

TECHNOLOGY INNOVATION CHAIN

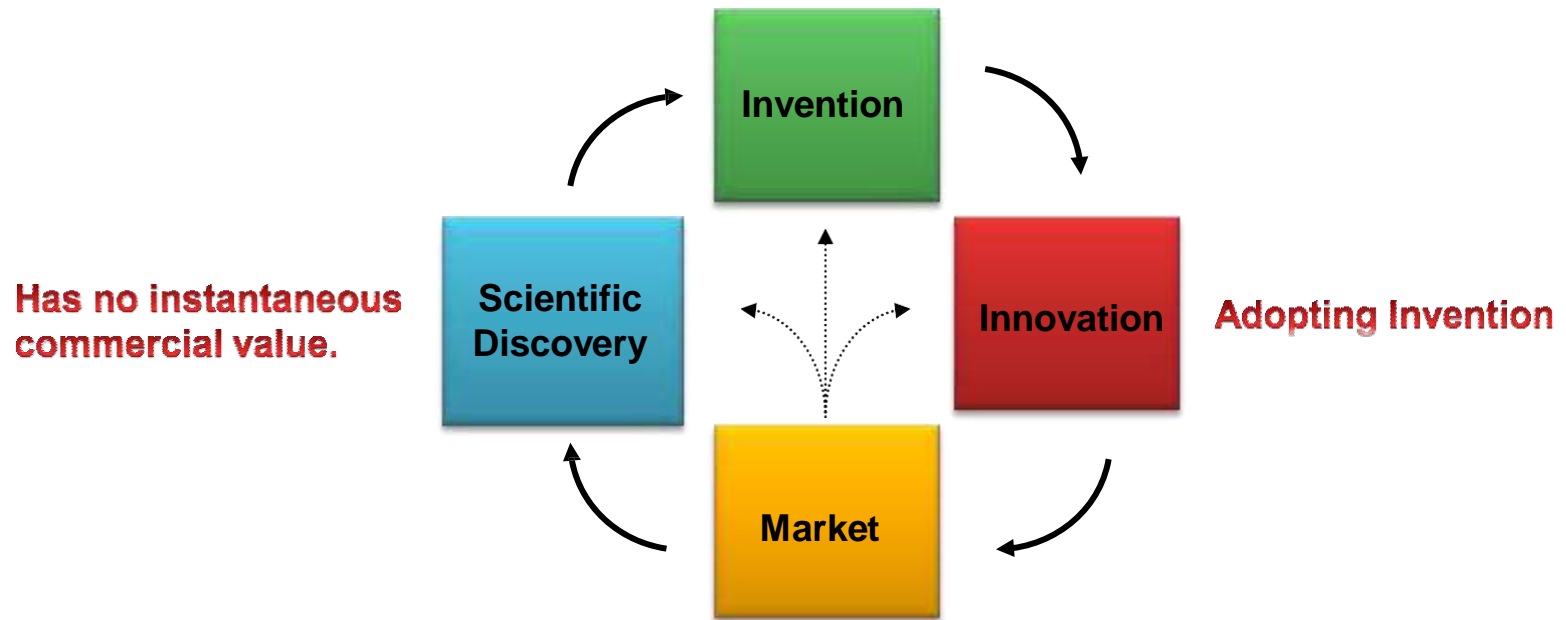
INVENTION VS. INNOVATION

Invention is either a concept of a creation of a novel technology. It could be a product, a process or a previously unknown system.

Innovation is the creation of a product, service, or process that is new to an organization. It's the introduction into the marketplace, either by utilization or by commercialization of a new product, service or process

