

Managing Successful Innovations

Venkatesh Ganapathy



VENKATESH GANAPATHY

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1 INNOVATION MANAGEMENT – AN INTRODUCTION

“Real life is...a perpetual compromise between the ideal and the possible; but the world of pure reason knows no compromise, no practical limitations, no barrier to the creative activity.”

– Bertrand Russell

1.1 LEARNING OBJECTIVES

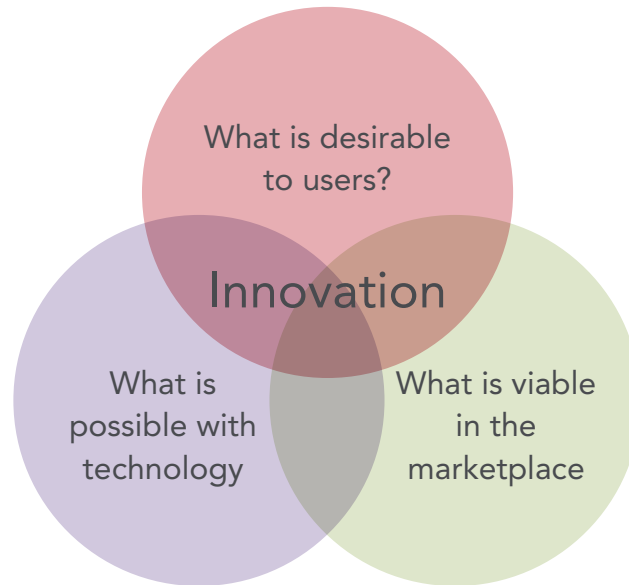
- Understand the concept of innovation
- An overview of different types of innovation
- Learn about the dynamism of the innovation process
- Get conceptual clarity on the innovation business model.
- Understand innovation eco systems
- Get conceptual clarity on Pull and Push approaches to innovation
- Understand the barriers and assumptions about innovation
- Learn about the macroeconomic aspects of innovation
- Get an overall perspective about the innovation process

1.2 INTRODUCTION

“Innovation is the successful exploitation of new ideas.” Businesses strive for increased revenues, access to new markets, increased profit margins. Innovation is a mechanism by which businesses can achieve a competitive edge in the market. Innovation is the tool for sustainable competitive advantage in the market.

1.3 THE FUNDAMENTAL QUESTIONS OF INNOVATION

Let us understand that managing a successful innovation involves lots of hard work. The first question that we need to ask is – what do the customers want? Can this want be translated into an innovation project? If this project is successful, can it be commercialized? If it is commercialized, what is the probability of its success? If it is successful, will it be sustainable? What is the role played by technology in the innovation process?



It must be noted that innovation and innovation processes must cause a significant impact on the pricing structure, in the market share and in company's revenues.

1.3.1 WHY IS INNOVATION IMPORTANT?

Managing an innovation successfully can reap rich dividends for the firm in the long run. How can innovation help a business firm?

- Innovation enables a business to gain competitive advantage in the medium and long term.
- Innovation ensures a sustainable business model.
- Innovation increases revenues and grows the business.
- Innovation helps in gaining access to new markets
- Innovation is part of the knowledge management process

Obviously, the benefits of innovation are not limited to the companies. Innovations enable countries and regions to increase the level of employment and income, as well as the access to the globalized world.

1.3.2 TYPOLOGY OF INNOVATIONS

Type of Innovation	Example
Product innovation	Development of new or improved product
Process Innovation	Development of new manufacturing process
Organisational Innovation	A new internal communication system; introduction of a new accounting procedure; innovation in recruitment practices.
Management Innovation	TQM, BPR [Business Process Re-engineering]
Production Innovation	Quality Circles, Just in Time manufacturing, new production planning software, Lean manufacturing, Green Logistics
Marketing Innovation	New financing arrangements, direct marketing, e-commerce
Service Innovation	Internet based financial services, home delivery

1.3.3 HOW CAN INNOVATION HAPPEN IN A BUSINESS MODEL?

Changes in the business model can lead to innovations in terms of how the product or service is offered to the market. An example of this could be – instead of buying a car, a consumer could rent a car and then pay a monthly fee to use the vehicle that includes insurance and maintenance.

1.3.4 INCREMENTAL VERSUS RADICAL INNOVATION

Incremental innovations are small continuous improvements in products or product lines. These do not change the business model or the way in which a product is consumed.

Example – the evolution of common CD to double CD that is capable of storing twice as many tracks; addition of a new perfume to a toilet soap; change in the packaging design of a product.

Radical innovations are also called as breakthrough innovations or out-of-the-box innovations. These involve a drastic change in the way a product or service is consumed. The existing business model gets revamped. Examples – Evolution of MP3 player, touch phones, whatsapp as a social networking tool, tablets, ipad – there are several such examples of radical innovations.

Radical innovations have a greater impact on the topline and bottomline growth of a business than incremental innovations. In India, there was a time when there were only two products to drive away malaria-causing mosquitoes – Odomos mosquito repellent cream and Tortoise Mosquito coils. They were very famous at one point of time. Then a new breakthrough product was launched in the market called – Mosquito Mats. The brand was called Good Night. It completely transformed the market. Now the consumer needed electricity to drive away the mosquitoes. As a radical innovation, it spawned many more followers who launched similar products. Now mosquito mats are passé – we have liquid vaporizers. A few companies have now launched herbal variants of liquid vaporizers.

1.3.5 THE DYNAMICS OF INNOVATION

Companies play an important role in fostering a climate of innovation. Ideas, technologies, inventions require support of management. It is not just R&D that has to be involved in innovation but the entire organisation needs to adopt behaviors that support the innovation process.

Innovation ecosystem includes universities, research centers, angel investors, venture capitalists, business firms. A trend that is becoming stronger is the open innovation model (or open innovation), where companies look outside of their R&D centers for ideas and projects that can help them add competitive advantages.

1.3.6 HOW TO INNOVATE

To perform innovations it is necessary for the companies, in the first place, to be aware of the importance of innovation in the existing competitive scenario. There is no way to become an innovative company without giving proper attention to the subject.

Then, companies must understand what innovation is and what its dynamics are. From there, they can define a strategy aligned with the objectives of the organization and its vision. Thus, it is possible to identify other essential concept for companies to become innovative: attention to the future is a requirement for the company to innovate.

The next step is to develop and internalize management tools of the innovation process. These solutions must be tailored to each situation. The size of the company, its sector of activity, culture and organizational structure, the agent system in which it is inserted, its future vision and ambitions should be taken into consideration.

1.3.7 SNAPSHOT OF INNOVATION

- Innovation is typically understood as the introduction of something new and useful
- Innovation is the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes, or services
- Invention is the first occurrence of an idea for a new product or process, while innovation is the first attempt to carry it out into practice
- All innovation begins with creative ideas... We define innovation as the successful implementation of creative ideas within an organization. In this view, creativity by individuals and teams is a starting point for innovation.

Innovation is the lifeblood of any organization. There is no growth without innovation. Innovation is thus a management process that requires specific tools, rules, and discipline. The challenge is to cultivate and leverage innovation capabilities that allow the continuous delivery of innovations.

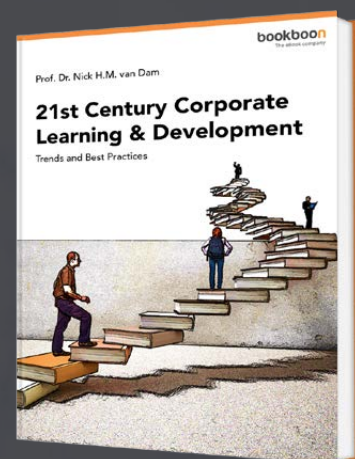
1.3.8 INCREASING FOCUS ON SYSTEMIC INNOVATION

This needs a stronger innovation culture company-wide. The contribution to innovation has to come from all company's disciplines and organizations. Each and every employee plays an important role in innovation.

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1.4 INNOVATION ECOSYSTEMS

Innovation Ecosystems enable collaborative arrangements through which firms combine their individual offers into a coherent, customer-facing solution.

- Interdependencies
- Networked Customers
- Cooperation & Integration
- Risk

In an Innovation Ecosystem all contributing parties can validate their strategy in advance and create higher value for their customers and customers' customers. They can secure the right timing for launching new solutions and focus their efforts on higher probability innovations

Innovation ecosystems allow companies to create value that no one firm could have created alone.

1.5 HOW YOU INNOVATE DETERMINES WHAT YOU INNOVATE

1.5.1 INNOVATION SYSTEMS: PROCESSES, TEAMS & NETWORKS

Innovation Systems must be designed and tuned in order to execute the Innovation Strategy. Innovation Systems require both Processes and Teams. Innovation Systems leverage and expand the Innovation Culture.

1.5.2 INNOVATION CULTURE ELEMENTS

- Creativity
- Diversity
- Communication
- Co-operation
- Co-ordination
- Motivation
- Commitment
- Initiative
- Risk Taking
- Knowledge Sharing

1.5.3 INNOVATION PORTFOLIO MANAGEMENT

Portfolio management for new products is a dynamic decision process. The list of active new products and R&D projects is constantly revised. New projects are evaluated, selected and prioritized.

Existing projects may be accelerated, killed, or de-prioritized and resources are allocated and reallocated to the active projects. The portfolio decision process is characterized by uncertain and changing information, dynamic opportunities, multiple goals and strategic considerations, interdependence among projects, and multiple decision makers and locations.

1.5.4 OBJECTIVES OF PORTFOLIO MANAGEMENT

- Maximize the Value of the Portfolio
- Achieve a Balanced Portfolio
- Build Strategy into the Portfolio

Strategy determines the profitability of the innovation portfolio.

1.5.5 HISTORIC PERSPECTIVE OF INNOVATION

Technology has played a role in creating the wealth of nations and influences standards of living and quality of life. If we look at the evolution of age by technology, then we had the following:

- a) Stone age
- b) Bronze age
- c) Iron age
- d) Steam age
- e) Electricity age
- f) Nuclear age
- g) Electronic age
- h) Space age
- i) Information age
- j) Biotech age

Civilisations were built around the use of innovative technology and some vanished when they lagged in technology. Egyptians used technology for farming and storing crops. They built cities, pyramids. The Chinese made pottery and built massive walls to defend their civilization. The axe, the wheel, the bow and arrow, the sword, the chariot were technologies that helped communities harness the resources of nature to satisfy human wants and needs.

After the Industrial Revolution 200 years ago, radical innovations created a major transformation in the way people live and do business. The factory system was born and mass production became dominant. Technology transformed many national economies from agricultural based to industrial based economies.

In the late 19th century and early 20th century, science and technology became connected. Scientific discoveries triggered technological breakthroughs, while technological devices and know-how helped advance science.

Innovation in power generation toward the end of the 18th century brought with it products such as the steam boat and the steam powered locomotive. Innovations in radio signal and electric power generation and transmission in the 19th century led to discovery of radio, telephone and telegraph. The air conditioner, car and aeroplane were developed in the early part of 20th century. Computers in the middle of the 20th century vastly expanded the knowledge base. Innovative products like television, transistor radio, jet engine, Xerox machine and mainframe computer were introduced.

From 1950s to 1970s, production of integrated circuit boards, spaceships, laser products, satellites, composite materials and fibre optic communication began. Technologies of 1980s brought the MRI scanning equipment, new drugs to fight diabetes, cholesterol and cardiac problems and also genetic disorders. Vaccines were introduced. Growth hormones were prescribed. Today cataract operations and kidney stone operations are done through laser technology. The IT revolution towards the end of the 20th century has transformed our lives. Software products, telecommunication equipment, semi conductors are now common.

In recent years, developments have taken place in the areas of robotics, nanotechnology, mobile technology, biosciences and automation. India has millions of mobile phone subscribers but for a population of our size, we do not have enough toilets. Tablet phones are innovations that have user friendly features.

Successful commercialization of innovation means wider changes in the organization to support this effort. Digital cameras by Kodak and Fuji involved radical innovation that impacted the working of the whole organisation – especially manufacturing, marketing and sales. Thus, in simple terms, innovation is the application of knowledge.

1.5.6 INNOVATION PROCESS

Innovation, according to Schumpeter (1934), covers:

- 1) The introduction of a new good or a new quality of the good
- 2) The introduction of a new method of production
- 3) The opening of a new market
- 4) The conquest of a new source of supply
- 5) The carrying out of the new organization of an industry

The “newness” need not necessarily involve “new” knowledge thereby effectively implying that the “newness” may also concern advancement or modification of existing knowledge. Innovation, is “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”.

The Oslo Manual, developed jointly by Eurostat and the OECD defines innovation as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.” It differentiates between 4 types of innovations, namely “Product Innovation”, “Process Innovation”, “Marketing Innovation”, and “Organisational Innovation”.

Innovation is “invention and commercialization of new (or betterment of existing) products, processes and/or services”. The terms “processes” and “services” in this definition therefore cater also to marketing and organisational innovations.

The innovation process encompasses several systematic steps, beginning from problem/requirement analysis to idea generation, idea evaluation, project planning, product development and testing to finally product marketing. The steps may overlap each other. These steps may be categorised into 3 broad phases, which represent a simplified innovation process.

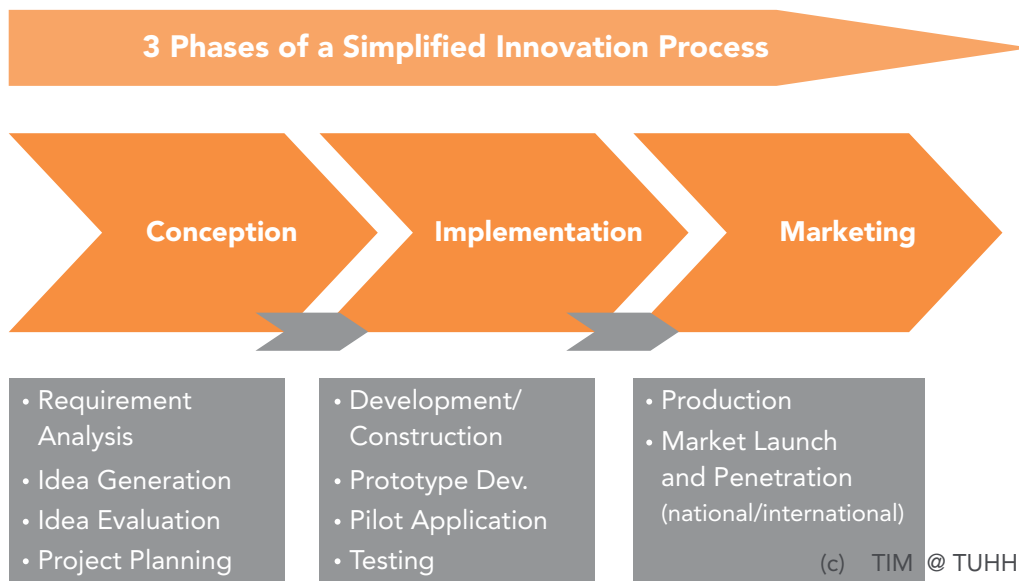


Figure 1: Three phases of a simplified innovation process

A simplified innovation process comprises three steps namely conception, implementation and marketing. Conception involves understanding needs and generating and evaluating ideas and then based on the feasibility, planning the project. Implementation is the vital next step which eventually leads to developing a testable proto-type. Marketing signifies that the project is now ready for commercialization which is very the revenue from the project is expected to trickle in.

1.5.7 CREATING NEW IDEAS DOESN'T SIGNIFY THE BEGINNING OF INNOVATION

Many people assume that creating new ideas is the beginning of the innovation process, but actually that is not true. Ideation occurs in the middle of the disciplined innovation process.

While the purpose of innovation is “simply” to create business value, the value itself can take many different forms. As we noted above, it can be incremental improvements to existing products, the creation of breakthroughs such as entirely new products and services, cost reductions, efficiency improvements, new business models, new ventures, and countless other forms as well.

The method of creating innovation is to discover, create, and develop ideas, to refine them into useful forms, and to use them to earn profits, increase efficiency, and/or reduce costs. Here we focus on how to do that, the process of innovation.

In the quest for innovation it is obvious that many ideas at the input stage become a few completed, useful innovations at the output stage, so people readily visualize the innovation process as a funnel: lots of ideas come in the wide end on the left, and a few finished innovations come to market from the narrow end at the right.

We have to start the innovation process by strategic thinking to ensure that the outputs of innovation are fully aligned with the strategic intent.

1.6 GLOBALIZATION OF THE INNOVATION PROCESS: A REFERENCE MODEL

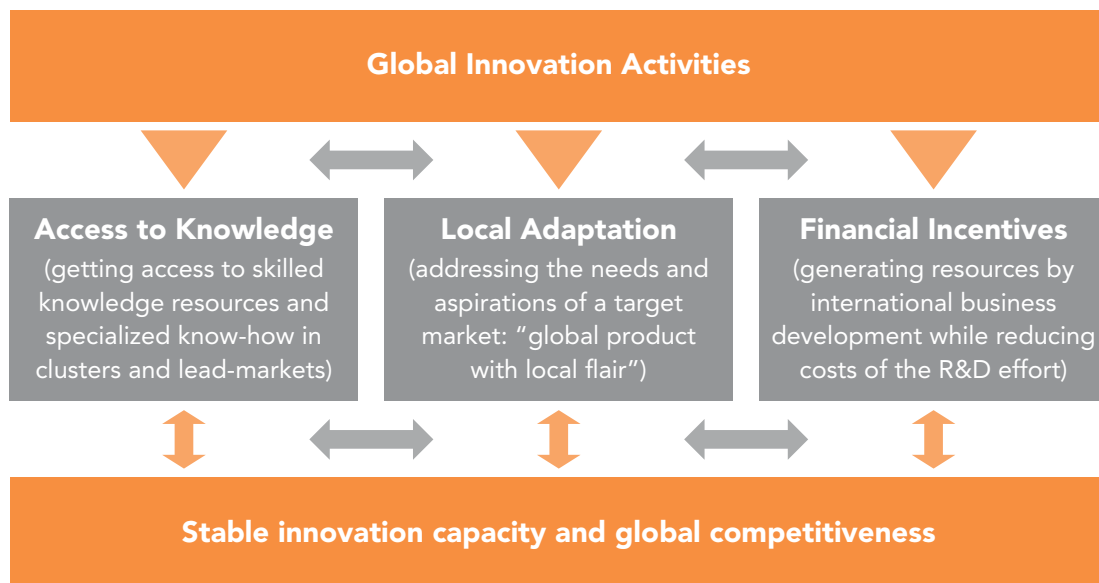


Fig 2: A reference model for globalization of innovation process

Access to know-how is vital for understanding the process of innovation. Based on this knowledge, a business must address the needs of the local market so that it can develop its international business agenda. The advantage here is that research and development costs can be optimized to generate significant savings. These savings can be used to fund future research.

1.6.1 THE STEPS IN THE PROCESS OF INNOVATION

Step 1 – Strategic Thinking. The innovation process begins with the goal to create strategic advantage in the marketplace, so in this stage we think specifically about how innovation is going to add value to your strategic intents, and we target the areas where innovation has the greatest potential to provide strategic advantage.

Step 2 is Portfolio Management & Metrics. One of the important underlying facts of innovation management is the necessity of failure. We are by definition trying to do something new, and as we proceed on the innovation journey we do not in fact know if we are going to succeed. We have confidence that we'll succeed eventually, but along the way we know that there will be many wrong turns, and many attempts that will never come to fruition. So we manage innovation portfolios aggressively to balance the inherent risks of the unknown with the targeted rewards of success, and balancing our pursuit of the ideal with the realities of learning, risking, failing in order to ultimately succeed.

Step 3 is Research. An output of Stage 2 is the design of the ideal innovation portfolio, which is what we believe, as of today, is the right mixture of short and long term projects across all types of innovation. Once we understand the ideal we can compare our current knowledge and discern the gaps. Filling these gaps, then, is the purpose of research. Through research we will master a wide range of unknowns, including emerging technologies, societal change, and customer values, and in the process we will expose significant new opportunities for innovation.

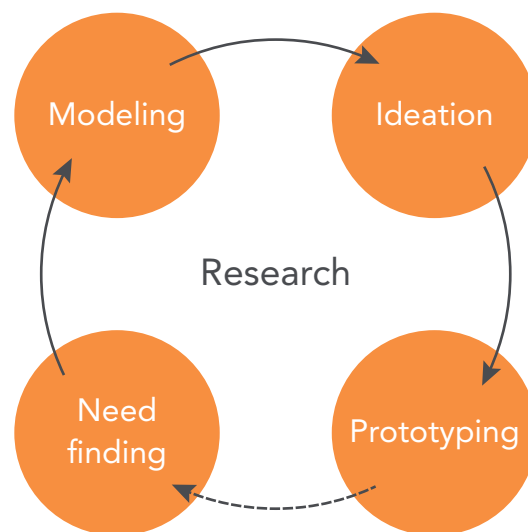


Fig: The Four Stages of the Research Cycle

Step 4 is Insight. Here we understand what the right value proposition is for the right customer. While many people think of this moment of insight as the beginning of the innovation process, as you can see, in the well managed innovation effort we expect insight to come about as the result of the preceding processes and activities, not at random. Insight is the *result* of a dedicated process of examination and development.

Step 5 is Innovation Development. The process of design, engineering, prototyping, and testing that results in finished product, service, and business designs. Manufacturing, distribution, branding, marketing, and sales are also designed at this step in an integrated, multi-disciplinary process.

Step 6 is Market Development. The universal business planning process that begins with brand identification and development, continues through the preparation of customers to understand and choose this innovation and leads to rapid sales growth.

Step 7 is Selling. The where the real payoff is achieved. Now we earn the financial return by successfully selling the new products and services. In the case of process improvement innovations directed internally, we now reap the benefit of increased efficiency and productivity.

1.7 MACROECONOMIC VIEW OF INNOVATION APPROACHES

- Real GDP growth is the primary indicator of aggregate economic condition and its decomposition into domestic consumption rates, long-term interest rates and unemployment rates as most impacting macroeconomic variables.
- Product innovations have a positive impact on macroeconomic variables.
- Changing consumer confidence, preferences, incomes, long term interest rates and unemployment rates affect product innovations positively.
- Innovation in manufacturing and trade is insensitive to macro-economic dynamics. This means that innovation is a central strategy to the success of their business operations.
- Innovative service industries that are not resource intensive choose to discontinue a project or launch a new product in limited window of opportunity dependent on the competition structure of the market.

In addition, the positive labor market effect implies that during a more competitive labor market, the access to more skilled employees increases the probability of product innovations. Changing macroeconomic dynamics and competitions structures influence small firms differently depending on their innovativeness. While most industries do get innovative along with the macroeconomic growth cycle, some do not, and policy aimed at augmenting further innovations may not be applied to correct levels for industry specific innovativeness. Though it is believed that supportive policies for the macroeconomic climate will have the same effect on all industries, in reality, firm and industry innovativeness result in different effects from the macro economy.

In the wake of the global financial crisis, there is a resurfacing debate amongst economists questioning the most conducive macroeconomic climate for innovation activity. In early theorizing on innovation and the business cycle (Schumpeter 1934; Schmookler 1966), economists created a demand-pull and supply-push vocabulary to conceptualize the fundamental directions of causality of innovation activity. Extreme adversity and competition, on the other hand, may be a hindrance to a firm's ability to innovate successfully.

1.8 ASSUMPTIONS AND BARRIERS TO INNOVATIONS

Most organizations have barriers to creativity, ideas and innovation. Some are obvious while some are more subtle. Some barriers emerge from attitudes and perceptions of organizational leadership while others come from organizational structure or even from the employees themselves. Since these barriers have a tendency to eliminate creative possibilities from the organization, identifying and removing barriers to creativity and innovation is crucial. By pinpointing, recognizing, and acknowledging that barriers exist, an organization can bypass many common obstacles and become more idea-oriented by employing simple strategies.

There is an ongoing drumbeat of service innovation in approximately the top twenty percent of companies. These innovations can be classified into three areas:

1. Delivering products and services that completely meet customer expectations in a manner that leads to less need for supplemental customer service, thereby providing higher value to the customer. For example, HP and FedEx proactively educate customers on how to avoid problems, thereby preventing their occurrence and lowering service cost. Further, they have appointed Chief Customer Officers with preview across the end-to-end customer experience to assure that marketing and sales set expectations that operations can and will fulfill.
2. Enhanced customer service delivery and problem solving process. Problem solving is based on flexible response to tailor the solution to the particular customer problem accompanied with clear believable explanations of why the company did what it did. The front line is empowered to achieve first contact resolution and to further educate the customer and provide value addition as appropriate. These approaches are practiced by American Express and Firestone.
3. An enhanced use of Voice of the Customer (VOC) to improve the basic product and service delivery process. Companies like 3M, Toyota, NJ Natural Gas and Cisco Systems combine surveys, internal metrics and structured and unstructured customer contact data to create a more impactful, less expensive unified picture of the customer experience. This picture is then converted into revenue and word of mouth impact estimates the CFO will accept.

1.9 ASSUMPTIONS ABOUT INNOVATIONS

1. Front line employees are the causes of most customer dissatisfaction
2. No news is good news
3. Almost everyone is price driven
4. Answering the phone really fast is the key to great service
5. Great service costs more than good service
6. Once you are at 90% satisfaction, it gets dramatically more expensive to move the needle
7. Everyone wants personalized service and to talk to a human being
8. The customer is always right
9. Our benchmarking shows that we're better than average so we're OK.
10. We have a comprehensive survey process, therefore we have a great Voice of the Customer system

Each of these beliefs results in serious mistakes in resource allocation and impedes fundamental improvements in service.



