stem of a tree, SBU level is like branches and the obtained fruits are: the products.

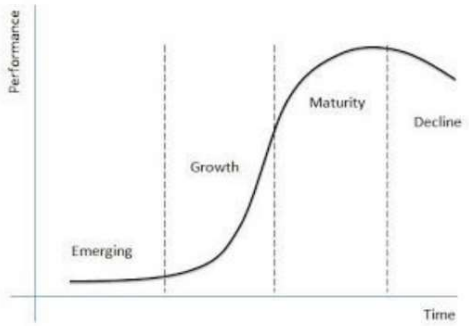
Technology Planning

23.
- Forecast evolving technological possibilities and capabilities together with evolving market needs and opportunities.
- Disaggregate technology – market matrix into its component submatrices and to assess the firm's present and future competitive strengths in order to identify potential future technology- market synergies or options.
- Formulate a technological innovation mission or plan, based upon a selection from these options.

TECHNOLOGICAL INNOVATION MANAGEMENT STRATEGIES:

TECHNOLOGICAL INNOVATION MANAGEMENT STRATEGIES:

1. Planning is taking decisions for future period. With respect to planning the other important term is strategy. Strategy is related to long term planning. The genesis of strategy is from military.

2. 

3. During decline, a new technology emerges.
4. Different types of technologies:
   - Base technologies
   - Key technologies
   - Pacing technologies
   - Emerging technlogies

   Base technology are in emerging area where we have so many ideas revolving around it. Key technologies show rapid increase like AI, which have great future potential. Pacing technologies are achieving a level of maturity where we cannot find new innovations, they are stable. Emerging technology are new technology emerged after decline of present technology. Eg, Kodak was involved in reel based photography and an innovative shift to digital photography devastated the company. Then the whole cycle continues. The emerging technology becomes the base technology and so on.

Present SWOT Analysis

5.
   - Defining current core technologies, products, markets and competition
   - Technology Audit

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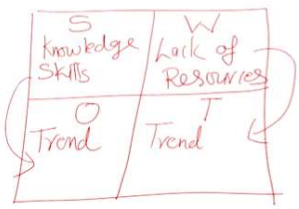
6. 

7. Even competitors are threat if they have better resources.

Future SWOT Analysis

8.
   - Formulating the Technology Plan

9. Converting weakness to strength and threats to opportunities.

Technology Timing Strategies

10.
    - Continuum approach rather discrete types
    - One or more strategies simultaneously

OFFENSIVE STRATEGY

11.
    - IBM
    - TI
    - DuPont

11.
- IBM
- TI
- DuPont
  - All of above initiated industry life cycle

12.
- IBM — Computing Sol:
- TI — Semicondu
- DuPont — Chemical

13. They initiated an entirely new industry.

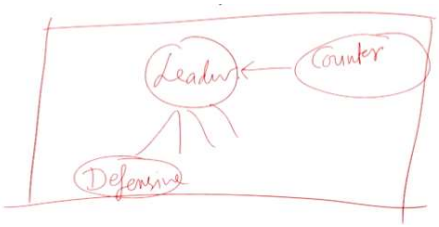
DEFENSIVE STRATEGY

14.
- Follow the leader policy

Counter Offensive Strategy

15.
- To counter the leadership effect

16.



Imitative Strategy

17.
- These companies are development design, production, and service engineering intensive rather than R intensive.

Applications Engineering

18.
- Focus on design and development

19. Example use of different app languages to make a final mobile app. Most popular at the moment.

Dependent Strategies

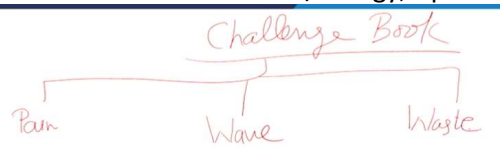
20.
- Branch Plant Policy
- Focus on Production and Marketing

Absorbant Strategies

21.
- An offsore company, probably with a truncated technology base, acquires a license from an offensive-defensive innovator to exploit innovation in its domestic market.

TECHNOLOGY FORECASTING

1. We can classify ideas of challenge book into 3 parts :
   Pain: problems that are causing discomfort to people.
   Wave: you observe some pattern/ trend which is futuristic that you feel will happen after some time.
   Waste: Waste of resources/energy, optimize their use

2. 

3. Here, we will discuss wave related to technology. Wave can also be related to regulations or demography.

4. **The Emergence of Technological Forecasting**

   The concept is more than 100 years old.
   Future Research : WW II
   Scope is much larger : 3 to 25 years
   Multidisciplinary
   It evaluates technological trends creatively

5. ## Technology Monitoring

   - Monitor signals of technological change (Bright)
   - Journals and Magazines
     – E.g. New Scientist and Scientific American

6. ## The "S" Shaped Logistic Curve

   - Pearl Function

$$y = \frac{L}{1 + ae^{-bt}}$$

Where y is the dependent variable whose growth is to be forecasted ,
L is the upper limit to growth, and a and b are parameters.

7. 

8. Gompertz Function

$$y = L\, e^{-be^{-kt}}$$

9. **Envelope Curves and Trend Extrapolation**

   - Envelope curve is generated by successive technologies.

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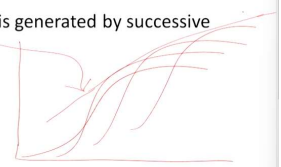

11. We keep on introducing new superior technologies as shown thus, the performance becomes linear.

12. • Efficiency of light source since 1850
y = -128.71511 + 0.06851t
• Top speed of combat aircraft since 1909
y = -118.30568 + 0.0640t

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Delphi Method

14. • Iterative Approach
• Right selection of panel members

15. There are subject experts who sit and think and discuss and forecast according to each other's opinion.

16. Other methods require long term data.

Morphological Analysis

17. It performs a systematic exhaustive categorization and evaluation of the possible alternative combinations of subcapabilities which may be integrated to provide a given functional capability.

Building Bricks Example

18.

	1	2	3	4	5
Material	Natural clay	Metal	Plastic	Waster Materials	
Forming Process	Extrude	Mold	Press		
Bounding Process	Heat	Chemical	Molecular		
Properties	Opacity	Thermal insulation	Elasticity	Aesthetics	
Form	Rectangular	Spherical	Interlocking	Cubical	Aesthetics

19. There are 4 * 3 * 3 * 5 combinations possible.