DISCOVERY-INVENTION -INNOVATION -MARKET

May never be developed into marketable products

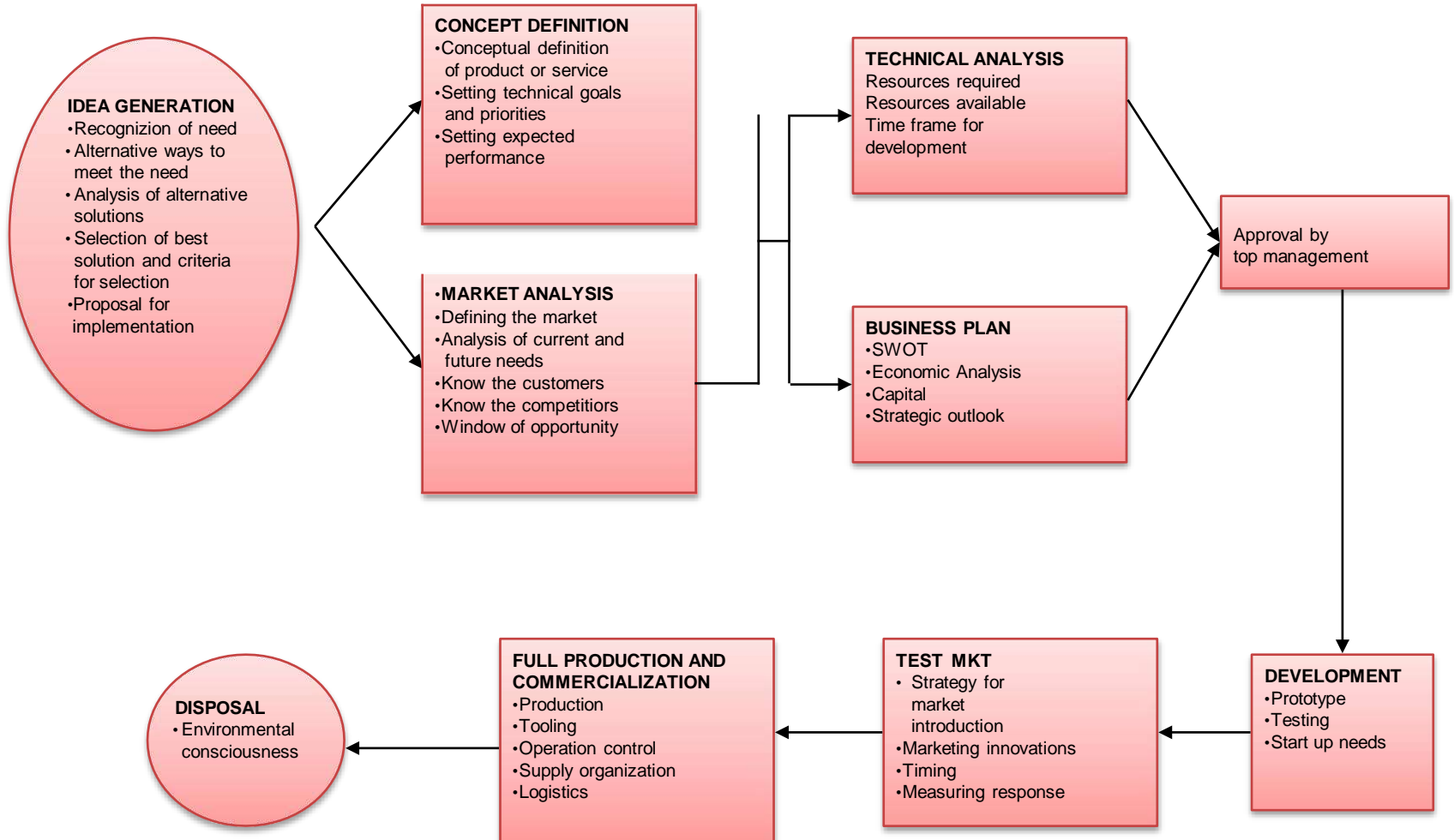


Buying or ignoring the innovation.