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It is alright to say no to the customer or give bad news as long as you give the customer a clear, reasonable explanation as to why the request is not possible. For example, explaining that the flight will be delayed due to a leak in the hydraulic system will not make customers happy but will keep them safe – and thankful to be on the ground. Further, at Starbucks recently, the counter person said, we're just brewing new coffee so it will be four minutes – but it will be free for you when it is ready, do you want to wait?" Benchmarking of performance indicators can lead to complacency and mislead companies into believing that they are performing cost effectively in the marketplace. But their customers might expect more and improvement may be easily achieved.

1.10 OTHER ASSUMPTIONS ABOUT INNOVATIONS

1. Innovation is inherently good, any resistance by employees or managers is unwelcome. But sometimes this resistance to change may be in the interest of the organization.
2. Assume that removal of barriers will restore the natural flow of innovation. Innovation needs motivation, extra ordinary effort, tolerance to risk and co-ordination of activities of many actors. Removal of barriers is a necessary but not a sufficient condition for innovation to take place.
3. Existence of barriers itself is bad. Occasionally, barriers can turn into positive factors stimulating innovation or providing valuable learning experience for the firm.
4. Focusing on innovation barriers is more important than focusing on reinforcing positive factors for innovation. Perhaps both are equally necessary and complementary.

1.11 EXTERNAL BARRIERS TO INNOVATIONS

Market related – These can be due to structure of markets, competitive forces operating in the market, entry and exit barriers.

Government related – Lack of government support/incentives can mar innovation.

1.12 INTERNAL BARRIERS TO INNOVATIONS

People related – If people are not sufficiently motivated or energized or if the culture in the firm does not incentivize people to be creative, innovation cannot flourish in such a firm.

Structure related – Inadequate communication flows, inappropriate incentive systems, inadequate collaboration between R&D, production and marketing.

Strategy related – Technical personnel unaware of overall business strategy, senior managers more risk averse, inclination to maintain the status quo, fear of cannibalizing sales of existing products becomes an excuse for avoiding innovation.

1.12.1 BARRIERS TO INNOVATIONS

- Tendency to focus on negative aspects of problems.
- Not looking at problems as opportunities
- Fear of failure
- Not having time to think creatively.
- Tendency to conform to accepted patterns of belief hampers breakthroughs.
- Making assumptions that restrict creative thinking
- Over reliance on logic
- Resistance to new ideas and processes
- Emotional attachment to old habits, beliefs and assumptions
- Policies, procedures, inflexible and rigid organizational structures, traditions
- Lethargy that results due to extent of hard work (time and effort) to produce results while taking the path from ideas to development to implementation.
- Absence of robust processes within the organisation.

Barriers to innovations can cripple idea generation and innovation management processes. These barriers demotivate employees and also keep the organization as a whole from moving forward. Therefore identification of barriers is important.

Barrier to innovation is any factor that influences the innovation process negatively.

1.13 INNOVATION SOURCES – I.E. SCIENCE & R&D, TECHNOLOGY TRANSFER, PUSH AND PULL APPROACHES

Management of technology creates a linkage among science, engineering and management disciplines. Science and engineering contribute to scientific discovery and technology creation. Discoveries in science create a phenomenal base for technological innovation. New science and new technology provide the basis for expanding the economy.

Science deals with understanding laws of nature. When scientific knowledge is applied that knowledge starts getting used in technology. Earlier science and technology ran on parallel tracks but now they are converging. Most technologies were result of scientific discoveries. More innovations have resulted only because of interaction between science and technology.

R&D is the purposeful and systematic use of scientific knowledge to improve man's lot. R&D is effort to develop new knowledge and apply scientific or engineering knowledge to connect the knowledge in one field to that in others.

1.13.1 R&D CONTINUUM

Basic research, Applied research, Development, Technical service – all these elements comprise the R&D continuum. R&D contributes to strategic success of an organisation. R&D growth is linked to intensity of sales growth and increase in market value. The expenditure on R&D must be viewed as a long term investment. Even R&D investment reduces short term profitability, the company must not react to it by curbing the expenditure on R&D.

Basic research is fundamental research carried out in universities and research institutions. Applied research involves the use of existing scientific principles for solving a particular problem. Development involves the use of known scientific principles, but the activities center on products. It could be overcoming a technical problem associated with a new product. Technical service provides service to existing products and processes – cost and performance improvements to existing products, processes or systems.

R&D has to be integrated within the existing business framework of an organisation.

1.13.2 TECHNOLOGY TRANSFER

Technology transfer is defined as the process of promoting technical innovation through the transfer of ideas, knowledge, devices from leading edge companies, R&D organisations and academic research to more general and effective application in industry and commerce.

It was in the 1980s that governments around the world began to realise the importance of technology transfer. Technology that has already been produced and hence paid for by someone else could be used and exploited by other companies to generate revenue and thereby lead to growth of economy. Since 1980, transfer of technology from universities to private industry has become big business. Governments encouraged technology transfer.

In simple terms, technology transfer is the application of technology to a new use or user. Technology developed for one purpose is employed by a new user in a different application.

The different models of technology transfer are:

1. Licensing
2. Science Parks
3. Intermediary agency model
4. Directory model
5. Knowledge transfer partnership model
6. Ferret model

7. Hiring skilled employees
8. Technology transfer units
9. Consultancy
10. Research Clubs

1.13.3 PUSH APPROACH TO INNOVATION

Here, the firms carry out R&D activities, create a new product and aggressively market it. They create a desire in the consumer to purchase the product. The firms carry out aggressive marketing and sales promotions. This is called as push approach. For instance – FMCG goods, LED televisions, Tablet mobile phones follow the push approach. The company creates a need for its products in the market. The research is not based on what the customer wants but what the company wants to sell. Pharma sector uses push approach.

1.13.4 PULL APPROACH TO INNOVATION

Here, the firms carry out R&D activities based on a distinct need for such a product or service as highlighted by market research. In the initial stages, when there is not much competition, no aggressive marketing is needed. Example: Mosquito mats were discovered based on consumer needs to have a better technology for fighting mosquitoes. Good Knight understood that Tortoise mosquito coils and Odomos creams were not meeting the needs of customers. Thus mosquito mats were introduced and later on we have had a number of incremental innovations in such products. Now we have liquid vaporisers. Some firms are using neem oil as a mosquito repellent. Several beauty products are marketed aggressively to create awareness but once they achieve market share, they use pull approach to redesign and tweak the products so that customer is drawn to buying such products on his own volition. Food industry uses pull approach.

1.14 PROCESSES USED TO EXPLORE INNOVATIONS ALONG THE TECHNOLOGY, MARKET AND STRATEGY DIMENSIONS AS INNOVATION MOVES FROM IDEA TO MARKET

In all the firms there is a fundamental tension between the need for stability and the need for creativity. What is needed is a creative environment where ideas can be tested and developed. Stability leads to efficiency gains. Creativity leads to development of new products. Companies like P&G, Sony, Ford, 3M ensure that their products are manufactured to precise specifications. Firms have to exert pressure to drive down costs and improve operational efficiency. But they also need to provide room for new product development.

To improve innovation performance firms have to stimulate innovation through research, leadership and creativity.

Innovation Stimulus comprises Leadership, people management, knowledge management, Creativity management.

Innovation capacity – Technology management, R&D management Innovation capacity is a combination of technological and human factors. R&D will need support from Project management and Risk management.

Innovation Process can be described in the following steps:

1. Firm has to understand organizational heritage, composition of R&D teams, experience strategy for innovation and organizational structure.
2. The top management support required has to be documented.
3. This determines technological viability.
4. Product related factors like price, quality, technology are determined.
5. Market related factors like structure of market, timing of market entry, competition are determined.
6. This establishes commercial viability.
7. Once technological and commercial viability is successfully determined we now have a successful product that can be marketed.

Innovation is not a linear process. It requires a variety of competencies at key stages in the innovation cycle. Along with special skills there is need for proper coordination and management. The firm has to be receptive to innovation, create a space for creativity and plan long term for the success of innovation. Organizations need a diverse range of skills. They have to insist on cross functional cooperation and also demonstrate willingness to accept risk. The strategic planning will lead to proper selection of technology and understanding the market segmentation.

Let us now outline the processes from idea generation to commercialization

1. Conduct market research
2. Arrive at needs of consumers
3. R&D efforts
4. Formulate strategy
5. Assemble knowledge
6. Generate ideas
7. Screen ideas
8. Select the idea
9. Develop the idea

10. Test the idea – trial and error
11. Refine the idea based on test results
12. Development product prototype and test
13. Technical testing
14. Market testing
15. Launch the product in the market

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2 INNOVATION STRATEGY

2.1 LEARNING OBJECTIVES

- Appreciate the factors that drive the success of innovation
- Understand why innovation strategy is so crucial
- Study examples of companies that failed in their attempts to innovate
- Explore how companies can strategise to achieve success

2.2 WHY DO WE NEED AN INNOVATION STRATEGY?

Companies like Polaroid, Nokia, Sun Microsystems, Yahoo, Hewlett-Packard have realized that it is difficult to sustain innovation performance. It is not just about failure to execute an innovation. Many of the attempts fail because of the absence of a robust innovation strategy.

Strategy is born when policies or behaviors are aligned to achieve a specific goal. Many companies focus on cross-functional collaboration but do not pay sufficient attention to aligning innovation strategies with business strategies. This is why innovations fail.

When a company does not have an innovation strategy, it faces problems in decision making – in terms of deciding how to select the right projects and accordingly allocate resources for the same. Aping other organizations won't lead to success. One can learn from successful innovators but eventually the innovation attempts must be tailored to match a company's specific needs. Ultimately it is strategy that binds the conflicting goals of different functions to arrive at a common understanding of what is needed to achieve success.

Corning is a leading manufacturer of specialty components used in electronic displays, telecommunication systems, environmental products and life sciences instruments. Corning has repeatedly transformed its business through path breaking, pioneering innovations.

If we look at Corning's best practices, they may look outdated. It has a centralized R&D center. The company invests a lot in fundamental research. Corning also makes heavy investments in manufacturing technology. Corning has still not succumbed to the temptation of outsourcing its manufacturing operations.

But in reality, Corning's approach focuses on selling components that improve the performance of customer's complex products. Corning needs to have the extraordinary ability to solve customers' problems and this is not possible without investments in long term research. Centralization of R&D function enables greater cross-functional cross-discipline collaboration. As manufacturing is in-house, Corning finds it easy to keep itself abreast of latest technologies and designs and navigate them from R&D to manufacturing in a seamless fashion.

2.3 STRATEGIC CONSIDERATIONS ON INNOVATIONS

Innovation needs smart thinking. Businesses have to think long-term. So, they use the foresight about future opportunities to innovate and develop business. What are strategic opportunities? These are opportunities for business in the long term. Using SWOT analysis, a firm can map future strategic opportunities.

Companies analyse market trends. Then they do competitive benchmarking. Here they compare themselves with the competitors who are better than them. Firms have to build on their strengths and take actions to overcome weaknesses. This enables them to counter the threats and tap the opportunities.

Strategic aspects of innovation comprise the following three elements:

1. Market Dynamics
2. Market Opportunity
3. Market Impact

2.4 MARKET DYNAMICS

A business has to be aware about the external environment that is dynamic in nature. Agility is very important for sustainability. Today businesses cannot aim to be only successful in the short term. How can businesses continue to survive in the long run? The ability of businesses to survive in the market in the long term is called as sustainability of business.

What is agility? It is the speed of response. How quickly can a business respond to the needs of the customers?

If a business wants to be agile and sustainable, then it has to understand the dynamics of the market. Who are the players in the market? What are the prices at which they are offering the products? Do customers like their products? Are the competitors supplying better quality products? What are the Government regulations? Is there a change in consumer tastes and preferences? These are important questions.

As businesses are increasingly facing the impact of globalization, it becomes essential to understand market dynamics not only in the local market but also in foreign markets.

In developed countries, environmental concerns drive public policy. So, suppliers in developing countries learn about innovation from customers in developed countries. The regulations in developed countries are stringent. So, suppliers have to work hard to meet these demands. This makes them more efficient. Due to the increased capability of suppliers, the domestic market also benefits.

The scope of innovation is wide. It is not just about new product development. It covers new processes, new and better ways of manufacturing products or looking at new applications of existing products. Market dynamics enable businesses to gain unique customer insights that help the business.



2.5 MARKET OPPORTUNITY

Once market dynamics is understood, it is easier to understand the opportunities that exist in the market. More than 75% of innovations fail. Businesses have to be prepared to face this reality.

Even when innovations succeed, many products do not succeed commercially. Why is it that some innovations are successful, while others are not? The reasons can be outlined as below:

- Better understanding about consumer choices and preferences
- Better understanding of markets and their peculiarities
- Ability to anticipate future needs
- Gain insights about how consumers are influenced by the changes in the external environment
- Better cost-benefit analysis
- Greater value for customer
- Establishing an emotional connect with the people
- Correct time of launching new products

A successful innovation results because the company has understood the drivers of innovation. Return on investment of innovation takes time. So, the company that is the first to launch an innovative product in the market place gains the advantage of market mover. Good Knight pioneered the idea of mosquito mats.

Apple is known for its innovative products. 3M launched Scotch-bite for cleaning utensils. Once a product is successful, other players in the market try to copy the market leader. Some companies build up on the existing product and manage to develop a better product. For example – while mosquito mats are still being used, liquid vaporizers are also popular now.

Odomos cream was a well-known mosquito-repellant cream. But when the company realized that there is an opportunity in the market for selling creams that had a mild/pleasant odour, the formula of the cream was changed to reduce the strong odour in the original cream. In a similar manner, pain balms like Amrutanjan came up with sprays. Iodex was being sold in a dark coloured bottle for ages. But when competition came in the form of Moov – a cream in a collapsible tube, Iodex was forced to change.

Thus, strategic innovation mindset needs correct understanding of opportunities in the market.

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2.6 MARKET IMPACT

Once the market dynamics is understood and actions are taken to tap the opportunities, the next step is to have a clear understanding of the market impact. How is the market responding to the new product? Is the price-performance equation perfect? Are there any gaps in existing products? Is there scope for improvement? Is the introduction of new product triggering action by competitors?

It is important to get answers to these questions. Companies often do market research to understand the opportunities in the market. After the product is introduced, some companies do a post-launch survey. This helps them to improve parameters like price, quality and aesthetic features of the product. If the market impact is positive, it spurs the businesses to ramp up production.

To develop the innovation pipeline, understanding these three elements viz. Market dynamics, Market opportunity and Market Impact is important.

2.7 COMPETITIVE ENVIRONMENT

External environment can dictate innovation. For example – new environmental regulation can force businesses to innovate. A breakthrough in technology can help. If consumers become more affluent, then this can lead to a great opportunity. The emergence of Bangalore as a silicon valley of India has given a great fillip to the service industry. When a competitor acquires an innovative company, it can prove to be a real threat for a business. Some questions that arise are:

1. How will technology change?
2. How will the industry structure be altered?
3. How will the regulatory framework evolve?
4. How will the customer needs change in the future?

2.8 END-TO-END STRATEGIC INNOVATION PROCESS

Companies have to look at the innovation process holistically. Managing the process end-to-end means that – a business has to get involved in all aspects of the process. They have to look at design of the process at supplier end as well as application of product by customer. This gives them a complete picture.

Managing strategic aspects of innovation is useful for a business in the long run. This will need the innovation efforts of a business to be properly aligned with the demands of the market place.

2.9 STEPS FOR MANAGING STRATEGIC ASPECTS OF INNOVATION

- Do a thorough market analysis
- Understand future trends
- Monitor and analyse market dynamics
- Know what are consumer needs
- Know the competencies of the business
- Understanding how the assets of business can be put to better use
- Take advantage of opportunities by taking actions
- Creating an impact in the market

2.10 QUESTIONS THAT A BUSINESS SHOULD BE ASKING

- How are consumer perceptions evolving?
- What is changing in the market?
- How will this change affect my brand equity?
- What are the greatest opportunities for my brands and my business?
- What innovations best meet emerging needs?
- Which innovations should I take to the market?
- When should I take these innovations to the market?
- What is the revenue potential?

It has to be understood that:

Innovation = Insight + Invention + Implementation

Collaboration between academic, industry, government and investors is vital.

2.11 HOW CAN INNOVATION CREATE VALUE?

- Make potential customers pay more by saving them money
- Create a dramatic societal impact

Apple's focus on making its products easier to use than competitor's is driving its innovation strategy. Bell Labs created many breakthrough innovations like the telephone exchange switcher, the photovoltaic cell, the transistor, satellite communications, the laser, mobile telephony and the operating system Unix. But research at Bell Labs was directed at improving the capabilities and reliability of the phone network.

Creating indispensability is another way of ensuring sustainability.

When an innovation creates value and is lapped up by the market, imitators are bound to follow. Intellectual property alone is insufficient to thwart the entry of these rivals. When imitators enter the market, they try to compete on the basis of price. As was mentioned in Michael Porter's five forces model, such competition enhances the bargaining power of suppliers and buyers.

Companies have to think about the complementary assets, capabilities, products or services that could prevent customers from defecting to rivals so that they can make their position insurmountable. For example, the way Apple designs its complementarities is such that an iPhone owner finds it attractive to use an iPad rather than use a rival's tablet. On top of it, Apple's control of the operating system makes it indispensable. Corning has a customer-partnering strategy that makes it indefensible.

The discount retail format in India called as Big-Bazar is always at the forefront of retail innovations. For example – while selling food grains, the retailer displays the foodgrains similar to the way such commodities are displayed in a market. Bazar is the Indian word for market. Big Bazar has always claimed that it wants to create a unique bazaar experience for its customers. Indians have the habit of touching and feeling the commodities like foodgrains and hence this effort of Big Bazaar went down well with its middle-class consumers.

The only way to sustain the innovation business model is to continue to innovate to keep copy cats at bay. Firms have to think long term which is one more reason why an innovation strategy is needed.

2.12 IS INNOVATION ALWAYS ABOUT TECHNOLOGY?

It is not necessarily so. Companies like Netflix, Amazon, LinkedIn, Uber have mastered the art of business model innovation. Companies can make a choice about the quantum of efforts that have to be directed at technological innovations and the quantum that needs to focus on business model innovation.

Take the case of taxi aggregator services in India. Ola Cabs is also offering cab services like others – but they differentiate their service in terms of ease with which a customer can book a cab. They have launched an app for Ola cab services through which a customer can easily book a cab and then can connect to a driver – all in a matter of minutes. The fact that the drivers are taken care of well through financial incentives adds to the appeal of the model.

This leads us to the concept of Innovation Landscape map that is the outcome of research by Gary Pisano, William Abernathy, Kim Clark, Clayton Christensen, Rebecca Henderson and Michael Tushman. This model characterizes innovation along two dimensions – the degree to which technology is involved and the degree to which the business model is impacted.

This research classifies innovations into

1. Routine Innovations
2. Disruptive Innovations
3. Radical Innovations
4. Architectural innovations

The Innovation Landscape Map

When creating an innovation strategy, companies have a choice about how much to focus on technological innovation and how much to invest in business model innovation. This matrix, which considers how a potential innovation fits with a company's existing business model and technical capabilities, can assist with that decision.

<p>REQUIRES NEW BUSINESS MODEL</p> <p>DISRUPTIVE</p> <ul style="list-style-type: none"> • Open source software FOR SOFTWARE COMPANIES • Video on demand FOR DVD RENTAL SERVICES • Ride-sharing services FOR TAXI AND LIMO COMPANIES 	<p>ARCHITECTURAL</p> <ul style="list-style-type: none"> • Personalized medicine FOR PHARMACEUTICAL COMPANIES • Digital imaging FOR POLAROID AND KODAK • Internet search FOR NEWSPAPERS
<p>LEVERAGES EXISTING BUSINESS MODEL</p> <p>ROUTINE</p> <ul style="list-style-type: none"> • A next-generation 3 series FOR BMW • A new index fund FOR VANGUARD • A new 3-D animated film FOR PIXAR <p>LEVERAGES EXISTING TECHNICAL COMPETENCES</p>	<p>RADICAL</p> <ul style="list-style-type: none"> • Biotechnology FOR PHARMACEUTICAL COMPANIES • Jet engines FOR AIRCRAFT MANUFACTURERS • Fiber-optic cable FOR TELECOMMUNICATIONS COMPANIES <p>REQUIRES NEW TECHNICAL COMPETENCES</p>

SOURCE CORNING; GARY P. PISANO
FROM "YOU NEED AN INNOVATION STRATEGY," JUNE 2015

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Routine innovations build on a company's existing technological competence and fit the existing business model. Example – Intel's microprocessors that have contributed to the growth of the firm. Apple iphone is another such example.

Disruptive innovations do not need a technological breakthrough though they may necessitate a change in the existing business model. It challenges the business models of other organizations. Take the case of Google's Android operating system – this system is used for mobile devices. It is disruptive not because it is technologically superior than Apple or Microsoft but because of its business model – Android is given away free while the operating systems of Apple and Microsoft are not.

Radical innovation is all about technological innovations. Use of genetic engineering and biotechnology in the 1970s and '80s for drug discovery can be cited as an example. Biotechnology helped in creating new drugs for the pharmaceutical industry.

Architectural innovation combines technological and business model disruptions. Digital photography is an example. Companies like Kodak and Polaroid needed to master new competences to embrace digital technology. These companies could earn money only through cameras and not through film rolls.

Thus, we can say that Architectural Innovations = Radical Innovations + Disruptive Innovations.

Google is experiencing rapid growth through routine innovations. But it is looking at innovations like driverless car. Automotive companies are investing funds in research directed at manufacturing hybrid cars and electric cars. A new innovation by R&D department needs support in the form of manufacturing capabilities. Otherwise, the innovation will not be able to sustain. Resource allocation decisions are often based on power struggles within the organization and the desire to stay in the comfort zone rather than enter untested waters.

Research has proved that crowd sourcing whereby a business can invite ideas from just about anyone to solve a problem is faster, more efficient and more credible. Crowd sourcing is a tool whose strength is that it can tap the potential of a large number of people to solve problems. But it may not be the right strategy when a firm seeks a more concentrated knowledge base and more expensive testing.

Customer involvement in the innovation process is called as co-creation. Customers can reveal unique insights about a product or service. Steve Jobs did not believe in market research because he felt that customers do not know what they want.

2.12.1 DEMAND-PULL APPROACH

This is the approach wherein the firm tries to understand the customer's unsatisfied needs or problems and works towards providing solutions. This needs a strong customer orientation.

2.12.2 SUPPLY-PUSH APPROACH

This is the approach where a firm develops a new technology and then tries to find a market for it.

Both these approaches involve risks and necessitate an appropriate trade-off.

In the decision to choose a particular idea, a structured phase-gate process has immense value. Whether it is using an existing technology or use of a new technology, the collective wisdom involved in the front end loading stage can deliver immense benefits at a later stage. Knowing the risks at an early stage and knowing how to mitigate them is always better than circumventing the risk management process.

2.12.3 FOUR ESSENTIAL QUESTIONS IN IMPLEMENTING AN EFFECTIVE INNOVATIVE STRATEGY

- How will the innovations deliver value for our customers and business?
- How can we allocate resources efficiently for different kinds of innovations?
- How can we manage trade-offs and take decisions that are in the best interests of the organizations?
- How do we prepare for the evolving landscape of changes in the patterns of innovation over a period of time?

Innovation strategy is generated by a process of churn – it involves continual experimentation, learning and adaptation.

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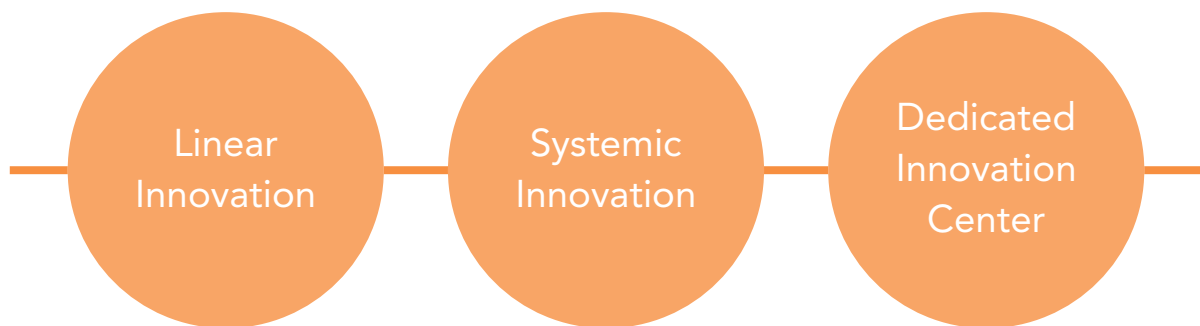
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3 APPLICATION OF INNOVATION

3.1 LEARNING OBJECTIVES

- Understand the organizational aspects of innovation
- Learn about the relevance of creative approaches
- Study the different techniques of innovation management
- Understand the different innovation models
- Learn about the sources of financing innovations
- Understand the facets of innovation funnel
- Study about the soft and hard aspects of innovation management

3.2 ORGANIZATIONAL ASPECTS OF INNOVATION



Where is Innovation generated?
 Where could innovation be generated?
 Where could each type of innovation be generated?
 How can Innovations find the higher chances to get through?

During earlier part of the 19th century, small firms existed that only made limited products. But towards the end of the century, these firms were replaced by larger firms that were able to produce a variety of products using a wide range of activities. As manufacturing activities expanded, administrative activities also became more prominent. Thus was born the diversified business enterprise. When companies wanted to explore new markets, they started developing new products.

Linear innovation was more incremental in nature. Innovation happened in small steps. This was followed by systemic innovation where the process of innovation was seamlessly blended into other organizational processes. For example – in linear innovation, new products would be developed by R&D and then it would be shared with other functions. The process was bureaucratic in that decision making was slow. In systemic innovation, there is a continuous dialog between different functions. So, if R&D is working on developing a new product that involves a new raw material, then purchase is involved right in the beginning to scout for the sources for this raw material. In systemic innovation, the functional processes are concurrent and are not serial in nature.

The Scope of Innovation Mgmt



From Idea to Commercialization

When a firm starts deriving greater value from innovation, then it realizes that innovation has to be its core competence and therefore it starts a dedicated innovation center and appoints a Chief Innovation Officer who provides the necessary functional links and is ably supported by the top management.

Role of other firms is important in understanding innovation. Innovation does not happen in a vacuum. Economics has a role to play. Organisational behavior is important because we need to know what activities are required to achieve success in innovation. Innovations like cell phones and software are associated with organizations rather than individuals. Resources in terms of capital, knowledge, skills and market experience have to be mobilized and therefore innovation has to be looked at from organization's point of view.

Earlier ICI was considered as the leader in chemicals. But today every company is known as a specialist in some areas. Chemical companies cannot be scientific leaders in all areas of chemistry. Success of new ideas requires inputs from several sources – not just academic establishments. This is one reason crowdsourcing is becoming popular.

In crowdsourcing, the design ideas can come from customers. Asian Paints encourages customers to design new paints. Many service establishments encourage feedback from customers and use it as an input for new service development.

3.3 CREATIVE APPROACHES

Organizations should encourage creative approaches to solving problems. Creativity can be encouraged through brainstorming. Firms should develop the competencies of employees to adopt a creative approach. Creative approach involves using out of box thinking.

Often creative approach is defined by how efficiently the problems are solved or how frequently ideas are generated. Less attention is paid to the style of problem solving. Thus more attention has been paid to level of intellectual element in the creative approach. A creative approach may involve questioning the problem itself. Creative approach is about approaching a problem from unexpected angles. Innovation attempts to reorganize or restructure the problems and to approach it in a new light, free from any assumptions.

In large organizations, bureaucracy distorts the creative approach that needs to be adopted in successful innovations.

True innovator is less concerned about the views of others, he is more blunt in his presentation of the solution and he is more comfortable in a turbulent environment.

A strictly rational approach cannot solve problems effectively. Since creativity is an important input for problem solving, creative problem solving has now assumed greater importance.

The 8 stages in creative problem solving process are:

1. Analyze the environment
2. Recognize the problem
3. Identify the exact problem
4. Make assumptions
5. Generate alternatives
6. Choose among alternatives
7. Implement the chosen solution
8. Control

Both internal and external organizational environments must be continuously monitored to notice signs of problems or opportunities. This process of information gathering is vital to the creative problem solving process. Royal Dutch Shell is an organization that spends millions of dollars tracking information about competition and the economy.

Often doubts about the existence of a problem exist at the sub conscious level. Mikio Kitano started having doubts about Toyota's plans of saving costs using robots. On deeper introspection, he realized that it would be cheaper to do the same tasks using human labour. He was proved right and he was guided by his intuition.

Resources must be directed towards eliminating the problem instead of merely addressing the symptoms. Assumptions have to be stated carefully. For example – how will the state of the economy be when a new product is launched? Assumptions can be a constraint on the success of the solution. Sometime assumptions can make a simple problem more complex or they can oversimplify a complex problem.

Formulation of useful options increases the chances of success. Decision making should be based on a systematic evaluation of alternatives against the criteria established earlier.

What if you could build your future and create the future?

The innovation accelerator

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Engineers of Honda were working on the development of an engine that would get 55 miles per gallon but when they chose the technology they looked at the impact on cost of production and compatibility with existing technology. Once we have a clear idea of what we want to do, we need to take action. Evaluating results is important and provides inputs to the environmental scanning process. Deficiencies in solutions must be promptly addressed. At Federal Express, group decisions based on creative approaches are routine affairs. The teams that solved problems were also responsible for making further refinements to the process.

3.4 SYSTEMIC AND ANALYTICAL METHODS AND TECHNIQUES OF INNOVATION MANAGEMENT

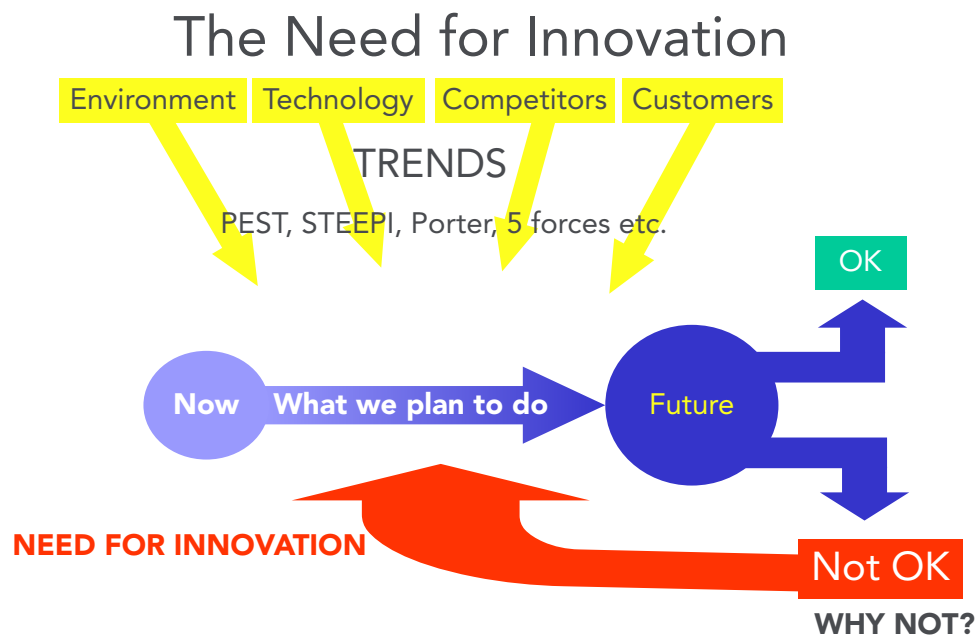
Brainstorming

Alex F. Osborn invented brainstorming technique in 1938. Osborn felt that business conferences were a waste of time. He developed the technique of organized ideation in group meetings. Creative approach consists of finding out facts, finding out ideas and finding out solutions. In brainstorming, the evaluation of ideas is deferred.

The four major rules of brainstorming are:

1. Do not criticize any idea.
2. Encourage free flow of ideas
3. Ensure more ideas
4. Combination and improvement are sought

The Need for innovation is documented after scanning the environment, mapping the technology, looking at competitor actions and focusing on customer needs. If what we are going to do now is going to help the business in the future, it will trigger further actions. But if there is a contrarian view to this, then it makes to sense to re-look at the need for innovation.



3.5 INNOVATION FUNNEL

The innovation process is like a funnel. Many ideas enter the funnel but only some can be prioritized depending on availability of resources and depending on technical and commercial viability of the idea. Initially technical viability plays a greater role. Once the ideas are screened and prioritized, the New Product Development process is followed to implement the idea. All these actions are enabled by the strategy that defines the goals, communicates the goals, decides the technology and sets forth the performance measures. The people in the organisation – their skills, knowledge, competence and behaviors play a role in the successful implementation of the idea. The organisation also needs to have the right culture to support this process. Employees have to be motivated and a performance appraisal system must be put in place.

- Framework of the five key areas
- Use as a basis for “auditing” innovation performance

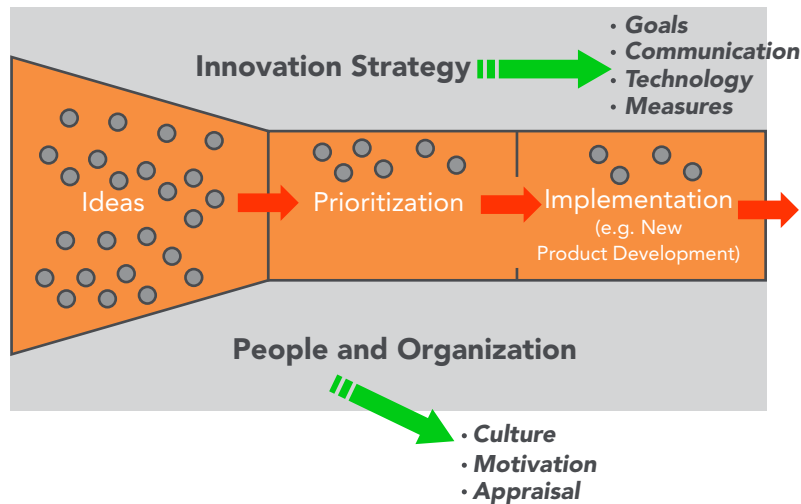


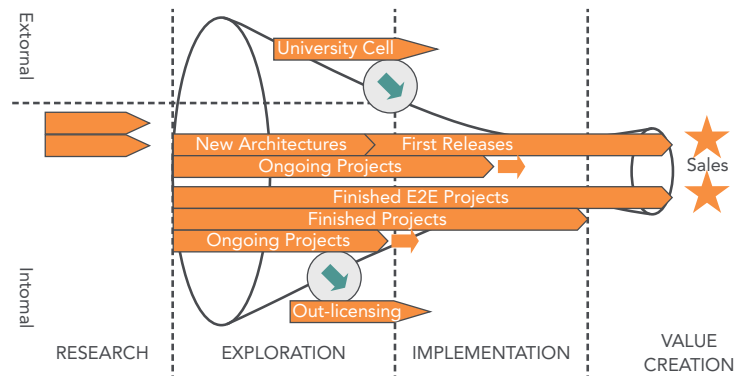
Fig: Innovation Funnel

The culture in an organisation sets the paradigm for innovation. Structures in the organization determine the hierarchical levels within the organization. Power equations decide which project gets the preference. This leads to transmission of symbols/messages that decide the project that is actually going to be implemented. The firm needs to project future success stories so that routines and rituals in the organisation are attuned to the innovation needs. Control systems are now in place to measure the performance. Culture is a driver for all these actions.

The innovation funnel is characterized by four parts. Research, exploration, implementation and value creation.

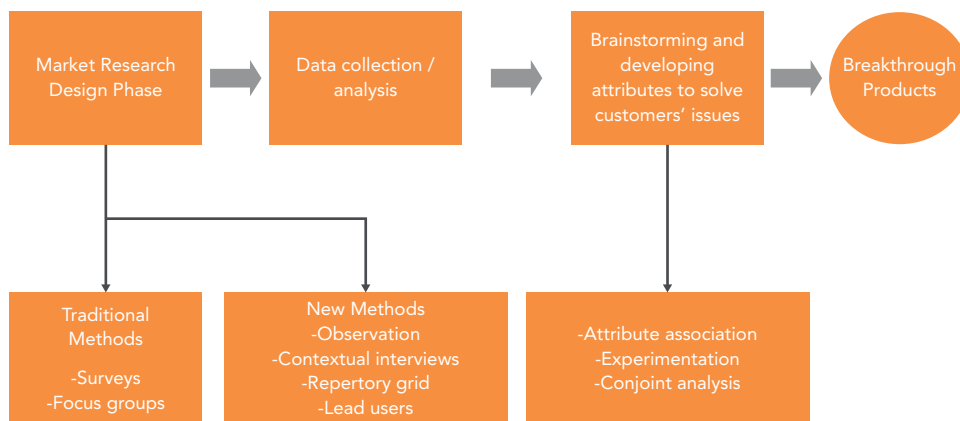
The innovation funnel shows the progress and filtering, inside an innovating firm, across the path from Idea to Innovation

Innovation Funnel



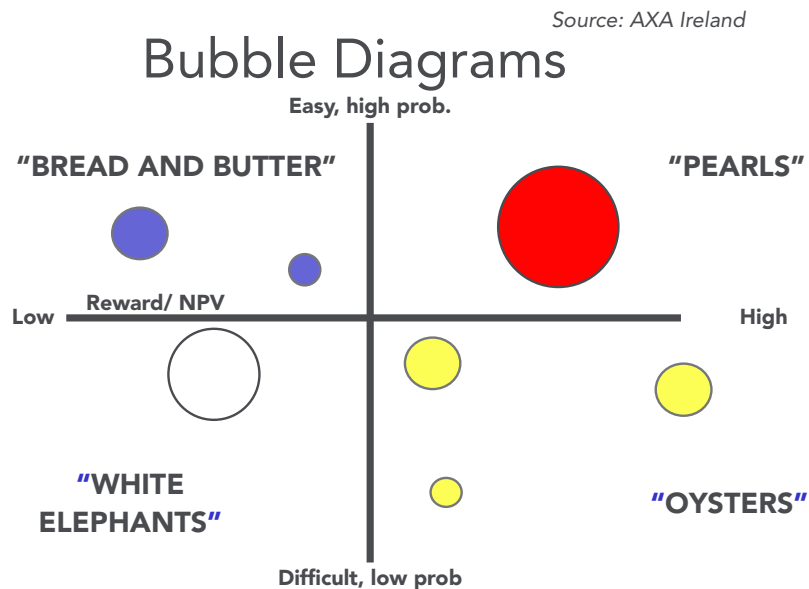
3.6 HIDDEN NEEDS ANALYSIS

Hidden Needs Analysis³



If we look at the flowchart above, the innovation process is characterized by what is called as hidden needs analysis. Market Research is done to arrive at customer needs. This feeds into the design process.

The design keeps evolving. In the next step, data is collected and analysed. Brainstorming is the technique that is used to generate ideas and the customer issues are mainly in focus. These issues have been revealed through market research. Breakthrough products are created in this fashion. While surveys and focus group methods help the process, new methods are also being tried out.

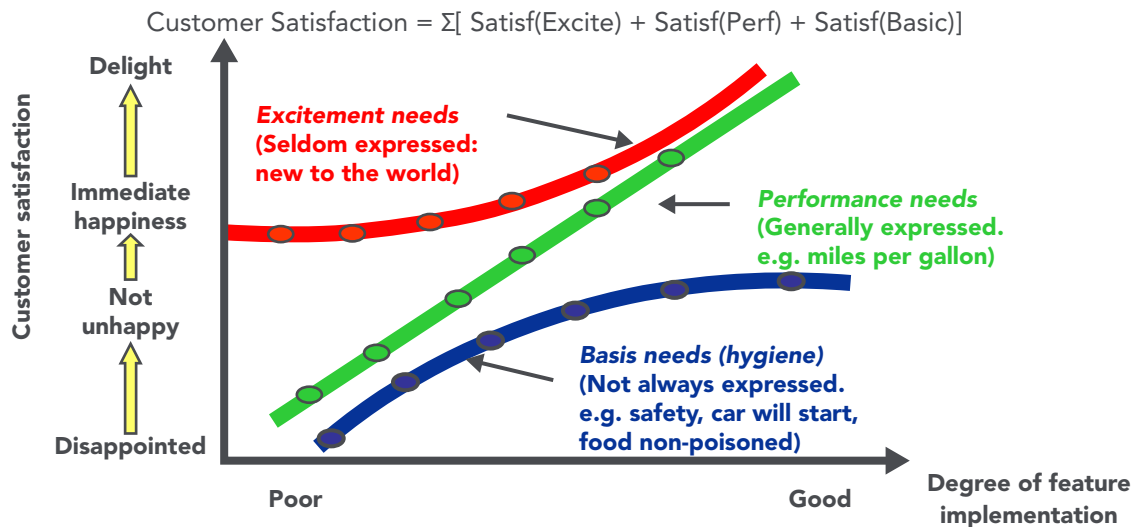


3.6.1 BUBBLE DIAGRAM

This is one more method of evaluating the innovation projects. The projects that give low reward are the ones that have already delivered returns. These are the “bread and butter” products of the company that yield great profits. To continue drawing profits from such products, the firm relies on minor adjustments in the products [incremental innovation] and the product’s brand strength continues to help the business growth. Then we have products that are called pearls that have a higher probability for success and are easy to achieve. These are typically low hanging fruits in that they deliver a higher reward and higher return on investment. Typically these are breakthrough products launched by the company and the company now gets the first mover advantage as it is the first company to hit the market with “pearls” products. Implementation is easy because the firm has the experience, expertise and the required skills sets and knowledge base. Oysters are projects where technological breakthrough is difficult but once it is achieved, the rewards can be huge. However such projects are characterized by greater uncertainty and a greater element of risk. The term “white elephants” is a better known term as these are projects that have low chance of success and also do not deliver sufficient returns.

3.6.2 THE KANO MODEL OF INNOVATION

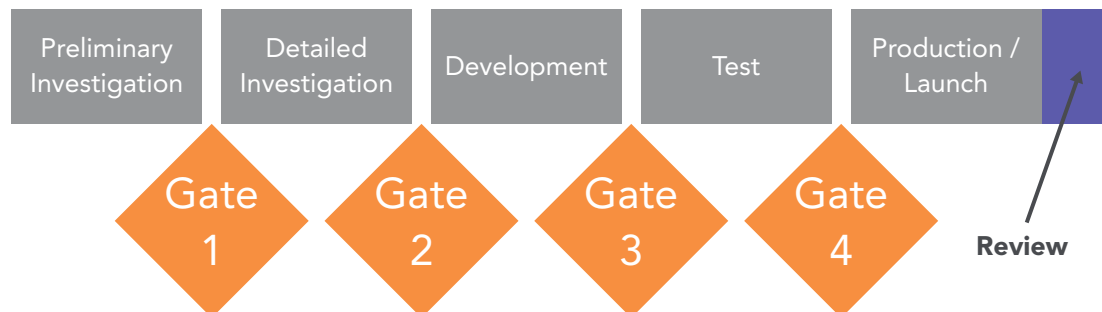
Kano Model



In the Kano model for managing innovation, customer behavior is traced on a scale from “disappointment” to “customer delight”. The basic needs may not lead to a state of happiness for the customer even though the dissatisfaction levels will reduce as more features get introduced. Once these features become value for money propositions, the state of unhappiness gets translated into one of happiness and this is the stage when the product performance starts playing a greater role in satisfaction. Beyond this, if the customer has to be delighted, then the products has to generate excitement that is something that the customer never expected, may have never wanted but once he has achieved the same, he becomes delighted. Thus, in the Kano model, customer satisfaction is expressed as a cumulative output of fulfillment of basic needs, performance needs and excitement needs.

3.7 THE NEW PRODUCT DEVELOPMENT/NEW SERVICE DEVELOPMENT PROCESS

The NPD / NSD Process⁶



In the new product development/new service development process, the preliminary investigation of the proposal is followed by detailed investigation and now the proposal starts taking shape. Testing of the proposal precedes the launch of the product in the market. Initial feedback from the market is then used to refine the product further.

3.8 ECONOMIC ASPECTS OF INNOVATION

Many managers complain that they have more projects to finance and there is paucity of funds. Not all innovations are successful; so there is tremendous pressure on managers to justify the expenditure as resources are scarce. Companies like British Petroleum encourage project managers to abandon a project if it is unlikely that it is going to deliver. Just because you have spent money on a project, it does not make sense to complete the project and invest more resources. Such expenditure is treated as “sunk investment” and written off.

The uncertainty and risk associated with the project complicates the financing of innovation projects. In a freely competitive market place, economies have expressed apprehensions about financing innovation projects.

All the economists have expressed the view that innovation by a firm does not prevent its use by competitors, so how can the firm justify the investments? To some extent, patents and intellectual property rights can help but competitors can take advantage of loopholes in the system. But the fact that innovative efforts can be copied by other firms has limited the innovative capabilities of firms in the past.

Due to these problems, the Government has had to step in to support innovation. Tax incentives have been given for R&D investments.

Financing is extremely important for innovation and growth, in particular at the seed and early stages of business development. Access to finance is a central issue for both innovative entrepreneurs and policy makers. Entrepreneurial start-ups and small and medium-sized enterprises (SMEs) face financial constraints largely because of their inherent riskiness and weaknesses. Evidence shows that innovative SMEs in the euro area considered access to finance one of their most pressing problems following the sovereign debt crisis in 2011 (EC, 2011a).

In spite of the growing importance of entrepreneurial activities in creating new ventures and implementing frontier research, innovative SMEs face several barriers for accessing finance, such as asymmetric information and financing gaps between investors and entrepreneurs. They also suffer from resource constraints, insufficient collateral, and lack of a track record. The quality of a business plan, in terms of due diligence, can be a very influential factor in funding decisions.

These potential market imperfections justify public intervention in entrepreneurial financing. In addition to establishing framework conditions that foster investment in R&D and innovation, governments use a variety of instruments such as subsidised loans, tax incentives and public support to venture capital. Grants and subsidies are considered especially effective for mitigating financing constraints in young and small R&D-intensive, technology-based SMEs in the early stages of development. Seed funding can help entrepreneurs not only to gain access to finance

Venture capital investment, which has become an important source of financing for technology-based ventures, has tended to increase, except for the moderate drop in the United States and the EU in 2009 in the aftermath of the 2008 financial crisis (OECD, 2011b). Investments by US business angel groups fell significantly in 2009, again owing to the 2008 crisis, but in Europe these investments rose steadily. As experienced, wealthy and informal investors, business angels tend to invest in the early and riskier stages and play a crucial role in filling the financing gap between the early- and the later-growth stage.

3.8.1 SOURCES OF FINANCING INNOVATION

Financing instrument	Key features in financing	Remarks
Bank loan	It needs collateral or guarantees in exchange for loans.	Obligation to repay as debt
Grant, subsidy	Used as seed funding for innovative start-ups and SMEs at the seed and early stage.	Complements market failures, financing at seed and initial stage
Business angel	Financing source at early riskier stage and provides financing, advice and mentoring on business management.	Financing at start-up and early stage
Venture capital	Tends increasingly to invest at later, less risky growth stage.	Financing at later expansion stage
Corporate venturing	Used by large firms to invest in innovative start-ups with a view to improving corporate competitiveness with either strategic or financial objectives.	Strategic motive
Crowd funding	A collective funding tool via the Internet which makes it easier for small businesses to raise capital at the seed and early stages.	Potential for fraud
Tax incentive	A broad range of tax incentives for R&D and entrepreneurial investments in most countries,	Indirect, non-discriminatory

Source: OECD (2011), *OECD Science, Technology and Industry Scoreboard*; OECD (2011), *Financing High-Growth Firms*; NIST (2008), *Corporate Venture Capital*, and other sources.

There is a gap between private rate of return and cost of capital when the innovation investor and financier are different entities. Financiers who expect quick returns will be reluctant to finance innovative efforts of entrepreneurs. Cost of external capital can be too high for funding innovations.

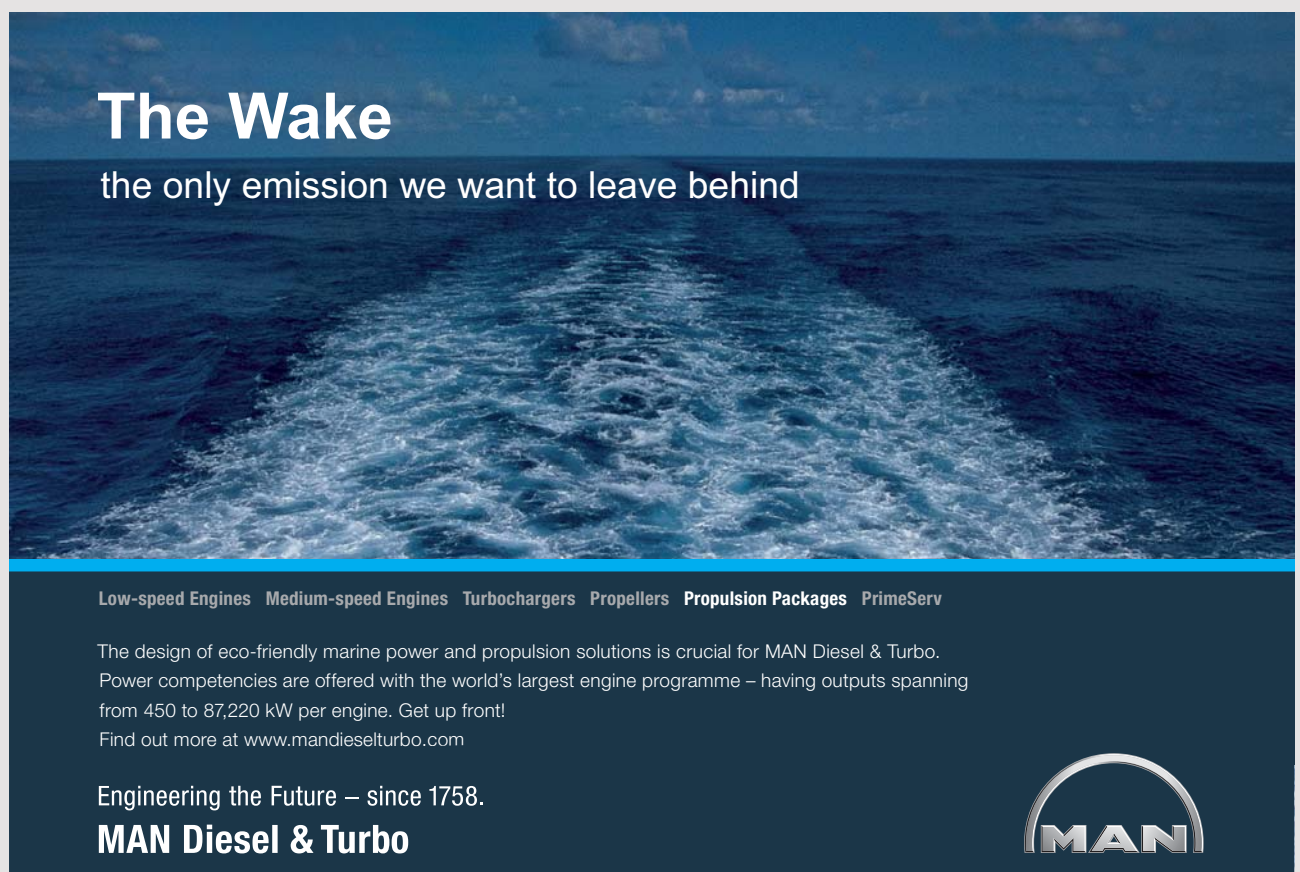
50% of R&D costs comprise wages and salaries of highly educated engineers and scientists. Efforts of R&D team create the firm's knowledge base, which is an intangible asset, from which future profits will be generated.