INNOVATION CHAIN EQUATION



PROCESS OF TECHNOLOGICAL INNOVATION



IDEA Discovery Stage

Gate 1	Idea Screen Does the idea merit any work?
Stage 1	Preliminary Investigation Prelim market assessment Prelim technical assessment Prelim financial & business assessment Action plan for Stage 2
Gate 2	Second Screen Does the idea justify extensive investigation?
Stage 2	Detailed Investigation User needs & wants study Competitive analysis Value proposition defined Technical feasibility assessment Operations assessment Product Definition Financial analysis
Gate 3	Decision to Develop Is the business case sound?
Stage 3	Development Technical development work Rapid prototypes Initial customer feedback Prototype development In-house product testing Operations process development Full launch & operations plans

Gate 4	Decision to Test Should the project be moved to external testing?
Stage 4	Testing & Validation Extend in-house testing Customer field trials Acquisition of production equipment Production/operation trials Test market/trial sell Finalized launch and operations plans Post-launch & life cycle plans
Gate 5	Decision to Launch Is the product ready for commercial launch?
Stage 5	Launch Market launch & roll-out Full production/operations Selling begin Results monitoring Post-Launch & life cycle plans under way

Post-Launch Review
How did we do vs. projections?
What did we learn?



FORECASTING OF TECHNOLOGY

Good companies can forecast their technology properly.

For example, technology has changed from incandescent lamps to fluorescent lamps. In Edison's time we had tungsten filament lamps, called incandescent lamps. These lamps worked on the 'Theory of Electronic Conduction in metals'.

Now, we have fluorescent lamps like sodium vapour lamp and mercury vapour lamp. These lamps work on theory of electronic conduction in rarified gases. Similarly previously we had semiconductors. They had several limitations. Now, we are using transistors.

Similarly, in older days, we had steam engines. Then came diesel engines. Which were replaced by electrical engines. In future we may have hydrogen powered engine.

Features of a Good Forecast

A good forecast should be reliable, dependable and accurate.

It must not be ambiguous or vague.

It must be based on solid data.

It should stake the forecast with say 95% confidence level.

Techniques of Technology Forecasting

In the foregoing discussion, we present certain techniques of technology forecasting.

1. Monitoring Techniques

It is a method of gathering and organizing the relevant forecasting information by scanning the environment.

Here, we carefully observe and analyze the business environment considering all the rival partners etc.

We all observe the social environment, the economic environment, the National and International environment etc.

Then, we collect data from the environment. We analyze the collected data and thereby forecast the technology.

2. Expert-opinion Method

Here we may conduct interviews with industry experts and make technology forecast.

For example, if you want to know about future of computer industry, you may interview Mr. Bill Gates CEO of Microsoft. The opinions of experts often indicate truth about future of technology.

3. Trend Analysis

It makes use of mathematical and statistical technique, to predict future of technology. It includes complex techniques like Box-Jenkins method or statistic-I techniques like time - series analysis, etc., since these techniques are based on mathematical they are often true.

4. Modeling

A model is a simplified representation of reality. Model range from simple equations to complex sophisticated computer models.

Here we assume that computer models depict reality.

5. Scenarios

They are snap shots of future. They indicate how the future would be.

General Remarks

We may analyze the strengths and weakness, of our firm. We may do bench-marking of our company as compared to a standard company.

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Bench-marking means critically comparing our firm's stand with comparison with a standard company. For example, in the field of calculator, Casio Ltd is the industry standard. The Indian company like Orpat calculators Ltd may compare itself critically with Casio and find our where orpat company stands.

What are the strengths and weakness of our Orpat weakness of our Orpat company as compared with Casio company.

How, we can equal Orpat with Casio. What are the modifications we have to make in Orpat calculator so that it becomes superior to Casio.

What marketing strategy, we have to employ, what additional feature, we have to add how to improve Orpat's quality.

There are certain technologies which are considered as of critical significant to us commercial sector.

A list of such critical technologies is as follows:

Advanced materials

Super conductors

Flexible manufacturing Systems

Artificial intelligence

Super computers

Sensor technology

High-density data Storage

Biotechnology

Space Technology

MOTOROLA'S TECHNOLOGY ROAD MAP

Motorola is a well-recognized company in wire-less communications. It has developed it's technology. It has developed it's based competitive strategy.

In order to make sure that no component or element of technology is neglected in their design of manufacturing, Motorola developed a company wide technology planning to called technology road map. A road map is developed for emerging technology and steered by motorola's expert.

Motorola's experts consider a technology as candidate for road map only if it has been demonstrated in laboratory of either university's lab or Motorola's lab. A technical committee advices Motorola whether to directly accept the innovation or improve it.