Firms spread R&D investment over time as they do not want to lose knowledge workers. Degree of uncertainty associated with the output of a research project is high. R&D projects with small probabilities of great success in the future may be worth continuing even if they do not meet the needs of expected rate of return.

Distribution of profits from innovation is somewhat like a Pareto distribution [20% projects lead to 80% profits]. As investments are made over time, new information arrives which reduces or changes the uncertainty.

Therefore decision to invest in any particular project is not a once and for all decision, but has to be re-assessed throughout the life of the project.

Information asymmetry between the innovator and the investor complicates problems. Firms are reluctant to reveal their innovative ideas to the market place and competitors.




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Financing of R&D projects is often done at a higher premium if the funding is through external sources. There are two types of innovation financing:

1. Relationship Financing – Here, the investor is able to monitor the progress of the project accurately.
2. Arm's length Financing – Here the investor has to rely on the innovator for information.

The investor is able to speed up or slow down the rate of financing depending on the progress of the project and his expectations of success. For firms in industries where R&D is an important part, the need for internal funds is greater.

Servicing debt requires a stable source of cash flow, which makes it difficult to find the funds for R&D investments that must be sustained at a certain level to be more productive.

Debt finance is not used for R&D investment as this may raise the cost of capital depending on the precise tax treatment of debt versus equity. Venture capital, Government incubation funding, seed funding, loan guarantees are different ways of funding R&D projects. Soft loans are approved at concessional rates of interest.

3.8.2 SOFT METHODS AND TECHNIQUES OF INNOVATION MANAGEMENT

Innovation happens best in a project environment. Innovation is successful when culture in the firm promotes initiative, ideation, transparent value analysis of ideas and prompt and efficient implementation and exploitation.

Each key stage in innovation is aided by techniques and tools as aides to achieving valuable outputs that serve the pipeline towards exploitation of new ideas.

Many techniques exist to promote the generation of ideas. Typically called creativity tools, they frequently are associated with a workshop style approach to the generation and qualification of ideas. While an idea comes from an individual, many consider that it emerges most effectively in a supportive group environment. The traditional workshop is described as brainstorming.

De Bono's Six Hats can modify the tendency for immediate criticism of new ideas, QFD can be used as an aid to classification. Ideas are consolidated and translated into concepts in order to evaluate them. Valuation of ideas is supported by Six Hats, and by many other techniques such as Function Analysis and other techniques with the area of Value Management.

When ideas are brought in from external sources, they will have typically evolved to well defined concepts, and validated through market research, through prototyping with one of more designs, and by test marketing, and perhaps protected through patenting.

Design is a critical phase and is supported by many design tools. Where a physical size and shape are important as in automobiles and household appliances then 3D CAD models and physical models are produced. Indeed modelling forms an important part of design in very many products. Prototypes that address a single aspect of a product is frequently employed, as example a system may have a paper model to show its navigation.

Scaling is becoming more important with certain products and services. In the pharmaceutical and petrochemical industries, chemical engineering models address its ability for mass production while maintaining product integrity. In software for social networking, the use of distributed databases, partitioning of data, memory caching, and architectural layers with loose coupling contribute to increased performance.

There is increasing attention to innovation in services. The extent of international services provides an opportunity for much greater value through innovation. Many new services are being identified, and many of them are technology bound. The availability and applicability and integrity of the technology become extremely important.

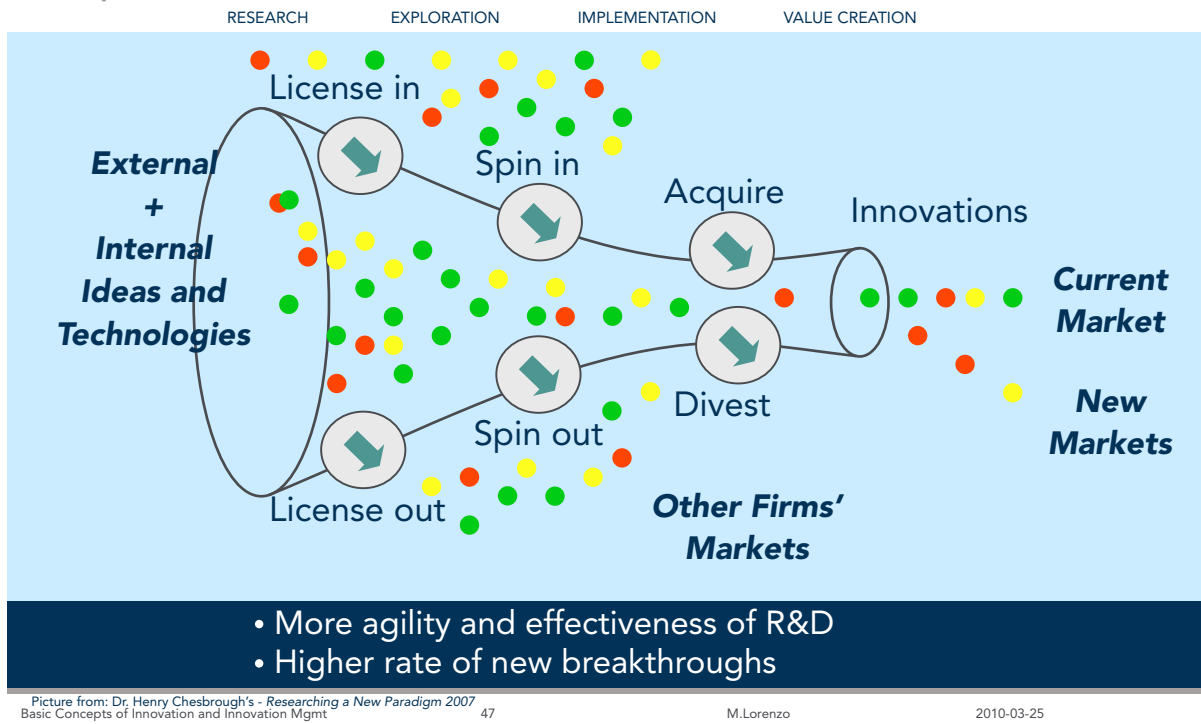
Process innovation has become critical to greater competitiveness. Operational and organisational improvements can greatly enhance the ability of an organisation to carry out business. However processes need to be considered from entirely new angles to make for true innovation. The result can be an entirely new way of working, new models of outsourcing and collaboration. It can also create opportunities for entirely different products and services. In IT we are seeing how improvements in Amazon processes are opening up possibilities of exploiting their network and intellectual assets for new services to major internet operations such as social networking.

Business model innovation represents a new way of carrying out business. An example of this is the change by software product companies to become service companies through operation of their products as a service (SaaS software as a service). In this example the switch is from sale of software as a technology play to sale of a core competence that includes deep knowledge of their market combined with professional services and use of their software technology.

Hard innovation involves expensive breakthroughs that require engineers and PhDs to toil away deep in the lab. The challenge with this type of innovation is that it's expensive and high risk because it requires a lot of marketing dollars to educate consumers, not to mention the cost of developing the product itself.

On the flip side, soft innovators establish new standards for quality, experience, and sales in their categories without actually doing anything profoundly innovative. Many companies underestimate the power of soft innovation, which can enhance the consumer experience and drive massive differentiation within a category. The advantage of a soft innovation is that it treads lightly on the R&D budget, requires less marketing support because consumers “get it” right away, and is predictably successful because the idea is familiar and the consumer learning curve is quicker.

Open Innovation Model



The open innovation model shows how the innovation process is dynamic in nature. In the open innovation approach, companies do not rely only on internal competencies but they also scout for support from outside the organisation.

3.9 CLASSIFICATION OF INNOVATION

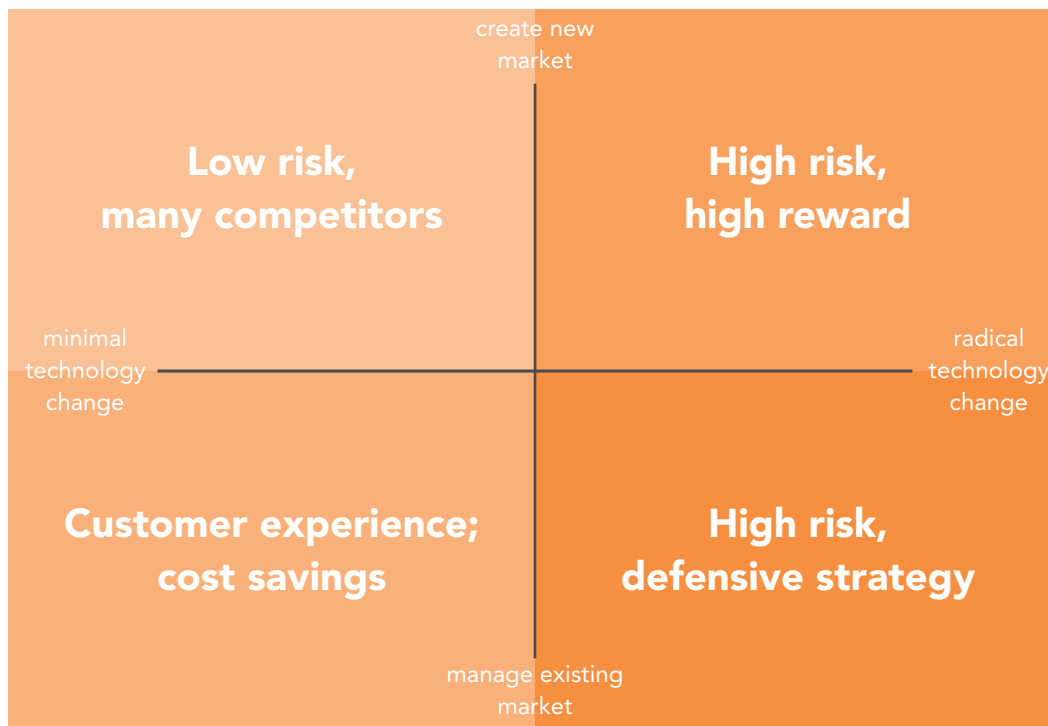


Source: Davila et al (2005) - Making Innovation Work

3.10 KEYS TO INNOVATION MANAGEMENT

1. Innovation has enabled companies to command a premium in the market for their products/ services/stock price.
2. Innovation has to be treated as a discipline like other organizational activities like Sales and Enterprise Resource Planning.
3. Common dedicated platforms strengthen innovation culture.
4. Innovation benefits from a diversity of perspectives.
5. Encourage employees to contribute to innovative ideas.
6. As companies are faced with increasing choices, this puts a premium on continual innovation.
7. Putting limits on innovation efforts spurs creativity and increases innovation.
8. Recognize innovation as a funnel with valuable leaks. Ideas come from diverse angles. Thus ideas that have impact can be synthesized.
9. Measure both results and process of innovation. Conduct root cause analysis to optimize the process of innovation.
10. Pursue a balanced portfolio of incremental and disruptive innovations. Focus on small ideas as well as game changing ideas.

Often one of the challenges in innovation management is that companies have dedicated teams to look at it but seldom do they realize that other functional teams also have a role to play in the success of innovation efforts and in the day to day execution of business efforts.



Incremental vs Disruptive Innovations: Picking Your Spot

In the realm of risk and reward, there are two axes:

1. Managing existing markets vs creating new markets
2. Leveraging existing technology vs creating radical new technology

Mapping these two axes creates a set of four quadrants that define innovations along market and technology lines. Each quadrant has unique characteristics that define it. Each quadrant is appropriate for a specific set of circumstances.

Amazon.com CEO Jeff Bezos has pioneered many innovations in his company from online retail to recommendation systems to logistical management to cloud computing to the Kindle. The company has maintained a high market capitalization. He says that companies have to wait for 5–7 years for their innovation efforts to bear fruit but often companies are impatient and are more interested in the low-hanging fruits.

A survey by Accenture found that 58% of executives at large organisations believed that their organisation’s focus was more on silver bullet innovations rather than a portfolio of opportunities. This approach can actually exclude many innovations that can actually help the company.

3.11 INNOVATION PORTFOLIO MANAGEMENT

Innovation Portfolio Management

KEY FACTOR	QUESTION
BUSINESS STRATEGY FIT	Is the project aligned with the business strategy, and is it strategically important?
COMPETITIVE ADVANTAGE	Does the project offer unique customer benefits, meet customer needs better than competitors, provide good value for money?
MARKET ATTRACTIVENESS	Is the target market attractive - size, growth, margins, competition?
SINERGIES (LEVERAGES CORE COMPETENCIES)	Does the project build on strengths, experiences, and competencies in marketing, technology and operations?
TECHNICAL FEASIBILITY	What is the likelihood of technical feasibility size of gap, complexity, uncertainty?
FINANCIAL REWARD	Can this project make money? How certain are we? Is it worth the risk?

Source: Cooper (2001) - Portfolio Management for New Products

Cooper has proposed the model for innovation portfolio management. There are various questions that need to be asked to decide the choice of innovation projects in the portfolio. Each of these questions falls under a sub-category like business strategy fit, competitive advantage, attractiveness of market, synergies to be derived due to the innovation projects, technical feasibility and most important the revenues from the innovation projects.

3.12 FORMALIZATION OF INNOVATION PROCESS

1. Ideas are valuable intellectual assets
2. Pace of change in markets is faster
3. The ability to notice changes early and adapt to them more quickly is becoming a hall mark of today’s market leaders.

Excellence in innovation can produce significant financial returns. Companies are now hiring dedicated innovation executives. Executives are paying greater attention to promising ideas – no matter where they come from. The focus areas of innovation are thoroughly debated and discussed. Companies are now relying on dedicated innovation tools and platforms for sourcing and managing ideas. Establishment of a dedicated, common enterprise platform is an important signal for senior management to the work force.

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4 INNOVATION PLATFORMS

4.1 LEARNING OBJECTIVES

- To understand the difference between disruptive innovation and incremental innovation
- To explore the concept of innovation platforms
- To appreciate the benefits of innovation platforms

4.2 DISRUPTIVE INNOVATION VERSUS INCREMENTAL INNOVATION

Disruptive innovation	Incremental innovation
Game changing ideas that combine insight of new opportunities and unique ways to achieve them.	Innovative ideas are implemented step wise
Strategic	Tactical
Creates transformative opportunities	Creates transactional opportunities
Maximises economic and societal impact	Focus more on short term needs
Strengthens collaborative partnerships	Project-based partnerships are cultivated

4.3 INNOVATION PLATFORMS THAT INCORPORATE NEW PRODUCT DEVELOPMENT

When business strengths are able to meet opportunities in the market, it becomes a platform for strategic innovation. This helps a business take actions for commercializing the innovation and forecasting market impact. Thus every milestone achieved by the business is validated against market criteria with a clear cut plan for action.

- Strategy generally follows after a thorough understanding of the market
- Understand priority needs of today as well as tomorrow
- Go deeper understanding consumer’s needs
- Plan achieving the targets
- Align competencies and assets of business to market opportunities
- Define those opportunities that can be owned by the business
- Assess the strategic innovation platform against the relevant criteria
- Develop blueprint of each opportunity
- Profile priority consumers, needs and situations
- Formulate an action plan

While understanding consumer needs, a business can do consumer segmentation to capture each segment's needs. For example – a company selling fashion apparel can segment its customers as per their age and then design products according to the needs of each segment. A successful innovation is able to link the functional benefits to the emotional needs of customers. The objective is to deliver greater value to the business.

Once a company owns the opportunities, the benefits from the innovation can be used to channelise the priorities in the right direction. Consumers will get new experiences. When these experiences delight the customers, they are called “wow” experiences. Tablet mobile phones created such an experience when they were introduced in the market.

4.4 INTERNAL FACTORS THAT LEAD TO SUCCESS OF INNOVATION EFFORTS

- Empowerment of project teams who have greater freedom to implement their ideas.
- Interest of top management
- Successful creation of innovation platforms

4.5 HOW IS THE PROCESS OF CREATING INNOVATION PLATFORMS DIFFERENT?

Creating innovation platforms is valuable. The alternative to this approach is creating a portfolio of innovations. The portfolio approach is strategically appealing. The company constructs a basket of innovation efforts. But this approach has a problem. Decision making is centralized. Therefore, the innovation process slows down when decision making is slow.

Creating a platform for innovation allows greater autonomy for project teams. Yet, this does not divert attention from a strategic viewpoint. The top management is involved but decisions are taken by the empowered project teams. So, the innovation process is quick.

4.6 ADVANTAGES OF INNOVATION PLATFORMS

- Faster decisions
- More autonomy to teams
- Encourages intrapreneurship
- Encourages team ownership
- Economies of scale
- Economies of scope

4.7 CASE: APPLE'S INNOVATION PLATFORM

Apple's Ipad is a mass-produced consumer electronics product. Using this as a base, other parties can create and capture value with their own apps. Apple has maintained greater control over how something is developed. Apple is also particular how value is captured. But Apple's platform has found wider application.

4.8 CASE: DSM'S EFFORTS TO CREATE INNOVATION PLATFORMS

Dutch Life Sciences company DSM aims to build an intrinsically innovative company using innovation platforms instead of single projects. This helps in proper estimation of the risks in the beginning. Opportunities in the market also get defined properly. Projects are properly grouped in well-defined platforms.

DSM's Chief Innovation Officer Rob van Leen says, "Projects can fail, but you can't kill an opportunity". The innovation pipeline in DSM is used for looking at related opportunities. The burden of innovation is shared by the platforms. Passion, ownership and drive contribute to success of innovation in DSM. Even smaller projects get visibility due to the platform approach.



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Opportunities are given more importance than projects. Platforms encourage innovators to think more broadly across the value chain. They also foster team spirit and energise the team members to put in their best. Platforms make the organization more receptive to open-source innovation. Collective decision making increases the chances of success because risks are better understood. This makes it easy to mitigate the risks.

4.9 CASE: HAIER: EXPLOITING STRATEGIC POTENTIAL

CEO Zhang Ruimin is highly attuned to major trends sweeping across the global economic landscape, compelling organizations to respond. He has recognized the adverse effects of technological advances that can at times lead to poor strategic potential. Zhang believes that organizations should pursue speed, openness, boundarylessness, and value-ecosystem opportunity. He sees organizational platforms as the natural way to do this.

Haier created equal opportunities for everyone in the organisation. The company devised self-organizing work units and internal labor markets. Organizational barriers were removed. In the case of [Goodaymart](#), an integrated logistics arm of Haier, its ability to deliver products anywhere in China within a 24-hour promise time was always seen as a big proprietary advantage for Haier. Once it became a platform, however, it could offer that same advantage to anyone in the marketplace – competitors included. This delivered an advantage to industry whereas earlier only Haier benefited from this.

Platform organizations are similar to those who use crowdsourcing to benefit from innovators outside their corporate boundaries. Platforms operate internally. They encourage entrepreneurship abilities within the organization and create intrapreneurs.

Haier plans to operate Goodaymart as an independent business in partnership with Alibaba. The idea is to create industry standards for the logistics, installing and servicing of household appliances across China. Thus, Haier benefited by removing unnecessary controls.

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5 PROCESS INNOVATIONS

5.1 LEARNING OBJECTIVES

- Understand the importance of process innovations
- Study the business process innovation
- Learn about the effectiveness of process innovations

Process innovation is the implementation of a new or significantly improved production or delivery method. This includes changes in technique, equipment or even the software. Even minor improvements in processes that increase the production or service capabilities are valuable.

Retail sector has introduced a number of process innovations. For example – cross docking was an innovative technique by which goods were directly brought to the retail store without storing them in a godown or warehouse.

Process innovation is defined as:

“A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.”

3D modeling software is now a new process used for developing new products. Automation in the factory, use of robotics in manufacturing, Computer-aided design – all these are examples of process innovations.

Let us see a few more examples of process innovations:

- Ford’s first use of the production line by bringing product to the person during fabrication.
- The lithography method used to fabricate microchips.
- Pilkington glass method.
- Methods used to manufacture small disk drives currently used in some of the popular MP3 players.
- Factory to customer delivery of custom-built computers by Dell
- Use of internet for shopping [E-tailing]
- Use of barcodes and scanners
- Tracking of parcels delivered through courier

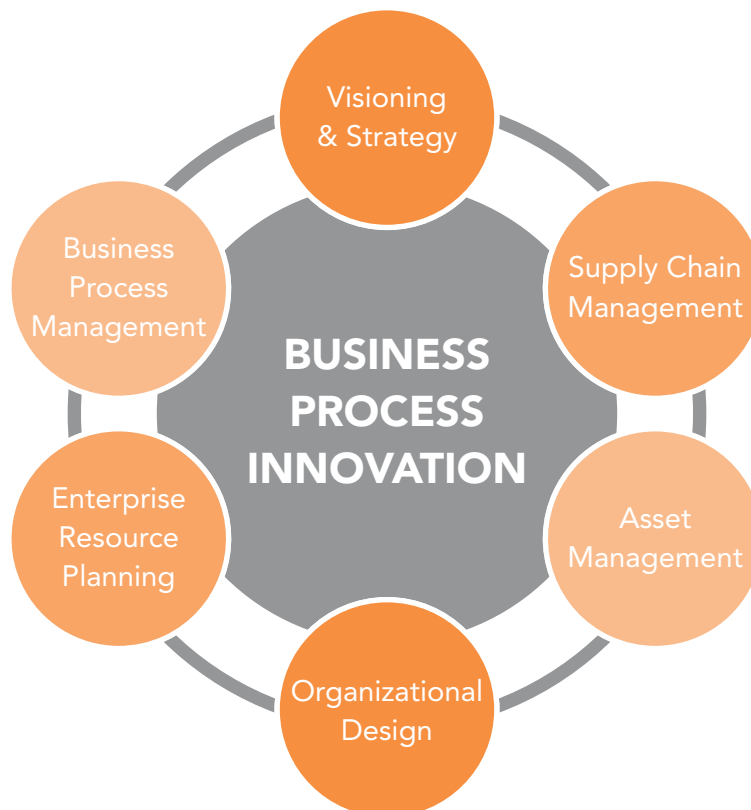
Many organizations use brainstorming to arrive at process innovations. Brainstorming is a creative process. In this process, ideas are welcomed from all participants. No idea is rejected as absurd or incorrect. Once all ideas are received, then they are classified and then prioritized. The best ideas are then screened and then the idea that looks most promising is selected for implementation.

Success of process innovation depends on how good an organization is able to plan. Merely planning won't suffice. The plans have to be translated into actions.

5.2 SUPPORT FOR PROCESS INNOVATIONS

- Policies and procedures
- Performance management frameworks
- Organizational structure that is well-defined
- Use of state-of-the-art technology

The ability of a firm to reach the strategic destination depends on how effective the transformation is.



Process innovations force a business to think new ways of doing the business. The company vision gets translated into a strategy. This strategy enables the business to frame a new model for supply chain management. The firm now learns to manage its assets well. Design of organization is modified to reflect these changes. Enterprise Resource Planning systems are installed so that real value information is shared across the networks. These inputs are used to reshape the management of business processes. This is an iterative process. Organizations learn from failures. They do continuous improvements to ensure that the processes deliver the desired results.

5.3 HOW CAN PROCESS INNOVATIONS BECOME MORE EFFECTIVE?

- Streamlining and sharing of existing processes
- Improved service delivery
- Automation of workflows
- A supporting infrastructure
- Strategic approach to managing supply chains
- Increased operational efficiency
- Reduction in costs
- Increase in revenues

6 SERVICE INNOVATIONS

6.1 LEARNING OBJECTIVES

- Understand the concept of service innovations
- Study the uniqueness of service innovations
- Gain conceptual clarity on different types of service innovations
- Study the Den Hertog's model of innovation
- Learn about service blueprinting
- Understand the process of New Product Development

Achieving service innovation and business growth are priorities for most businesses. Gaining the required insights is a challenge. Innovation must lead to growth across the board. Organisations like 3M, Sony, Apple are able to manage innovation in a sustainable manner but there are many organizations which flounder.

6.2 SERVICE INNOVATION ELEMENTS

When do successful service innovations occur? These occur only when four elements are present. What are these four elements? They are

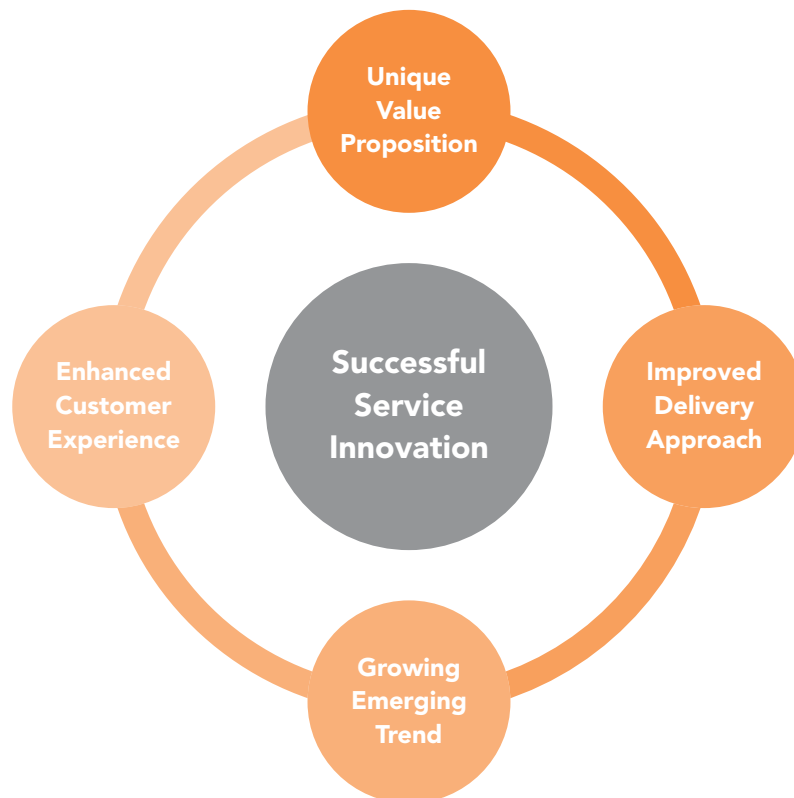
- Unique Value Proposition
- Improved Delivery Approach
- Growing emerging trend
- Enhanced customer experience

All these four elements have to be aligned and balanced.

It was in the year 1993 that the concept of service innovation was first discussed.

6.3 DEFINITION OF SERVICE INNOVATION

Service innovation is a new or significantly improved service concept that is taken into practice.



Examples

- A new channel for interacting with customers
- A new distribution system
- Use of a new technology to aid service delivery

E-commerce is a new way of directly interacting with customers. Through E-choupal, ITC directly started interacting with farmers. ITC believed in educating the farmers not only about the right price for their produces but also in knowing about the right farming techniques. Contract farming is the process by which a business enters into a contract with a farmer to support him in increasing productivity. This results in a win-win situation.

One of the fast-food giants discovered a box that would help in delivering the pizzas in the hot condition. Other pizza makers copied this strategy.

Service Innovation is also defined as a new or considerably changed service concept, client interaction channel, service delivery system or technological concept that individually or in combination leads to one or more service functions that are new to the firm.

6.4 WHAT IS SO UNIQUE ABOUT SERVICE INNOVATIONS

Service innovations can be easily replicated in other cases or environments. It helps the service provider. It also helps the customer.

Technology is not the only element in service innovations. These can also include non-technological elements. For instance, human interactions can be improved in the service environment so that customer experience is good. The aesthetics of a place can be improved to enhance the service delivery.

The buffet system of serving food was one innovation that resulted due to lack in space for seating many people at the same time.

Commoditisation of service innovations is not uncommon. Commoditisation happens when all service providers provide same type of service. Several years ago, a television set in a hotel room was considered an innovation. Today, every hotel has a television set in its rooms.

Axis Bank was the first bank to have introduced core banking services. Through core banking, one can operate a bank account from any geography. Today every bank has a core banking service. Mobile banking and Internet banking services are now being offered by low tier banks as well.

Many of the mobile phone payment galleries like those of Airtel & Vodafone have television sets so that people waiting in the queue do not feel bored. To manage the queues, drop boxes have been introduced where cheques can be dropped. Airtel has introduced a machine where cash can be deposited to pay the mobile bill. The machine delivers the receipt and one gets a confirmation text message on his mobile phone.

Many banks have introduced automatic pass-book updating machines. The machine reads the bar code on the pass-book and prints the update. Even post offices in India have introduced e-money orders. When a person deposits the cash in the post office, the post office transfers the cash online to the post office in the destination. This makes delivery of money to the recipient much faster.

6.5 TYPES OF SERVICE INNOVATION

1. Innovation in services or service products – this relates to changes in service design or new service development. For example – if a retail store introduces home delivery or a beauty parlour introduces services at the home. Bigbasket.com delivers fresh fruits and vegetables only through home delivery. E-tailers like Amazon, Snapdeal & Flipkart deliver products to your home. Banks started issuing credit cards to encourage customers to spend.
2. Innovation in service processes – These are improved ways of delivering the services. For example – doctors insist on appointments to reduce waiting times of patients. Air tickets can be booked online much in advance. When e-tailers found out that customers were scared to use credit cards online, they introduced COD [Cash on Delivery] system.

Amazon delivers goods on time even when they are of low value. Amazon also entered into tie-ups with mom-and-pop stores [the local shopkeeper or the kirana store] to improve delivery of its products.

The insurance industry is unique in the sense that it introduced the concept of selling insurance through agents. The Bangalore Metro does not issue rail tickets. It gives plastic tokens that have to be inserted at strategic locations for entry and exit into the stations.

Services have the characteristic of inseparability. Production and consumption of services happen at the same time. Many service innovations have resulted due to suggestions by customers and patrons. Some banks started working on Sundays to help customers. Some private banks are open from 8 am to 8 pm. Mobile dispensary services have been introduced in remote rural areas.

Due to unique features of services, service innovations are different from manufacturing innovations.

6.6 AREAS OF INNOVATION – DEN HERTOOG'S MODEL

Den Hertog has identified four dimensions of service innovation.

1. **The Service Concept:** This is a new service – a completely new value proposition. Examples might include new types of bank account or information service. Retail sector has different types of formats. Shops are organized in different ways. Layout is designed in a manner that makes it easy for customers. Online auctions is another example.

2. **The Client Interface:** refers to innovation in the interface between the service provider and its customers. Clients are highly involved in service production. Service organizations have introduced self-service. For example, Internet banking, withdrawing money from ATMs – these are examples of self service.
3. **The Service Delivery System** – this relates to the linkage between the service provider and its client, since delivery does involve an interaction across this interface. Delivery of parcels, and delivery of pizzas are some examples. Some banks have introduced home delivery service for senior citizens.

The employee of the bank visits the home of senior citizens to enable them to operate their accounts and open fixed deposits. When factory approach is used for delivering services, this is called as Servuction [Service + Production = Servuction].

Fast food outlet Taco Bell is known for adopting the servuction model. This is a more standardized approach. Taco Bell makes the fast food items only on receipt of order and it tells the customer the exact time that it would take to deliver the order via an electronic interface. This involves huge investment in technology infrastructure to improve reliability and performance.

4. **Technological Options:** Use of IT has improved effectiveness and efficiency of services. Now customers can track delivery of their consignments online. The phone banking service enables customers to get their account balances sitting at home. Some banks have started using the missed call facility. Introduction of voice over internet protocol service – skype.

When a customer gives a missed call to a number from his registered mobile phone, within a matter of minutes, the account balance is sent to his hand phone. Using tablets, scanning has become so easy that Xeroxing is no longer so relevant. Companies like Kodak and Cannon suffered when new digital technology made the earlier technology redundant.

The majority of service innovations will almost certainly involve various combinations of these four dimensions.

6.7 PRODUCT AND SERVICE INNOVATION – NEED FOR INNOVATION STRATEGY

Every company needs an innovation strategy. This can be a high tech product innovation or it can be a packaging innovation or process innovation in financial services companies.

Innovation is the key to growth and sustainable competitive advantage. It helps to build shareholder value in the long run. Innovation process is now becoming more open and more global. Customers are getting involved in innovation like never before.

6.8 SUCCESS OF INNOVATION DEPENDS ON:

- A company's openness to new ideas
- Organizational culture
- Ability to manage innovation projects from concept to commercialization
- Ability to kill unsuccessful projects early
- Tying new product development efforts to marketing, sales and financial objectives.

6.9 THREE IMPERATIVES FOR SERVICE INNOVATION

- Innovation has to be aligned with the core purpose
- Innovation should be capable of meeting a future consumer need
- It should be possible to execute the innovation strategy – organization must be capable of doing it.

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Employees must relate to the purpose of the organisation. They must believe that the service innovation is important for business growth and must act accordingly. Let us not forget that innovation is forward looking. Innovation has to be pro-active. One should try to anticipate problems before they occur.

True innovation is about taking risk. A business should have a clear idea of how success looks like. It should encourage the right behaviors that are essential to achieve the goal. If need be, training should be provided. When Dominos did not succeed in Japan, they analyzed the reasons. Then they realized that Japanese preferred rice in their menus and so Dominos changed the pizza formulation to include rice. This resulted in success.

In India, Mc Donalds has successfully introduced local recipes like Aloo Tikki in their own format and called it as Mc- Aloo Tikki. This is an example of glocalisation (globalization + localization). Multi national companies are now adopting a polycentric strategy to cater to the needs of the local markets where they operate.

Globalisation, digital technologies and social changes are now creating opportunities for designers to drive innovations in services.

6.10 PRODUCT STRATEGIES

Product Strategy	Firms	How
Product proliferation	Honda, P&G	Honda offered a wide range of engine sizes when it entered the European market; P&G offered a wide range of sizes for their diapers
Value	Toyota	High quality product, reliability
Design	Sony, Apple	Unique styles, elegance, easy to use products.
Innovation	3M, Merck, Philips	Strong technology culture; use of new technology is the main focus
Service	American Express, Tesco	These companies are at the forefront of service development.

6.11 STEPS IN SERVICE INNOVATION PROCESS

1. Formulation of new service objective/strategy
2. Idea generation
3. Idea screening
4. Concept development
5. Concept testing
6. Business analysis
7. Project authorization
8. Service design and testing
9. Process and system design and testing
10. Design and testing of marketing program
11. Training of personnel
12. Service Testing & Pilot run
13. Test marketing
14. Full scale launch
15. Post launch review

6.12 SERVICE DESIGN INNOVATION

As stated earlier, intangibility of services makes it difficult to apply traditional innovation models. But the success of firms like Flipkart and Snapdeal are changing the equation. Influence of technology has grown by leaps and bounds in the last decade. Architects now have to employ specialists like those from the fields of fire engineering, acoustics, lighting, security surveillance.

Knowledge intensive business services [KIBS] are the key behind the development of the service side of the economies. Today even vital business functions are being outsourced.

In services, it is difficult to distinguish product and process innovation due to the simultaneous production and consumption of services. Service product is the core of the new service offering that consists of functional benefits of service. Service process innovation is a new service delivery system.

A service innovation can also involve integration of an existing core service offering and innovative service process. Internet is the most innovative service process. Service firms are looking at ways of exploiting the Internet to their benefit.

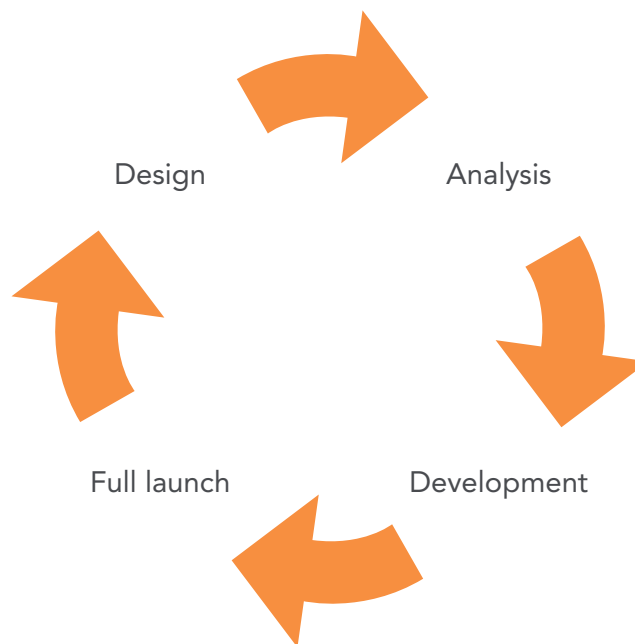
New product or service development is an iterative process that also proceeds after the commercialization or market launch stage.

Service design innovations need to be objective incorporating data about customer perceptions, market needs and feasibility. A new service design process may be imprecise in defining the nature of the service concept because of the notion that service processes cannot be defined precisely or the people presume that everyone understands service in the same way as they relate to it.

Service design innovation has to involve employees and customers. Involving employees in the design and development process increases the chances of service success because employees can identify the organizational issues that need to be addressed to support the delivery of the service to customers.

As customers are co-creators of service, they can help design the service concept and the delivery process. Bank of America conducted service design innovations with real customers in Atlanta to improve branch productivity.

6.13 THE NEW SERVICE DEVELOPMENT CYCLE



Design	Formulation of new services strategy, idea generation and screening, concept development & testing
Analysis	Business analysis; Project authorization
Development	Service design and testing; Process and system design and testing; personnel training; service testing and pilot run; Test marketing.
Full launch	Full scale launch; post launch review

6.14 TECHNOLOGY PORTFOLIO

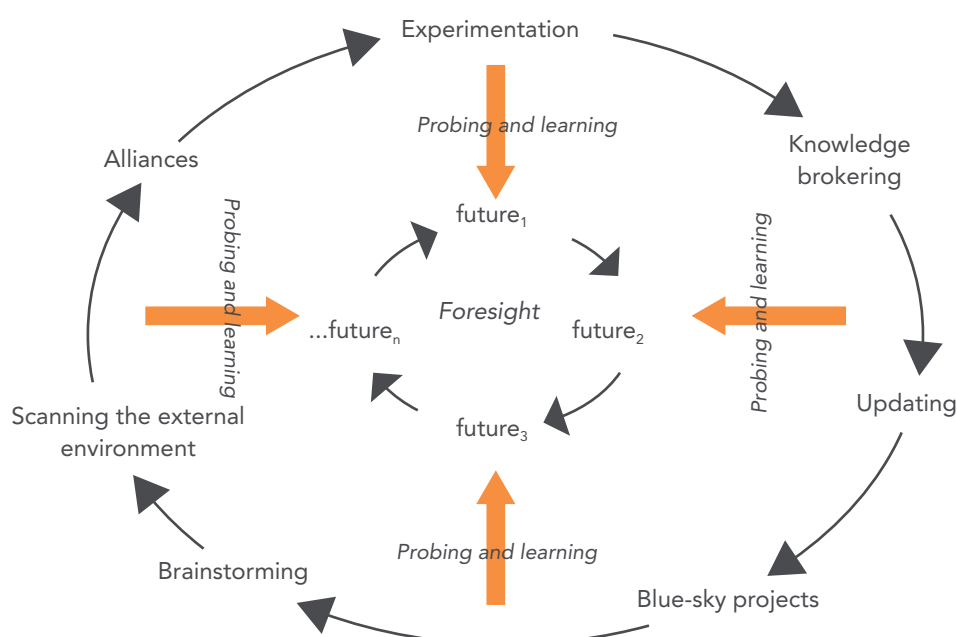
From a research & development perspective, technology base can be categorized as:

- a) Core technologies
- b) Complementary technologies
- c) Peripheral technologies
- d) Emerging technologies

Core technology is central to all or most of the company's products. Complementary technologies are additional inputs for product development. For photo copying industry, micro processor technology is complementary technology while photographic technology is core technology. Peripheral technology is something whose application contributes to the business. Example – computer software. Peripheral technology is not something that is necessarily incorporated in the product. Emerging technologies are new and give a strategic direction to the firm. They have a long term significance for a firm's products.

6.15 MULTIPLE PRODUCT OPTIONS, PORTFOLIOS AND STANDARDS

Many organizations have multiple product options that are sold in the market as brand extensions. Horlicks is one example of a product that has multiple options. For example – Horlicks Junior is for children below three years, Horlicks Lite is sugarless and meant for diabetics, Women's horlicks is targeted at women and Mothers Horlicks is targeted at breastfeeding mothers. Dell is a company that introduced mass customization strategy. The basic building blocks of a laptop are same but the customer is given the option of choosing a particular model and based on his choice, the laptop is assembled and delivered.



Multiple product innovation does not only require building on past knowledge but also needs probing the future. Foresight links the past, present and future. Some organizations encourage blue sky ideas that generate wild and impractical ideas.

New product strategy is derived from marketing strategy, technology strategy and overall corporate strategy. Many companies are not leaders but followers, so new product development is not always concerned with new-to-the-world innovations.

When a competitor aggressively launches a new product, this triggers the need for product variants. When Dettol launched Dettol soap, Savlon also launched Savlon soap. A reactive strategy means that product lines are filled with different product sizes or additional features that is intended to discourage a new entrant in the market. Many of these multiple product options may involve little NPD efforts.

While this sort of strategy will work in the short term, in the long run, a more profound contribution will be expected from the products. Greater research efforts will be needed. Using the same technology, new product categories may be introduced.

When Dettol launched the hand wash sanitizer, other soap manufacturers started introducing hand washes. Such new products will cater to the existing customer base or to new customer segments. However often such efforts have to be undertaken when there is lots of uncertainty. Technical, operational and manufacturing competencies have to be developed by organizations who wish to be market leaders.

6.16 PORTFOLIO SELECTION MODELS

The portfolio models look at those ideas that are aligned with the business strategy. Entire set of projects is considered instead of viewing new research projects in isolation.

1. Newness – how new is the product likely to be?
2. Time of introduction – is the new product portfolio going to deliver a constant stream or will it be a case of returns only for a short term?
3. Markets – Are different markets and business areas of the company receiving resources commensurate with their importance?

6.17 PORTFOLIOS AND STANDARDS

Analysing the organisation’s total collection of products by viewing it as a portfolio may give fresh insights. The Boston’s Matrix used market share and market growth as twin dimensions to understand the positions of products. Ideally the distribution of products in the matrix has to be balanced.

Other models have used variables like business strength and market attractiveness. The aim of all the models is simple – how can a business understand current problems, how can they anticipate future problems or tap opportunities at the right time.

Product platforms may be sophisticated or unsophisticated. They may be rigid or flexible. What matters is what the customer needs. When approach to product strategy development is original, it can result in distinctive market offerings.

6.18 SERVICE AND TECHNOLOGY

Technology has been the basic force behind service innovations like automated voice mail, interactive voice response systems, fax machines, automated teller machines. Wall Street Journal offers an interactive edition that allows customers to organize the newspaper’s content to suit their individual preferences and needs.

6.19 NEW SERVICE STRATEGY MATRIX

Offerings	Markets	
	Current customers	New customers
Existing services	Share building	Market development
New services	Service development	Diversification

This framework allows an organization to identify possible directions for growth and can be helpful as a catalyst for creative ideas. It can also help screen promising ideas. Café Coffee day has expanded its existing service to new locations such as airports and universities.

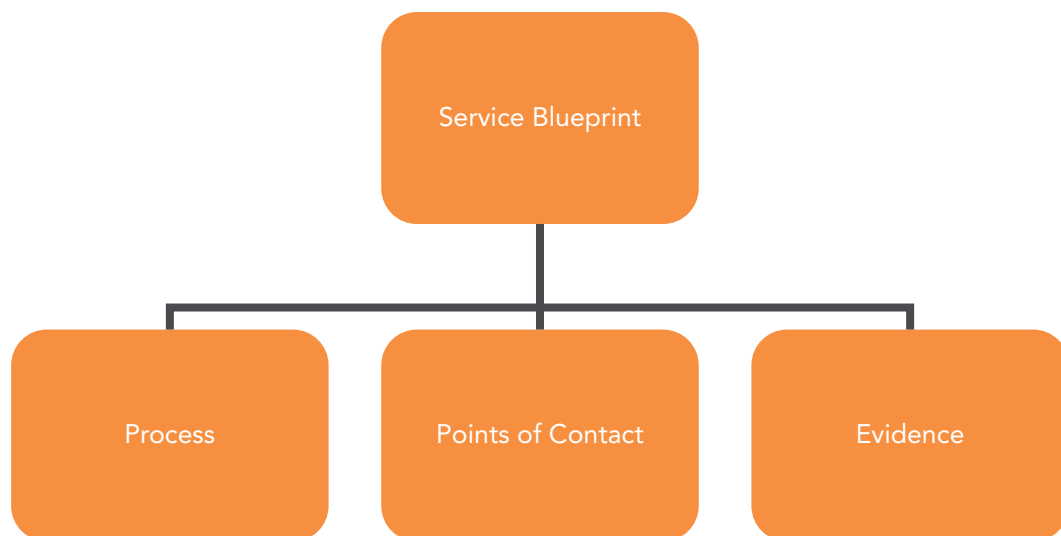
6.20 SERVICE BLUEPRINTING

To match service specifications to customer expectations, one has to objectively describe critical service process characteristics and depict them so that employees, customers and managers alike know what the service is, can see their roles and can understand all the steps and flows involved in the service process. Service blueprinting is a useful technique for designing and specifying intangible service processes.

A service blueprint is a picture or a map that portrays the service system so that the different people involved in providing it can understand and deal with it objectively. Blueprints are useful at the design stage of service development.

A service blueprint visually depicts the service by simultaneously showing the process of service delivery, the points of customer contact, the roles of customers and employees and the visible elements of the service.

Though service blueprinting was introduced two decades ago, it has evolved to address many of the challenges in services design and innovation. Service blueprints are customer focused.



6.21 STEPS IN SERVICE BLUEPRINTING

1. Identify the service process to be blueprinted
2. Identify the customer or customer segment
3. Map the process from the customer's point of view
4. Map contact employee actions and/or technology actions
5. Link contact activities to needed support functions
6. Add evidence of service at each customer action step

6.22 BENEFITS OF SERVICE BLUEPRINTING

1. Provides a platform for service innovation
2. Clarifies interdependencies among functions
3. Facilitates strategic and tactical innovations
4. Suggests critical points for measurement
5. Clarifies competitive positioning

Service Blueprint Components	
Physical Evidence	
Customer Actions	Lines of Interaction
Onstage/ Visible Contact Employee Actions	Lines of Visibility
Backstage/ invisible Contact Employee Actions	Lines of Internal interaction
Support Processes	

6.23 THE SERVICE CONCEPT

The service concept is a key driver of service design decisions at all levels of planning. Service design is the application of service concept in drawings and flowcharts. Service design also refers to the whole process from idea to specification.

Service concept is defined as the way in which the organisation would like to have its services perceived by its customers, employees, shareholders and lenders.

Service concept is also defined as detailed description of the customer needs to be satisfied, how they have to be satisfied, what is to be done for the customer and how this has to be achieved.

6.24 OPEN INNOVATION

Firms that follow open innovation understand the value of external inputs into the NPD process and they utilize these inputs internally. Open innovation may influence the success of NPD in different ways. The four stages of New Product Development [NPD] process are: Planning, Development, Marketing and Commercialization.

Structure of organization plays an important role in the success of NPD process in open innovation environment.

6.25 WHAT IS OPEN INNOVATION?

It is the use of knowledge for increasing the speed of internal innovation and expanding of markets for external use of innovation. Failure rate in NPD is 40% in some industries and in some other cases it can go upto 80%.

NPD is important for a firm's competitive advantage.

Challenges faced by firms in the NPD process are:

- Cost of R&D
- Short life cycles of products
- Drastic competition
- High failure rates of new products
- Technological obsolescence

In closed innovation, the business generates its own ideas and develops them.

6.26 FAILURE OF NEW PRODUCTS

According to a study by Georgetown University, for every four projects that enter development, only one makes it to the market. Booz & company found in an earlier study that 70% of the resources spent on new launches are allocated to products that are not successful in the market.

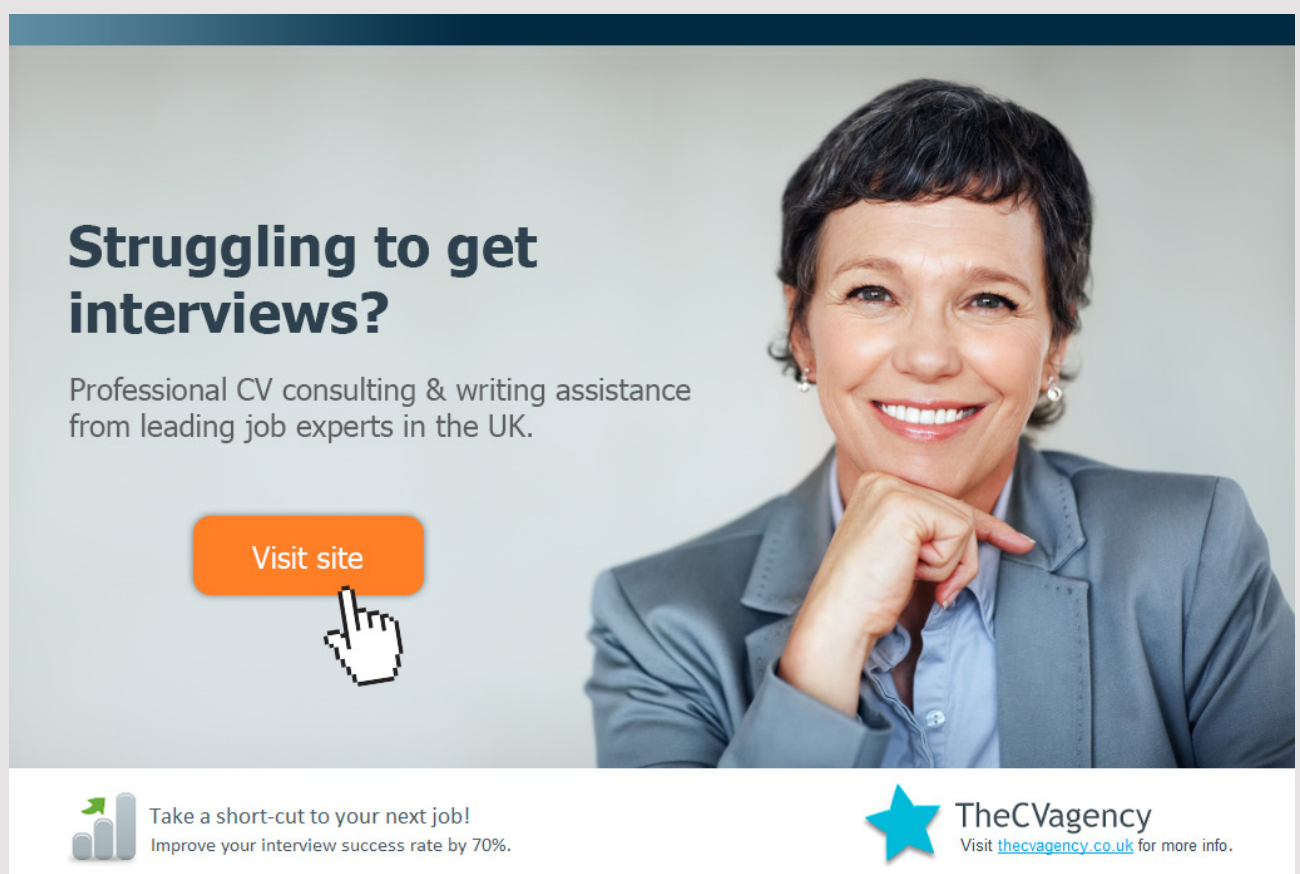
New products fail because by the time the product is introduced the customer needs have evolved. The time from generating an idea to commercializing it cannot go on forever. What is needed is an approach that combines flexibility and unpredictability to generate more stable and successful outcomes.

Traditional methods are rigid and linear. Companies need a more agile product development system that is iterative. An iterative system is one which undergoes number of changes.

Multiple design options have to be developed early in the process. Design changes have to customer driven. Apple products like ipad, ipod and iphone were launched in quick succession in the market.

Companies are taking steps to reduce time to deliver innovative products that meet market requirements. The people and process capabilities have to be integrated during implementation of innovative ideas.

Generating ideas is not the issue. Executing them is.




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6.27 IMPORTANT STEPS IN THE NEW PRODUCT DEVELOPMENT PROCESS

- Measure performance at every stage of NPD process.
- Take corrective actions.
- Focus on customer needs.
- Manage the idea generation process well.
- Encourage team work.
- Develop clear strategies for innovation.
- Develop decision making abilities.
- Proper focus and accountability across the organization.

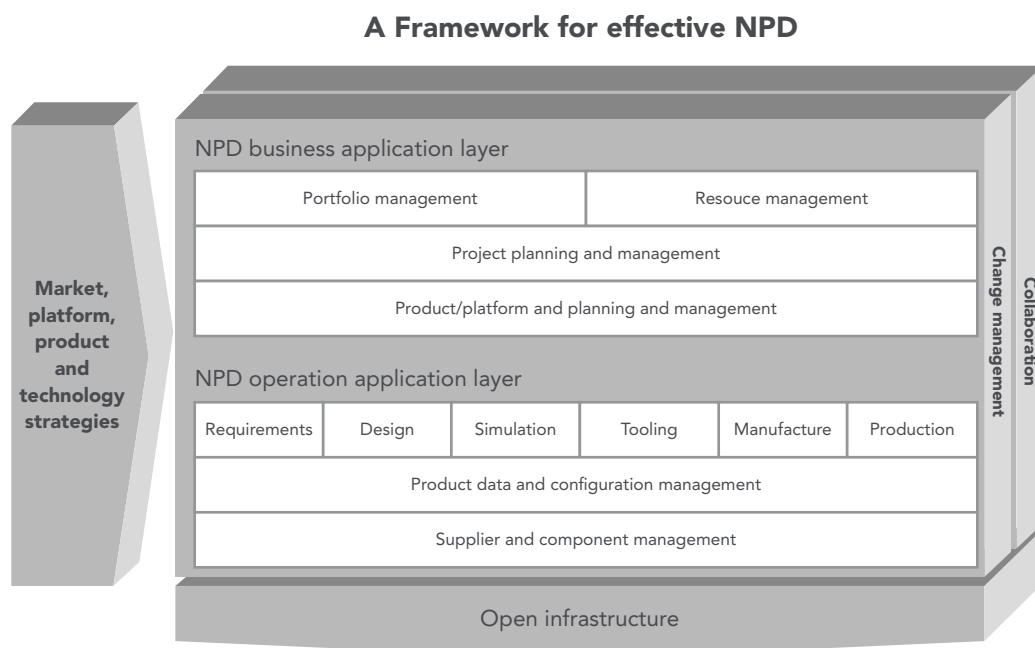


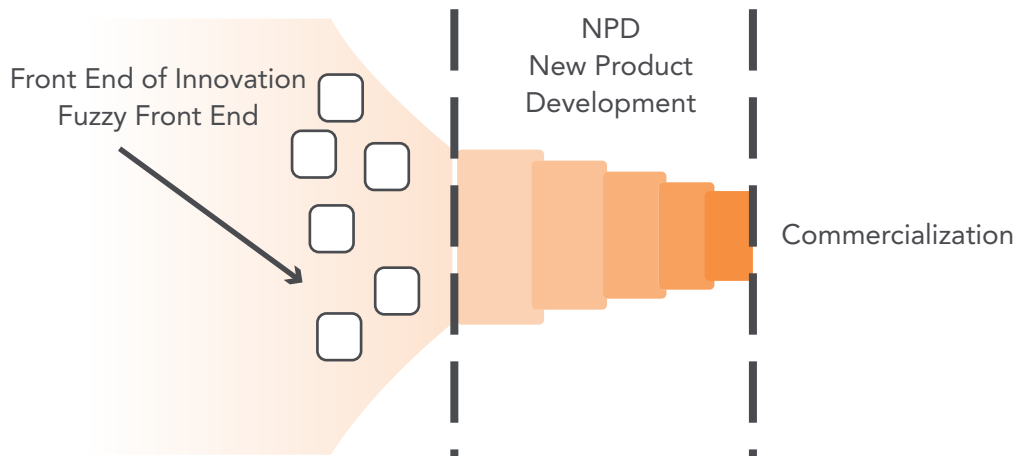
Chart adapted from *PDMA Toolbook for New Product Development*

86% of new product ideas never make it to the market. Of those that make it to the market, 70% fail. Steve Jobs said that in Apple, they had a culture of saying ‘no’ to 1000 things.

Making informed decisions is crucial for success. Collaborative work delivers the desired results. How you spend in R&D is more important than how much you spend.

What is important is:

- Greater alignment of R&D with business needs.
- Proper resource utilization.
- Cross-functional product management teams.
- Tying the project tasks of NPD into information work flows.
- Proper timing of the launch of the new product.
- Experimentation is the key to bringing innovations to market faster.



Idea generation to commercialization

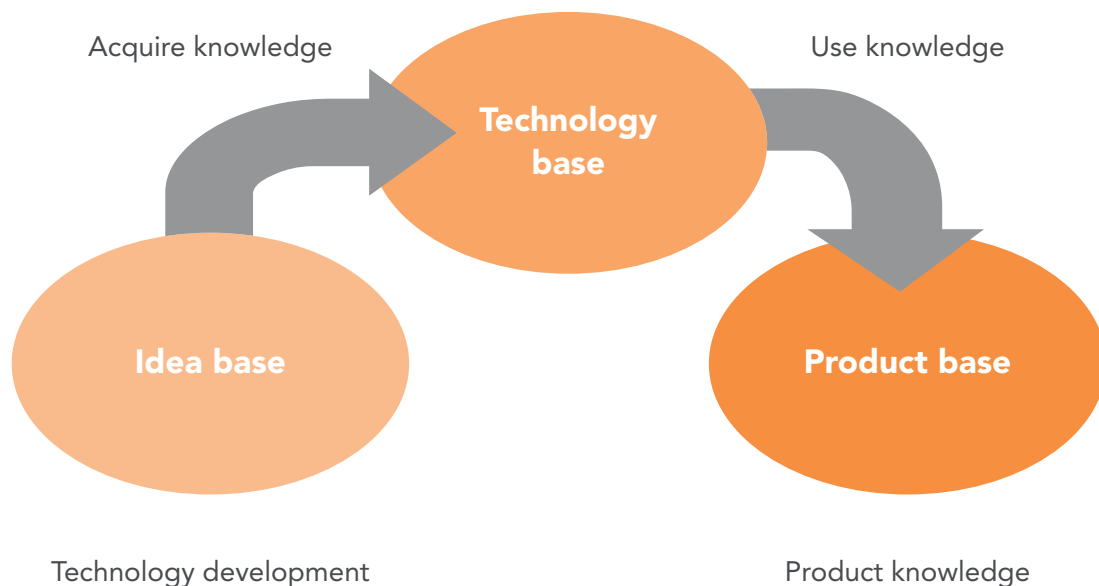
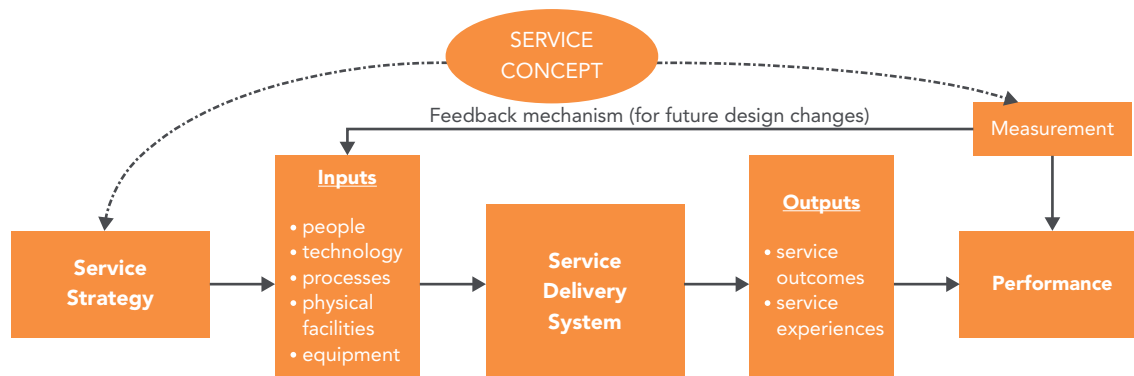


Chart adapted from PDMA Toolbook for New Product Development

6.28 SERVICE DESIGN PLANNING MODEL



A proper service strategy has to be linked to the service concept and this helps in measuring the performance. This strategy provides inputs and allocation of factors of production to ensure successful service delivery outputs. Measuring performance gives inputs for future design changes needed.

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7 EVALUATION OF INNOVATION

7.1 LEARNING OBJECTIVES

- Understand how effectiveness of innovation can be evaluated
- Study the importance of integrating risks
- Study and learn about the post implementation effects of innovation projects

Innovation is the development of customer value through solutions that meet new, undefined, or existing market needs in unique ways. Solutions may include new or more effective products, processes, services, technologies, or ideas that are more readily available to markets, governments, and society.

Innovation is easily confused with words like invention or improvement. They are, however, different terms. Innovation refers to coming up with a better idea or method, or integrating a new approach within a contextual model, while invention is more statically about creating something new. Innovation refers to finding new ways to do things, while improvement is about doing the same thing more effectively.

7.2 EFFECTIVENESS EVALUATION

Innovation activity plays a key role in ensuring economic and productivity growth. A considerable amount of tax revenue is allocated to promoting innovation activity. Much attention is therefore paid to the effectiveness of innovation policy.

The effectiveness of innovation policy is not easy to assess, because a high number of factors influence the results achieved. In addition, impacts only become visible after up to 10 to 20 years. Only some of these can be influenced directly by decisions taken by any single society. Others are related to global trends, to which nation states must adapt.

The global operating environment is changing quickly. That is why the innovation system is in a constant state of change.

While innovation has many similarities to other forms of projects it is characterised by a high failure rate and the need to stimulate creativity. More explicit risk management could help in achieving success in innovation projects. However, too much or inappropriate risk management might stifle the creativity that is core to innovation.

A theoretical framework is needed which combines the generic innovation process with project risk management.

7.3 INTEGRATION OF RISKS

1. Companies have to integrate customers into the innovation process to improve their overall innovation capabilities and reduce discontinuous innovation’s market risk.
2. Customer integration into NPD process helps to identify customer needs better and also manage the risks better because identification of risks is given lots of importance.
3. Once customer needs are identified, information dissemination across the functional disciplines becomes a very important task for the organization.
4. Discontinuous innovations pose more risk because they involve more uncertainty.

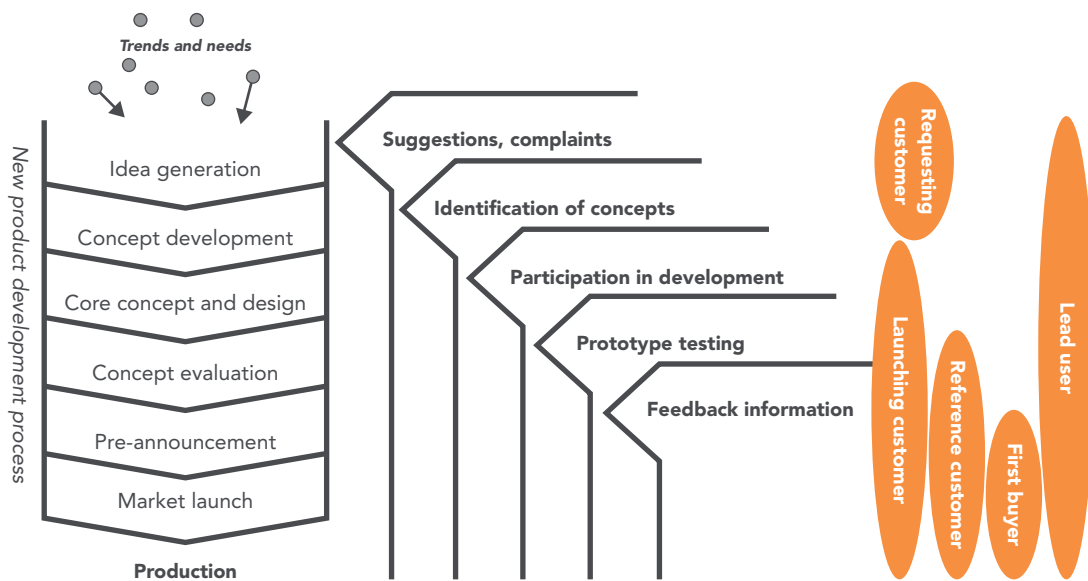


Figure 1. Customer Types and their Contribution to the NPD Process Note: Adapted from Brockhoff (1998)

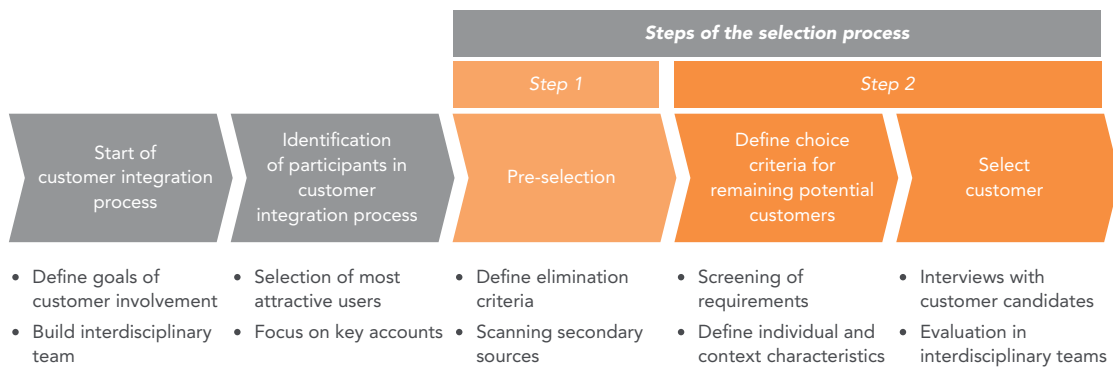


Figure 2. Process of Customer Involvement

Integration of risks is vital because it helps to manage the risk much more effectively. For instance, if a raw material that is used in a new product is found to be toxic in the initial stages itself, this is a technical risk.

But by keeping the purchase function in the loop, the R&D department can take the help of purchase function in scouting for a better raw material. Marketing function can give useful inputs to technical teams about the risks.

Manufacturing can sound off the organization about the possible risks in manufacturing a new product that may include aspects like safety, production bottlenecks, equipment bottlenecks, skill deficit or even capacity constraints.

7.4 HOW TO ADDRESS RISK IN INNOVATION?

Innovation always entails a certain amount of risk: as we wander into the unknown, we put new techniques to the test, which no one has ever used before. Successful innovation is to a large extent an issue of identifying and controlling that risk. So there is a crucial link between the both: if managed successfully, risks mean opportunities for innovation.

We are all exposed to a number of risks in our every-day life. And we all deal in different ways with the risks we are facing. Some of us are more risk-averse than others who tend to take more risks or feel that they are able to control the risks. People, industries and also politicians take a certain approach towards risk when making decisions. A risk can be a source of loss but also a source of benefit. Risk management is as much about seizing opportunities as it is about minimising negative consequences.

Hence finding the right balance between allowing new ideas to be tested and controlling the risks potentially associated to their use is one of the key tasks for all those contributing to innovation.

In the risk management framework, the principles of proportionality and precaution play a central role, however their interpretation and application are seen in many different ways raising numerous challenges for policy-makers, society and industry.

Innovation by nature means challenging and exploring new approaches.

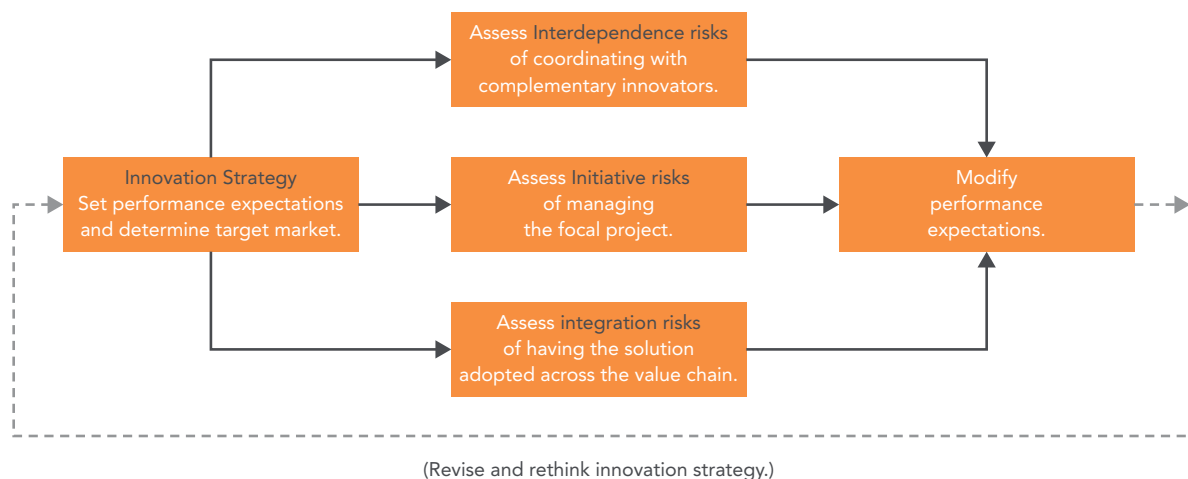
Issues:

- Benefits and risks from innovation
- Public perception of benefits and risk
- Public opinion, prejudice and new technologies: societal dialogue
- Communication and Education
- Science and scientific uncertainty

- Risk-based vs Hazard-based policy and legislation
- Risk assessment
- Precautionary principle
- Proportionality principle
- Integration of risk and benefit

The success of your company’s growth strategy hinges on how well you assess your ecosystem’s risks. How, then, can you assess these risks in a structured, systematic way? A first step is to specify the different categories of risk that ecosystems present and to understand how they relate to the markets you hope to serve.

Innovation ecosystems are characterized by three fundamental types of risk: *initiative risks* – the familiar uncertainties of managing a project; *interdependence risks* – the uncertainties of coordinating with complementary innovators; and *integration risks* – the uncertainties presented by the adoption process across the value chain. The extent of these risks is intimately related to the target market in which the firm hopes to deploy its innovation.



7.5 ASSESSING INTEGRATION RISKS: WHO HAS TO ADOPT THE SOLUTION BEFORE THE CUSTOMER CAN?

In many ecosystems, intermediaries are positioned between the innovation and the final customer. The further up the value chain an innovation resides, the larger the number of intermediaries that must adopt it before it can reach volume sales. As the number of intermediaries increases, so does the uncertainty surrounding market success.

Consider the case of Michelin's run-flat tire innovation. Unlike traditional tires, which become useless in the event of a puncture, the run-flat tire allows the driver to continue driving for 100 more miles at speeds up to 50 miles per hour, indicating its need for service with a simple dashboard light.

When Michelin began developing the tire in 1992, it believed that this innovation would be as big a win as the introduction of the radial tire 50 years earlier. The company spent years and untold riches developing the tire, which it trademarked under the PAX label. However, when the tire was finally introduced in 1997, no consumer could buy it.

Because the tires connect to a vehicle's electronic system, they can be used only in vehicles whose systems have been designed to accommodate them. Since electronics are added in when new cars are designed, Michelin had to wait until a willing OEM's design window opened.

An average OEM takes three to four years to move a car from design to volume production. So even if the tire is fortunate enough to be designed into a car model that enjoys market success (an outcome that is far from certain), Michelin's best case is that volume sales will begin three to four years after the tire is introduced. (As it happened, even the few willing OEMs with whom Michelin coordinated design cycles initially offered it as an option on only a very limited set of models.)

Michelin still needs to consider other intermediaries as well – garages, which will need to invest in new equipment and training, and dealers, which will need to understand and support the PAX system – each of whom will have to buy into the concept before the end customer is in a position to make a purchase decision. The status of the run-flat tire speaks to the integration risks of innovation ecosystems: Nine years after its introduction, Michelin's miraculous innovation is standard equipment on only a handful of car models.

Integration risk, in contrast, is assessed by *adding* adoption cycles to estimate delays caused by intermediaries.

Managing this risk is no small challenge. Failure in ecosystems is sometimes caused by technical difficulties in stand-alone innovations and sometimes by the difficulty of coordinating innovations across the system.

Often, though, failure occurs because a market does not emerge within the time frame required to support the investment. When you compete in an innovation ecosystem, you must expect and plan for delays, compromises, and disappointments that are, to a substantial extent, outside your control. You should either craft an innovation strategy that mitigates your risks or consider forgoing the opportunity.

- Innovation is the development of customer value through solutions that meet new needs, unarticulated needs, or existing market needs in unique ways.
- Innovative employees increase productivity by creating and executing new processes which in turn may increase competitive advantage and provide meaningful differentiation.
- Managers who promote an innovative environment can see value through increased employee motivation, creativity, and autonomy; stronger teams; and strategic recommendations from the bottom up.
- Clarity about and understanding of roles, increased responsibilities, strategic partnerships, senior management support, organizational restructuring, and investment in human resources can all enrich organizational culture and innovation.

7.6 FACTORS INFLUENCING ECONOMIC EFFECTIVENESS

It is important to understand the factors that influence economic effectiveness of innovations.

1. Cost efficiencies
2. Revenue generation capabilities
3. Failure rate of innovations
4. Regulatory framework
5. Government support and subsidies
6. The strengthening of Intellectual Properties and Patent Rights in the economic ecosystem
7. Profitability of innovations
8. Effectiveness and efficiency with which innovation funnel is managed.
9. Technical competency of human capital
10. Receptiveness of market to the innovations

7.7 POST IMPLEMENTATION ANALYSIS OF INNOVATION PROJECTS

Post-Implementation Reviews

“Completing a project” is not the same thing as ending the project management process. Simply finishing doesn’t ensure that the organization benefits from the project’s outcome.

For example, after completing a year-long project to establish a new quality management process for your organization, you want to make sure that what you set out to do was actually achieved. Your objective wasn't to simply deliver a process – but rather, to deliver the process that addresses the specific business need you intended to meet. This is the real measure of success.

To make the most of the benefits that the project can deliver, however, you also need to check to see if further improvements will deliver still greater benefit.

You also need to ensure that the lessons learned during the project are not forgotten. You can more effectively design and execute future projects when you take advantage of lessons learned through experience of previous projects.

So how can you properly measure a project's success, and work toward continuous improvement? This is where the process of Post-Implementation Review (PIR) is helpful. It helps you answer the following key questions:

- Did the project fully solve the problem that it was designed to address?
- Can we take things further, and deliver even bigger benefits?
- What lessons did we learn that we can apply to future projects?



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7.8 THE PIR PROCESS

The key to a successful PIR is recognizing that the time spent on the project is just a small part of an ongoing time-line.

For people and organizations that will be working on similar projects in the future, it makes sense to learn as many lessons as possible, so that mistakes are not repeated in future projects.

And for organizations benefiting from the project, it makes sense to ensure that all desired benefits have been realized, and to understand what additional benefits can be achieved.

7.9 WHEN TO REVIEW

A good time to start thinking about the Post Implementation Review is when members of the project team remember the most – shortly after the project has been delivered, and when most of the problems have been ironed-out. Start to list ideas and observations while they are still fresh in people’s minds.

However, to adequately assess the quality of the implementation and complete this process, you’ll need to wait long enough for the changes caused by the project to truly take effect.

There will probably be a period of adjustment before you can finally review the solution as it was intended to operate: you’ll likely need to overcome some of the usual resistance to change, hold people’s hands while they operate new systems, and eliminate technical problems that didn’t emerge when deliverables were tested. You should therefore typically allow a few weeks, or even a few months, before doing the full PIR. Where possible, allow for at least one, full, successful cycle of business before reviewing lessons learned.

7.10 WHAT TO REVIEW

Here are some tips for conducting the PIR:

- **Ask for openness** – Emphasize the importance of being open and honest in your assessment, and make sure that people aren’t in any way punished for being open.
- **Be objective** – Describe what has happened in objective terms, and then focus on improvements.
- **Document success** – Document practices and procedures that led to project successes, and make recommendations for applying them to similar future projects.
- **Look with hindsight** – Pay attention to the “unknowns” (now known!) that may have increased implementation risks. Develop a way of looking out for these in future projects.

- **Be future-focused** – Remember, the purpose is to focus on the future, not to assign blame for what happened in the past. This is not the time to focus on any one person or team.
- **Look at both positives and negatives** – Identify positive as well as negative lessons.

When conducting the review, include the following activities:

- **Conduct a gap analysis.**
 - Review the project charter to evaluate how closely the project results match the original objectives.
 - Review the expected deliverables (including documentation) and ensure either that these have been delivered to an acceptable level of quality, or that an acceptable substitute is in place.
 - If there are gaps, how will these be closed?
- **Determine whether the project goals were achieved.**
 - Is the deliverable functioning as expected?
 - Are error rates low enough, and is it fit for purpose?
 - Is it functioning well, and in a way that will adjust smoothly to future operating demands?
 - Are users adequately trained and supported? And are there sufficiently enough confident, skilled people in place?
 - Are the necessary controls and systems in place, and are they working properly?
 - What routine activities are needed to support the project's success?
 - If there are problems here, how will these be addressed?
 - How does the end result compare with the original project plan, in terms of quality, schedule and budget?
- **Determine the satisfaction of stakeholders.**
 - Were the end users' needs met?
 - Is the project sponsor satisfied?
 - What are the effects on the client or end user?
 - If key individuals aren't satisfied, how should this be addressed?
- **Determine the project's costs and benefits.**
 - What were the final costs?
 - What will it cost to operate the solution?
 - What will it cost to support the solution in the future?
 - How do the costs compare with the benefits achieved?
 - If the project hasn't delivered a sufficiently large return, how can this be improved?

- **Identify areas of further development.**
 - Have all of the expected benefits been achieved? If not, what is needed to achieve them?
 - Are there opportunities for further training and coaching that will maximize results?
 - Could you make further changes, which would deliver even more value?
 - Are there any other additional benefits that can be achieved?
- **Identify lessons learned.**
 - How well were the projects deliverables assessed, and how well were timescales and costs assessed?
 - What went wrong, why did these things go wrong, and how could these problems be avoided next time?
 - What went well, and needs to be learned from?
- **Report findings and recommendations.**
 - What have you learned from this review?
 - Do you need corrective activity to get the benefits you want?
 - What lessons have you learned that need to be carried forward to future projects?
 - Does this project naturally lead on to future projects, which will build on the success and benefits already achieved?

7.10.1 HOW TO REVIEW

As you perform the post-implementation review, certain methods and practices will help you obtain the best possible information:

- **Define the scope of the review beforehand** – The last thing you want to do is to create a political problem. Given the number of people often involved in a project, it's easy to hurt someone's feelings when reviewing the project's success. Clarify your objectives for the review, and make your intentions clear – this will better ensure that people share their experiences openly and honestly. Then make absolutely sure that you stick to these intentions, and that people's egos aren't unnecessarily bruised by the process!
- **Review key documents** – Gather together the key project documents. This will help you assess the project planning process, as well as the actual benefits achieved through the project.
- **Consider using independent reviewers** – Where possible, use outside people in your review process to get an objective, unclouded view of the project. Some people recommend using only independent people in the review, however, you can learn a lot from the perspectives of those who were directly involved in the project – this is why the best strategy is probably to have a balance.
- **Use appropriate data collection** – Collect information in the most appropriate way, for example, by using interviews and surveys. Also, test the deliverable yourself, to make sure you get firsthand information.

- **Deliver appropriate reports** – Report your findings, and publicize the results. Remember that the PIR is designed to help project managers conduct more effective projects in the future, as well as to measure and optimize the benefits of the specific project being reviewed.
- **Present recommendations** – Present the detailed recommendations to the organization and the project leaders, as well as to customers and other stakeholders. Include as many people as necessary so that you keep – and apply – the best-practice information in the future.

As you plan your PIR, be aware of the costs and benefits of the review process itself. Interviewing stakeholders and customers, testing the solution, and documenting the results are time-consuming activities. Make sure the time and resources dedicated to the review are consistent with the project scope and its output, and that the potential benefits of conducting the review are worth the effort put in.

7.11 KEY POINTS

A Post-Implementation Review (PIR) is conducted after completing a project. Its purpose is to evaluate whether project objectives were met, to determine how effectively the project was run, to learn lessons for the future, and to ensure that the organization gets the greatest possible benefit from the project.

After a long project, the last thing many project teams want to do is relive the process and look for ways to improve. However, a forward-looking review can discover many tips and strategies for improvement.

By conducting a thorough and timely PIR, you'll identify key lessons learned – and you can then apply those lessons to the planning and management of future projects.

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8 INNOVATION & INTELLECTUAL PROPERTY RIGHTS

8.1 INTELLECTUAL PROPERTY OF INNOVATIONS

The Intellectual Property and Innovation Project reviews the relationship among intellectual property rights, innovation, and economic growth.

It is important to review the relationship between IPR, innovation, and economic growth as the world moves further towards a global information economy. We have to recommend policies for long-term growth. Global integration and competition have raised the stakes for IP policy. As the promotion of innovation has become a key growth strategy for most nations, the role of intellectual property has become more important. Intellectual property rights lead to positive economic outcomes, including stronger national innovation systems and improved global competitiveness.

8.2 ROLE OF INTELLECTUAL PROPERTY IN INNOVATION AND NEW PRODUCT DEVELOPMENT MARKETING AND INNOVATION

"Marketing and innovation produce results, all the rest are costs."

– Peter Drucker

Generally put, an 'innovation' is developing a new idea *and* putting it into practice. The term 'innovation' is used here to refer to the process of bringing valuable new products (goods and services) to market i.e., from the idea/concept formulation stage to the successful launching of a new or improved product in the marketplace, or the result of that process, so as to meet the explicit or implied needs of current or potential customers. In other words, through innovation an enterprise seeks to deliver unique new value to its customers.

In theory, the IP system is considered to be absolutely necessary "to encourage creative intellectual endeavor in the public interest."

Managing innovation better than its competitors is one of the main objectives of a business that wishes to survive and thrive in today's economy. It begins with the formulation of a novel idea/concept and, through a series of stages, ends in the successful launching and marketing of a new or improved product in the marketplace. In other words, it looks at practical IP issues of relevance to different stages in the whole new product development process in which technological innovations may be introduced at different stages of the value chain from the producer to the end user.

8.3 INTELLECTUAL PROPERTY, INVENTIONS AND INNOVATIONS

So, what exactly is IP? Broadly speaking, the term 'IP' refers to unique, value-adding creations of the human intellect that results from human ingenuity, creativity and inventiveness. An IP right is thus a legal right, which is based on the relevant national law encompassing that particular type of intellectual property right.

Such a legal right comes into existence only when the requirements of the relevant IP law are met and, if required, it is granted or registered after following the prescribed procedure under that law. In practically all countries the world over, a national legal system of intellectual property rights have evolved; this has been created over varying periods of time during the last 150 years or so.

It has enabled the grant of property-like rights over such new knowledge and creative expression of mankind, which has made it possible to harness the commercial value of the outputs of human inventiveness and creativity. This is usually done by its orderly use, exchange or sharing it amongst various types of business partners in a complex network of strategic relationships that generally work harmoniously during the new product development process for creating and marketing new and improved goods and services in domestic and export markets.

The grant of a property right by the government, albeit generally for a limited period of time, over useful intangible intellectual output provides the owner of such legal property rights the *right to exclude* all others from commercially benefiting from it.

The different types of IP rights include trade secrets, utility models, patents, trademarks, geographical indications, industrial designs, layout designs of integrated circuits, copyright and related rights, and new varieties of plants.

Innovation may be seen as a process of interaction and feedback during the various stages of the new product development process. An invention is considered as the generation of a new idea or knowledge, which aims to solve a specific technical problem. Inventions could relate to products or processes and are characteristically protected by trade secrets, utility models/petty patents or patents.

8.4 ROLE OF IP IN INNOVATION

As there are many players involved in facilitating the market success of an innovation, the effective use of the tools of IP will play an important role in reducing risk for the players involved, who may then be able to reap acceptable returns for their participation in the process.

IP plays an important role in facilitating the process of taking innovative technology to the market place. At the same time, IP plays a major role in enhancing competitiveness of technology-based enterprises, whether such enterprises are commercializing new or improved products or providing service on the basis of a new or improved technology.

Once an enterprise decides to rely on a utility model or a patent to protect its output of research and development, it must initiate the required process, e.g., file a utility model/patent application. Such a move would facilitate the establishment of filing date for determining the priority date and for claiming exclusive rights over the output even before a patent is granted (unless on absolute or relative grounds the patent office refuses to grant a patent). Most R&D results in both functional and aesthetic improvements.

- Intellectual property rights can be used effectively to facilitate successful innovation.
- Innovative technologies stand a better chance of successfully reaching the marketplace if IP is used strategically.
- IP provides a strong negotiation position when it comes to entering into and maintaining business partnerships.

8.5 LEGAL ASPECTS OF INNOVATIONS

Managing legal aspects can be challenging. Despite patent protection and intellectual property rights, innovations continue to be copied discreetly. In Western countries, legal cases get resolved faster whereas in countries like India, the legal process takes a long time. Many of the innovation claims by companies are contested by competitors. Be it the claims of Pepsodent vis-à-vis Colgate or Dettol dishwasher Liquid vis-à-vis Vim liquid dishwasher.

Legal aspects of innovations have assumed greater complexity because of globalization. Market has become like a virtual battlefield due to intense competition. Several organisations have a separate legal cell to manage the legal risks. In fact, when we talk about integration of risks, the legal aspects of innovations must be embedded in the front-end risk management processes.

In industries like FMCG, pharmaceutical and food industries, the legal aspects have to be given serious consideration. Regulatory authorities are involved in approving the new product launches in the market.

8.6 ORGANIZATIONAL BENEFITS OF INNOVATION

From an organizational perspective, managers encourage innovation because of the value it can capture. Innovative employees increase productivity through by creating and executing new processes, which in turn may increase competitive advantage and provide meaningful differentiation. Innovative organizations are inherently more adaptable to the external environment; this allows them to react faster and more effectively to avoid risk and capture opportunities.

From a managerial perspective, innovative employees tend to be more motivated and involved in the organization. Empowering employees to innovate and improve their work processes provides a sense of autonomy that boosts job satisfaction.

From a broader perspective, empowering employees to engage in broader organization-wide innovation creates a strong sense of teamwork and community and ensures that employees are actively aware of and invested in organizational objectives and strategy. Managers who promote an innovative environment can see value through increased employee motivation, creativity, and autonomy; stronger teams; and strategic recommendations from the bottom up.

Managers can accomplish this through providing top-down support to employees, providing clear roles and responsibilities while allowing individuals the freedom to pursue these as they see fit. Supporting the HR and IT departments so that they can provide training and tools for higher employee efficiency can contribute substantially to a culture of internal innovation. This requires open-minded and motivational leaders in managerial positions who are capable of steering employee efforts without diminishing employee creativity.

9 DEVELOPING AN INNOVATION MINDSET

9.1 LEARNING OBJECTIVES

- Study the various aspects of developing an innovation mindset
- Understand the different models of an innovation mindset
- Learn about deep thinking and its impact on the social sector

New techniques do not always change conditions. In fact, new strategies always have the potential to reaffirm existing patterns and practices creating further entrenchment.

Users should know about new ideas, assumptions and new practices needed to implement the ideas. Organizations often take old ways of thinking as granted.

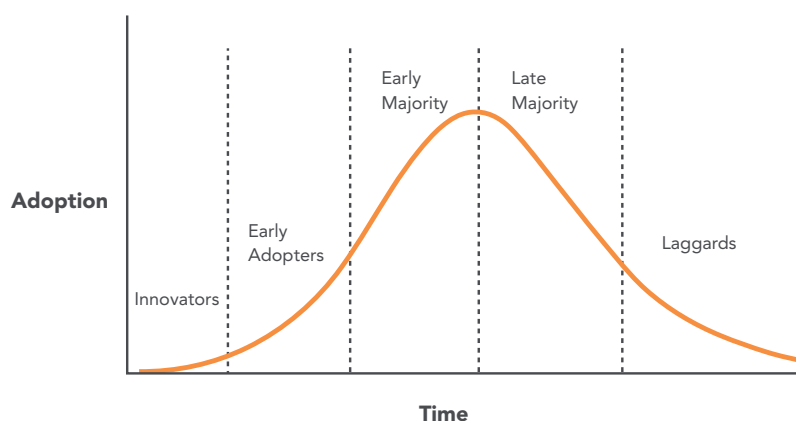
Deep thinking needs collection and analysis of data from a wide range of sources, thoughtful understanding of the data and the changes needed.

The impact of innovation work must be redefined to include more than reporting on the data that demonstrates outcomes. Impact includes the entire process of coming to understand the frequencies in which problems are/conceptualized and addressed, the process of deep thinking, as well as the resulting actions.

Let us now discuss two types of innovation models:

1. Roger's model
2. Docherty's innovation model

Rogers' Innovation Adoption Model



Roger's Innovation adoption curve is a classic model that explains how innovation is adopted. Individual and organizational mindsets evolve in a similar fashion. Innovators are the first to enter the market and they are followed by firms that are successful copy cats. Some firms make minor changes to the innovators' model and try to capture the market. As product becomes popular, a majority of players in the industry market similar products until a point of saturation is reached. As the product technology starts becoming obsolete, firms that are slow to adapt to innovation (called as laggards) try to take advantage of the situation but often they meet with little success. When this technology is becoming obsolete, a new technology is emerging in the market. Examples: Mobile Phone Technology.

9.2 DOCHERTY'S INNOVATION MINDSET ADOPTION CURVE

This is a useful way to look at how organizations typically approach innovation...especially when they are not used to an innovative approach.

At the beginning of any strategic innovation initiative, everyone is excited and optimistic and they feel that their idea is the best (Dreaming). Then they start facing challenges and enter a phase of uncertainty (Doubting).

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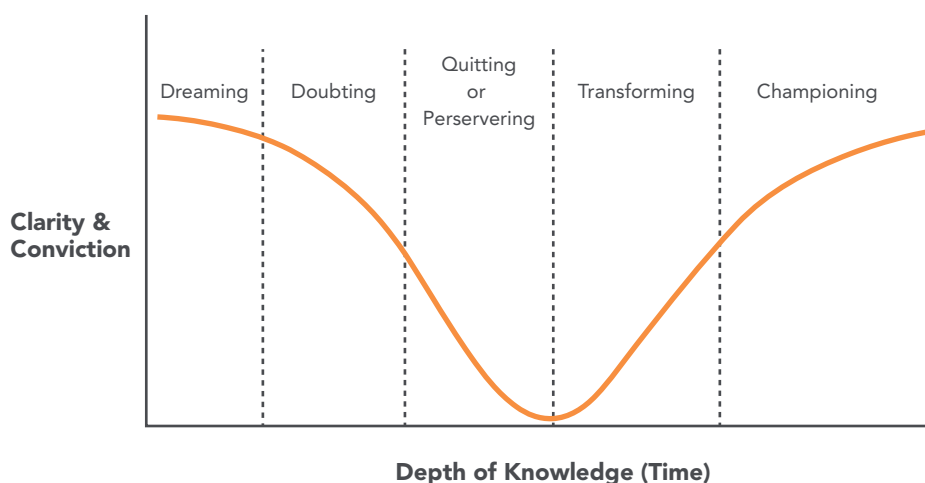
Failure is a natural and useful element of innovation...it's how we learn and adapt our solutions. Over time, the complexity of the challenge is understood.

It's this 3rd stage (Quitting or Persevering) that truly separates innovators from dreamers... those that persevere and don't quit often experience a transformational experience of having worked through the challenges and acquire a new confidence built upon deep knowledge and experience.

Individuals and organizations that repeatedly fight their way through to these transformational events acquire an ability to champion innovative and potentially risky ideas. Some firms become over-cautious after failure and this is not good.

Culture in organisation should support innovation. The company should encourage collaborative approach for innovation.

Docherty's Innovation Mindset Model



The organisations that have a never-say-die approach are able to experience transformation and they are in a position to earn the title of champions.

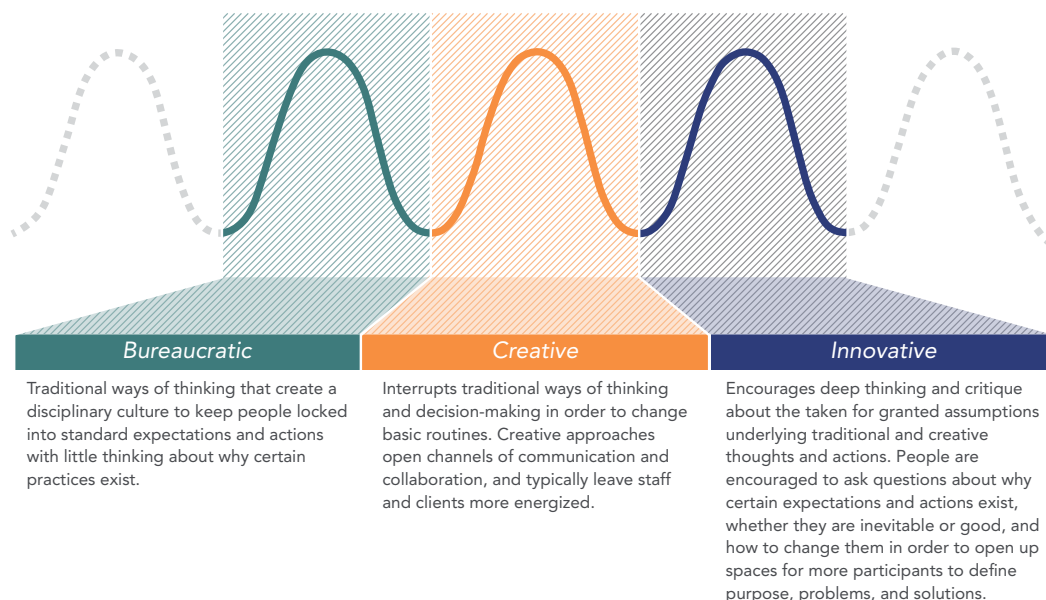


9.3 FREQUENCIES

- Interaction between people
- Habits and attitudes
- Community support
- Organizational hierarchy
- Flow of information about projects, goals and deadlines.

Every workplace operates on these patterns of unspoken communication that we call vibes, or frequencies. Understanding a frequency means knowing the culture of an organization.

Frequencies of Thought and Action in Social Sector Work



Each frequency can be useful and necessary for achieving goals; yet, individuals and organizations tend to rely mostly on bureaucratic approaches. Ultimately a frequency analysis can more effectively guide the development of creative and innovative mindsets.

9.4 DEEP THINKING

Deep Thinking = *research + thought + action*

Research, thought, and action are inseparable in social innovation. We call this deep thinking. Deep thinking means asking questions and using those questions to frame an area of investigation that will ultimately lead to actions. People must gather information or data to understand an area of concern and then use what they find to make decisions about what to do next.

9.5 REDEFINE IMPACT

Social sector organizations are made up of common components – people, environments, time, language, communication, and outcomes.

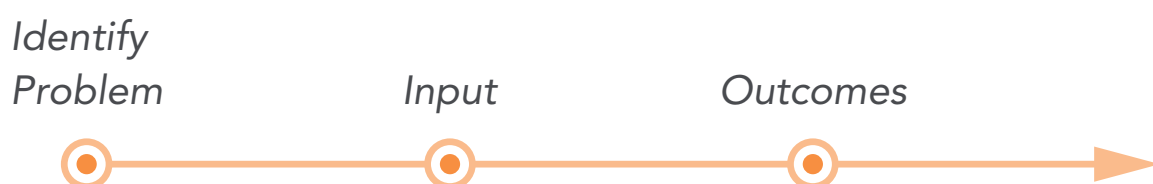
- How people work together in organizations
- How people define the problems and processes used to accomplish work
- How are solutions arrived at

Very often these components are seen as independent with no relation to each other. An innovation mindset views these components as connected. When one part is adjusted it creates movement in another. These shifts create opportunities that may have not been apparent before. This means that incremental change matters.

Components of social sector work	
PEOPLE	Recipients of services, staff, and decision makers who are engaged in work
ENVIRONMENTS	Physical and figurative spaces where work takes place
TIME	Cycles of work that are divided to accomplish work
LANGUAGE	Terms used to describe work and people engaged in work
COMMUNICATION	Ideas and information about the work and where these ideas come from, how they are communicated and represented in various media formats to multiple parties
OUTCOMES	Interpretations of the end result or purpose of the work such as changes in policies or quantifiable services received by recipients

9.6 UNDERSTAND THE MANY FORMS OF IMPACT

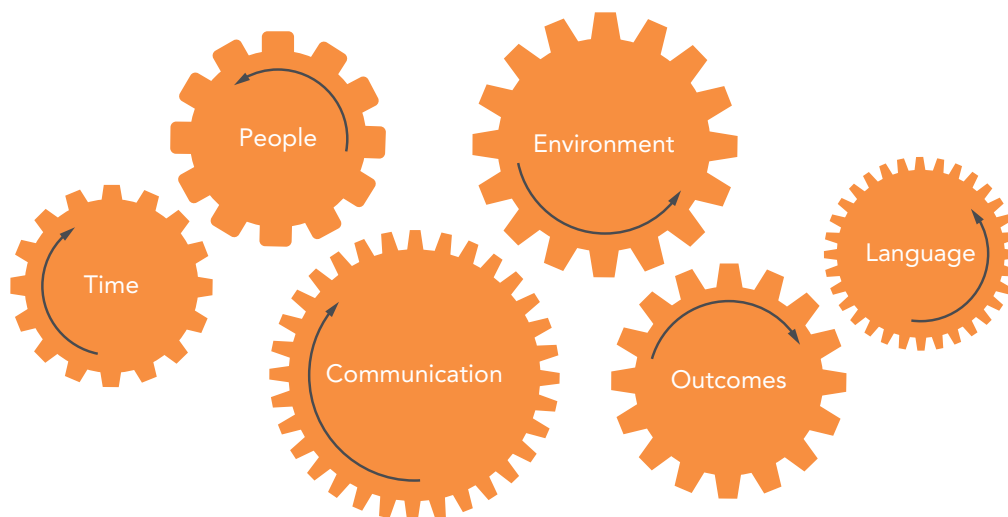
Too many innovations create new, unanticipated problems. Outcomes are considered as the most important end result instead of viewing them as one among many components. The usual image of achieving impact is a unidirectional line: we begin with problem identification, follow with inputs, and finish with outcomes.



Typical outcomes may include a policy change, an intervention or service, a workshop or a resource, all designed to solve a problem in some tangible, quantifiable way.

An innovation mindset re-conceptualizes impact beyond the mere attainment of outcomes. Social innovators must rethink the meaning and structure of all components of work, such as staff roles, how people are served, who provides services and what those relationships are like, the configuration of real and virtual workspace, how time and schedules are structured, language or terms used to describe work, how ideas are created and shared, external representations of those ideas, and the connections between each of these components.

An alternative image of impact is one of intersecting gears: when one gear moves faster or slower or in a different direction, all of the other parts are affected. Multiple components operate in relation to each other and engage with multiple characteristics at all times. Thus, impact is no longer simply the end result of a linear, unidirectional process. Instead impact becomes a constant part of the usual ways of thinking, talking, and doing.



9.7 POINTS TO REMEMBER

- The prime source of the innovation power in any firm lies in the mind of its employees.
- When they are mentally prepared for discovering and realising new opportunities, the organisation will possess an enduring capacity to innovate.

Two important questions for developing an innovation mindset:

- What have I learnt today?
- What can I improve tomorrow?

Approaching everyday life as a meaningful universe where possibilities and opportunities for learning and improving abound. It is the same phenomenon that occurs when we have bought a car of a certain brand, in the colour of our choice. Suddenly we begin to notice exactly the same car on many roads.

Suppose a manager of a sales team asks his employees monthly: what issues or topics have arisen during your conversations with customers that might indicate an opportunity? The effect of this repeated question is that team members will become more attentive, and when visiting customers, will listen more carefully. Each month they are asked to share what is worthwhile, so when speaking with clients they will notice opportunities, unarticulated needs or complaints. As with our earlier example of a new car, the team will then begin to identify possibilities everywhere.

British Airways used customer complaints as opportunities for improving their processes and growing the business.

9.8 HOW CAN COMPANIES ENCOURAGE AN INNOVATIVE MINDSET?

- Create a climate for innovation within the organization
- Announce incentives
- Be open to a gradual change
- Bring talent from outside if needed – subject to this talent having the experience and expertise that is required by the organization
- Encourage new ways of thinking
- Be willing to learn
- Challenge the thought patterns of existing employees
- Encourage collaboration and creative tension
- Encourage people to learn from each other and connect their insights
- Give people time to explore new opportunities, share the results and celebrate the successes
- Repeated cooperation and co-creation across units in innovation projects, possibly with the involvement of customers, has a profound impact upon the innovation mindset.

9.9 CASE-LETS:

The Rotterdam Eye Hospital in the Netherlands learned about the reservation system used by the Royal Dutch Airlines (KLM). KLM logistic experts then worked with professionals from the hospital to improve their patient planning and booking system, leading to a reduction in patient waiting times from an average of twelve to four weeks.

Let us suppose that a manager gives a small notebook to all team members with instructions to carry it at all times in order to record ideas as they occur. Each week the team is invited to share their recorded ideas relating to improvement and innovation.

When a good idea is brought forward, a small ad hoc project group is set up for further investigation of the idea. This group is deliberately composed of a mixture of individuals from the manager's own team together with members of other teams or departments and they are to consider the chosen idea alongside their regular work tasks. After two months, the project group will present their results to the management.

Many positive outcomes can arise from this simple action. Managers frequently advocate the importance of innovation, yet fail to integrate it into the work agenda. By taking action on good ideas, the leadership shows its appreciation of employee participation and the matter of innovation becomes a priority. Moreover, respect for the creativity of employees stimulates a feeling of community and helps make the company a more attractive place to work.

Questions are a simple and effective way to build a state of mind open to change and innovation.

There may be some conflicting opinions as a result of diverse backgrounds and experience within the group, but that contributes to the creative tension necessary to increase alertness and productivity and to improve an idea.

Employees enjoy the experience of being part of an exciting and inspiring community. This is exactly why organisations like Google are idea factories. They have taken away the barriers to innovation-focused collaboration. Chairman Eric Schmidt explains in an interview: "One of the things that we've tried very hard to avoid at Google is the sort of divisional structure and the business unit structure that prevents collaboration between teams."

It is the core task of leadership to eliminate the barriers that might prevent collaboration and then ignite the desire to connect and cross-fertilise ideas.

When searching for ways to enhance creative thinking we often rely on brainstorming or lateral thinking techniques. These are, of course, important in helping to break old patterns and guide us to new avenues of thinking. They remain techniques we occasionally use but they do not become part of our second creative nature.

Studies of highly creative people show that these talents use hardly any artificial techniques to boost their creativity. The secrets behind their creative genius are certain habits they have acquired.

When the great physicist Albert Einstein was asked how he differed from the average person, he gave a surprising answer. He said that when people were asked to find a needle in a haystack, most people were glad when they found the needle and immediately stopped searching.

“But I, ” said Einstein, “I always wonder if there might be more needles hidden in the haystack and keep on seeking for them.” Einstein was pointing to a golden creativity-boosting habit: stay curious and never stop the search for new insights, perspectives, and solutions. Or in other words: fight mental laziness and the inclination to habitually stick to old and familiar solutions.

Also, posing artificial barriers can stimulate the right habits for creativity. When an employee proposes a good idea, we can create such a hurdle by saying: we will only take it into consideration if you redesign your idea and come up with a forty per cent cheaper version. By constantly challenging the inventiveness of our personnel, we build the right mindset, prepared for innovation.

Another creative habit to acquire is to examine problems from different angles. Looking at current products and services from the eye of the customer can bring new ideas for improvements. We often forget that when we ask people to change, we also ask them to change perceptions and see the possibilities of the transformation. We can build an organisation ready for any change when we encourage employees, when faced with problems, to challenge their assumptions and shift their perspectives.

9.10 CHALLENGES FOR THE LEADERSHIP

More than mindset of employees, it is the mindset of leadership teams who just do not listen or do not think listening is important to stimulate innovative mindset within the organisation. Leaders have to develop tolerance for failure.

Soichiro Honda, the founder of the Japanese Honda Motor Company, phrased it as follows: “Success can only be achieved through repeated failure and introspection. Success represents the one per cent of your work that results from the ninety-nine per cent that is called failure.”⁴

The ultimate challenge of leadership is to create a mindset and a culture in the company where innovation is not seen as something extraordinary that can only occasionally occur. The desired culture is where all members of the organisation embrace innovation. With a collective mindset that is ready for these challenges, the organisation will possess a daily sustainable innovation strength with which it can effectively respond to any changes in a pro-active way.



Building an innovation mindset is always a gradual and tailor-made process; but when we succeed we will have a workforce capable of generating a sustainable competitive power through innovation!

9.11 PROBLEMS WITH INNOVATIONS

Big innovations are rare. The Walkman was a massive innovation and a great success for Sony. But it's one that Sony has never really repeated. Cost is another issue.

Look at how much money the pharmaceutical industry spends on research and development to evidence this. Bringing a new drug to market is fraught with challenges, not least the risk that having invested vast amounts of money in developing a product, someone else brings theirs to market first.

For a big innovation to be successful, it usually necessitates you or your customers making significant changes in practices, approaches, ways of working or living.

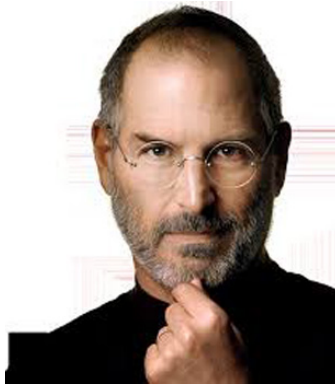


Fig: Steve Jobs

Steve Jobs is a good example of a business innovation ambassador. He was highly successful in enabling Apple to conquer an entirely new market.

While there can be great value in [transformative business models](#) that embrace large-scale changes to adapt to changing markets, innovation for most businesses shouldn't just be about radical shifts or major leaps forward.

It's also about a mindset that seeks to make incremental improvements that can benefit us, our business, our customers and employees in all sorts of ways. Efficiency improvements are as much about innovation as disruptive technologies are.

9.12 THE 7 KEY PRINCIPLES OF AN INNOVATION MINDSET

1. Innovation shouldn't be constrained. Big or small, product or process, labels don't matter. Actively look for and listen to any and all new ideas.
2. Ideas need to be heard. Need to respond meaningfully to all these suggestions. People need to know ideas are valued, even if they can't always be implemented.
3. Make innovation an everyday habit. Ask "what can we do differently?" Improvements have to be part of the day-to-day.
4. Keep your eyes and ears open. Innovations don't have to be completely new, just new for you. After all, imitation is the sincerest form of flattery!
5. Conversation and dialogue need to be encouraged.
6. Incremental improvements can be valuable.
7. Simple ideas can also have a tremendous impact. Small changes in non-cash incentives [like giving fruits to employees during the period in between breakfast and lunch] can bring about a dramatic transformation in behavior of employees.

“Mastery and Innovation are profoundly related. Anyone wanting to attain mastery or be innovative will need to commit to a journey of experiential learning; to develop and learn new things but also let go of and unlearn old habits”.

Ian McDermott

9.13 OUT OF BOX APPROACH

“Out of the box” is an expression that describes non-conformal, creative thinking. Not many organisations take a holistic approach to infusing innovation. Very few organisations adopt an approach that touches all relevant aspects of the organization like strategy & vision, leadership & processes, culture, physical work environment.

Only a coherent and cohesive approach can lead to creation of an innovative organisation. In an innovative organisation, everyone is responsible for innovation. Creating an innovative organisation needs a people centric approach. People come up with ideas and transform them into innovations.

Whirlpool is an example of an organisation that has taken a holistic approach to innovation.

Brain power

By 2020, wind could provide one-tenth of our planet's electricity needs. Already today, SKF's innovative know-how is crucial to running a large proportion of the world's wind turbines.

Up to 25 % of the generating costs relate to maintenance. These can be reduced dramatically thanks to our systems for on-line condition monitoring and automatic lubrication. We help make it more economical to create cleaner, cheaper energy out of thin air.

By sharing our experience, expertise, and creativity, industries can boost performance beyond expectations. Therefore we need the best employees who can meet this challenge!

The Power of Knowledge Engineering

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SKF

For decades Whirlpool Corp., the No. 1 U.S. appliance maker was an engineering and manufacturing firm fixated on quality and cost. Its products were mostly commodities sold at all large retailers – Sears, Best Buy, etc. In 1999 Whirlpool embarked on a mission to be recognized as being No. 1 in innovation as well. They started by simply enlisting 75 employees from across the firm to brainstorm. The group came up with one hit product, but most ideas were too far-out or insignificant. Like many first-time innovators, people had a difficult time seeing how a more far-reaching idea could turn into an opportunity.

That is when Whirlpool re-thought its approach. First, every salaried employee was enrolled in a business innovation course. Second, they trained people called I-mentors who were kind of like Six Sigma black belts. They had real jobs, but they also had special training in how to facilitate innovation projects and help people with their ideas.

An Intranet portal offered everyone in the firm a common forum for learning principles of innovation, keeping abreast of recent research, and tracking the progress of ideas toward realization. Innovation teams comprised of employees from all levels screened and vetted new ideas. In 2008, Whirlpool had 61, 000 employees and nearly 1, 100 volunteer I-mentors worldwide who helped facilitate innovation throughout the firm.

Two years into the program Whirlpool had 100 business ideas, 40 concepts in experimentation and 25 products and business ideas in prototype stage. By early 2006, Whirlpool had 100s of ideas in the pipeline, 60 in the prototype stage and 190 being scaled for the market. In 2007 new products stemming from the innovation areas contributed nearly \$2.5 billion in worldwide revenue and \$4 billion of 2008 \$19 billion in revenues.

So, if the senior leaders of the enterprise have the burning desire for the firm to be more innovative then, the goal is very clear. It is to create a “culture of innovation.” And the starting point on this journey is the lingua franca of innovation, i.e., Knowledge.

9.14 MISTAKES MADE BY LEADERS

1. Initiating innovation for the wrong reasons.
2. Thinking about innovation as a quick fix for solving problems.
3. Failure to recognize innovation as a formal discipline.
4. Failure to recognize the need for innovation training to enhance competence.
5. The belief that innovation cannot be learnt.

9.15 POINTS TO NOTE:

1. Create a culture of innovation
2. Mastery = knowledge + practice + discipline (rigor)
3. Educate employees about innovation – why innovate, links with strategy and role of leadership and culture.
4. Create a community of innovation experts

Organic growth can happen in two ways – copy or innovate. Hence, the practice of innovation is the relentless pursuit of identifying opportunities, shaping opportunities and capturing opportunities.

Firms tend to explore for opportunities in three spaces: incremental, platform and radical innovations. Examples of incremental innovations are: Intel going from 90 nanometer to 45 nanometer technology; car manufacturers improving the gas mileage using existing technologies; a new version of Microsoft Windows etc. In incremental innovations, firms are working to continuously improving upon existing technologies, existing markets, and existing ecosystems. Here, they are working with mostly “known” variables. Further, there is data from history as to how these variables might behave.

It doesn't mean that there are no unknown variables in incremental innovation. For instance, the Vista version of Windows and the “New Coke” were very poorly received by the existing customers and they were either quickly replaced with a better version or pulled from the market. Hence, all innovations – incremental, platform and radical – have some known variables and some unknown variables. Incremental innovations tend to have more of the known variables and fewer of the unknown variables.

Platform Innovations: WL Gore's polymer expanded polytetrafluoroethylene (ePTFE) was the first used in insulating industrial electric cables. Later it was transformed into Gore-Tex, the waterproof and breathable fabric that made the company famous.

Using their patents and deep knowledge of ePTFE Gore has created 5 platforms – films, fibers, tubes, tapes and sheets. Via these platforms, this polymer has found its way into fuel cells (films), Glide dental floss (fibers), medical vascular graft (tubes), cable assemblies (tapes) and medical patches (sheets).

Similarly, P&G's focus on connecting sciences to create domain expertise has led to dozens of products. Candle making provided the base technology for soap making. Soap making led to expertise in fats and oils and surfactants. Crushing seeds to make oil led to expertise in plant fibers (diapers, feminine hygiene, paper towels). Surfactant technology led to expertise in hard water and calcium (tooth paste and osteoporosis).

It is well known that platform innovations are no trivial matter. The technological unknowns alone pose tremendous challenges, notwithstanding market, financial, operational, regulatory and other uncertainties.

As compared to incremental innovations, the ratio of unknown to known variables increases in case of platform innovations. In case of radical innovations, the number of unknown variables outnumber the known variables.

Radical innovation is primarily about the unknown: unknown markets, unproven technologies, and untested business models. Some examples of radical innovations include the Cordis stents, Raytheon's microwave oven, Amazon selling books on the internet, Apple iPhone, Grameen Bank's microfinance and Skype.

Enterprises minimize and manage risk in its innovation projects by doing analysis before taking action. The future is approached by performing an environmental scanning (SWOT, STEP, Value Chain Analysis) and followed by the setting of a project plan to execute strategy.

KPIs and milestones are set and budgets are allocated. When project performance does not meet projections, money and energy is spent to get the project back on to the predicted trend line.

Unfortunately, all innovation projects have a bunch of unknowns. Specifically, there are two types of unknowns – known unknowns and unknown unknowns.

Uncertainty is about known unknowns. In these situations, you know which variables may impact the process and outcome of the project but there is no data from the past to assign a probabilistic numbers.

Ambiguity is a second order uncertainty. One cannot surmise as to what variables may be lurking in the background. They only appear once the project is underway. Unfortunately, analytical strategies do not account for these unknowns ex-ante.

In summary, the practice of innovation falls on a spectrum of “continuous improvement” at one end and “continuous experimentation” on the other end, i.e., incremental to radical. Over the last 25 years most firms around the world have learned the concepts of Kaizen and continuous improvement. However, very few firms have mastered the continuous experimentation philosophy.

9.16 WHAT DO WE MEAN BY ‘THINKING OUTSIDE THE BOX’?

This means that we do not follow the normal path. We develop the confidence to deviate from the regular path. By thinking differently and thinking outside the box, we can look at the same problem using a different lens and arrive at a solution.

9.17 WHY SHOULD WE THINK OUTSIDE THE BOX?

When you think outside the box, you’re more able to discover the real cause of the failure: Everyone learns differently – some people are active learners, some learn by watching, listening or reading. What works for some might not work for others.

Thinking outside the box *means viewing things from a completely different perspective: outside of the box; unfiltered, unbiased, open for suggestions, willing to empathize with others opinions.*

10 CREATIVITY & LATERAL THINKING

10.1 LEARNING OBJECTIVES

- Learn about creative approaches
- Study the relevance of lateral thinking
- Understand the difference between innovation and invention
- Understand the attributes of creative people
- Appreciate the difference between creativity and innovation

10.2 CREATIVITY

Innovation is associated with the creation of value or satisfaction of a customer need. Creativity is the engine of innovation. The essence of creativity is combining two or more ideas to arrive at an entirely new one. The idea of bringing the parts to the worker rather than moving the worker to the parts is a creative one.

Innovation distinguishes between a leader and a follower.

Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesise new things.

10.3 CREATIVE ENVIRONMENT

Johannes Gutenberg invented the printing press by combining three existing ideas; 1. A press that was used in wine making 2. Movable type as was used in minting coins 3. Wood blocks as was used in printing calendars and playing cards.

Creativity favors the prepared mind. It is associated with dissatisfaction from existing practice.

Characteristics of a creative environment

- Permits people to work in their areas of interest
- Encourages employees to network effectively with their colleagues
- Allows taking moderate risks
- Tolerates failures
- Tolerates non conformity
- Provides appropriate rewards and recognition

10.4 WHAT ARE THE CHARACTERISTICS OF CREATIVE PEOPLE?

- Ability to express ideas well
- Ability to relate to iterations needed in developing the ideas
- Ability to generate original ideas
- Ability to stand out from the crowd
- Ability to separate source from content in evaluating information
- Not afraid of problems
- Perseverance in facing problems
- Suspension of judgement
- Willingness to spend time analyzing and exploring
- Genuine regard for intellectual and cognitive matters

The sooner an innovation reaches the market place, the sooner a company can reap its rewards. A firm must be able to improve its ability to innovate and to use innovation to gain competitive advantage. Innovation may be relevant in a number of categories like products, packaging, services and production. Competing through technology is a fact of life today.

Technology is an expression of human creativity. Managing technology involves continuous effort in creating technology, developing novel products and services, and successfully marketing them. This requires great creativity along with a system designed to exploit it. It also requires investment in R&D.

Let us look at the difference between innovation and invention.

Invention	Innovation
Concept or creation of a novel technology – product, process or previously unknown system	Creation of a product or service or process that is new to the organisation
Steam engine, Transistor, Xerox machine are examples.	Mobile phone technology advances
Result of human ingenuity and imagination.	It is the introduction into the market place – either by utilization or commercialization of a new product, service or process.
Happens through chance or trial and error or to satisfy a need.	Innovation does not having to be new to the world. An innovation can also be a change in industrial practice that increases productivity.

10.5 INNOVATION FOR PROBLEM SOLVING

Four distinct levels of innovation

Level 1: Problem Solving. This is a reactive approach to innovation.

Level 2: Problem Prevention.

Level 3: Continuous Improvement.

Level 4: Creation of a New Future.

Level of Innovator	Mindset	Outcome
Level 4: Creator of a New Future	Visionary, fully engaged, and intrapreneurial—“Where must we be in 10 years?”	Breakthrough products, strategies, and business models are generated.
Level 3: Continuous Improver	Dissatisfied with the status quo—“Good enough is not good enough.”	Incremental upgrades are proposed and implemented.
Level 2: Problem Preventer	Mindful of and prepared for potential challenges—“Not on my watch.”	Market and operational risks are managed and mitigated.
Level 1: Problem Solver	Practical, competent, can-do attitude—“I can fix this.”	Challenges are resolved to the satisfaction of key stakeholders.

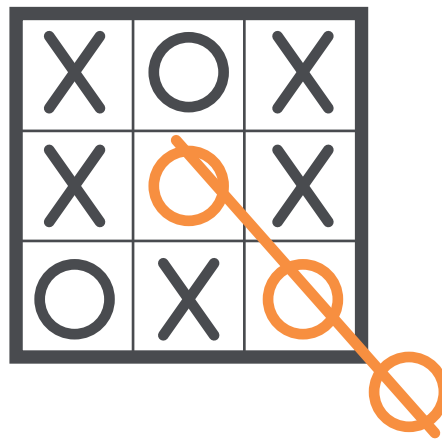
10.6 LATERAL THINKING

Edward de Bono has coined the term ‘Lateral thinking’ in 1967.

There are several ways of defining lateral thinking, ranging from the technical to the illustrative.



1. **“You cannot dig a hole in a different place by digging the same hole deeper”**
This means that trying harder in the same direction may not be as useful as changing direction. Effort in the same direction (approach) will not necessarily succeed.



2. **“Lateral Thinking is for changing concepts and perceptions”**

With logic you start out with certain ingredients just as in playing chess you start out with given pieces. But what are those pieces? We assume certain perceptions, certain concepts and certain boundaries. Lateral thinking is concerned not with playing with the existing pieces but with seeking to change those very pieces. Lateral thinking is concerned with the perception part of thinking.

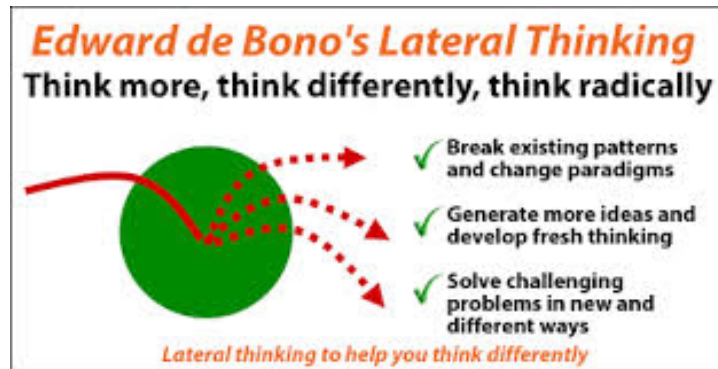
3. “The brain is a self-organising information system and forms asymmetric patterns. In such systems there is a mathematical need for moving across patterns.
4. “In any self-organising system there is a need to escape from a local optimum in order to move towards a more global optimum. The techniques of lateral thinking, such as provocation, are designed to help that change.”



10.6.1 WHAT IS LATERAL THINKING?

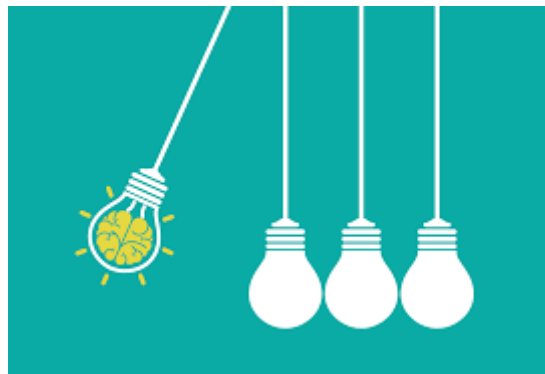
Lateral thinking, is the ability to think creatively, or “outside the box” as it is sometimes referred to in business, to use your inspiration and imagination to solve problems by looking at them from unexpected perspectives. Lateral thinking involves discarding the obvious, leaving behind traditional modes of thought, and throwing away preconceptions.

Lateral thinking is important in careers like marketing, advertising, media, art and design.



Edward de Bono defines four types of thinking tools:

- Idea generating tools that are designed to break current thinking patterns – routine patterns, the status quo
- Focus tools that are designed to broaden where to search for new ideas
- Harvest tools that are designed to ensure more value is received from idea generating output
- Treatment tools that consider real-world constraints, resources, and support



Random Entry Idea Generating Tool: The thinker chooses an object at random, or a noun from a dictionary, and associates it with the area they are thinking about.

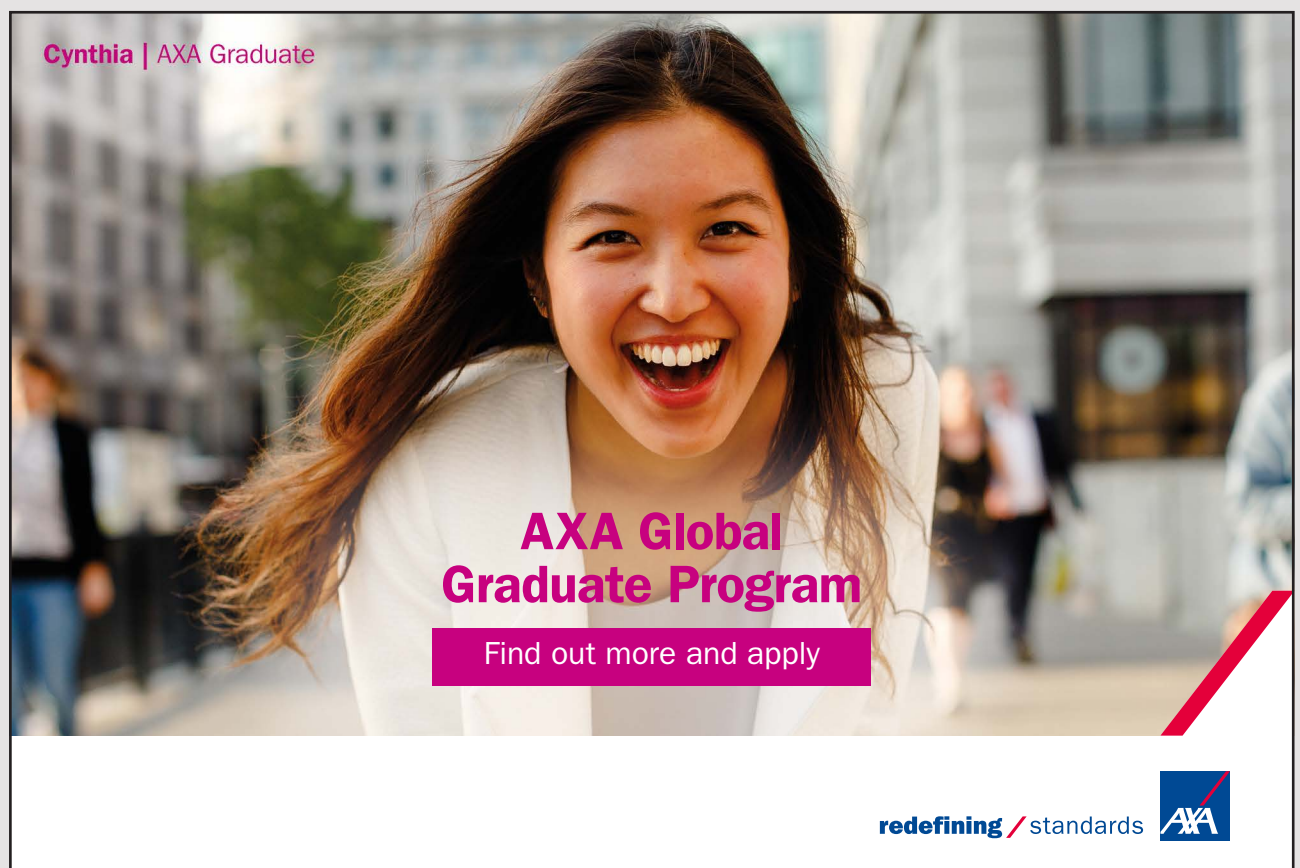
Provocation Idea Generating Tool: The use of any of the provocation techniques – wishful thinking, exaggeration, reversal, escape, distortion, or arising.

Movement Techniques: Extract a principle, focus on the difference, positive aspects, special circumstances.

Challenge Idea Generating Tool: A tool which is designed to ask the question “Why?” in a non-threatening way: why something exists, why it is done the way it is. The result is a very clear understanding of “Why?” which naturally leads to fresh new ideas.

Concept Fan Idea Generating Tool: Ideas carry out concepts. This tool systematically expands the range and number of concepts in order to end up with a very broad range of ideas to consider.


Disproving: Based on the idea that the majority is always wrong (as suggested by [Henrik Ibsen](#) and [John Kenneth Galbraith](#)), take anything that is obvious and generally accepted as “goes without saying”, question it, take an opposite view, and try to convincingly disprove it. This technique is similar to de Bono’s “Black Hat” of the [Six Thinking Hats](#), which looks at the ways in which something will not work.



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10.6.2 POINTS TO REMEMBER:

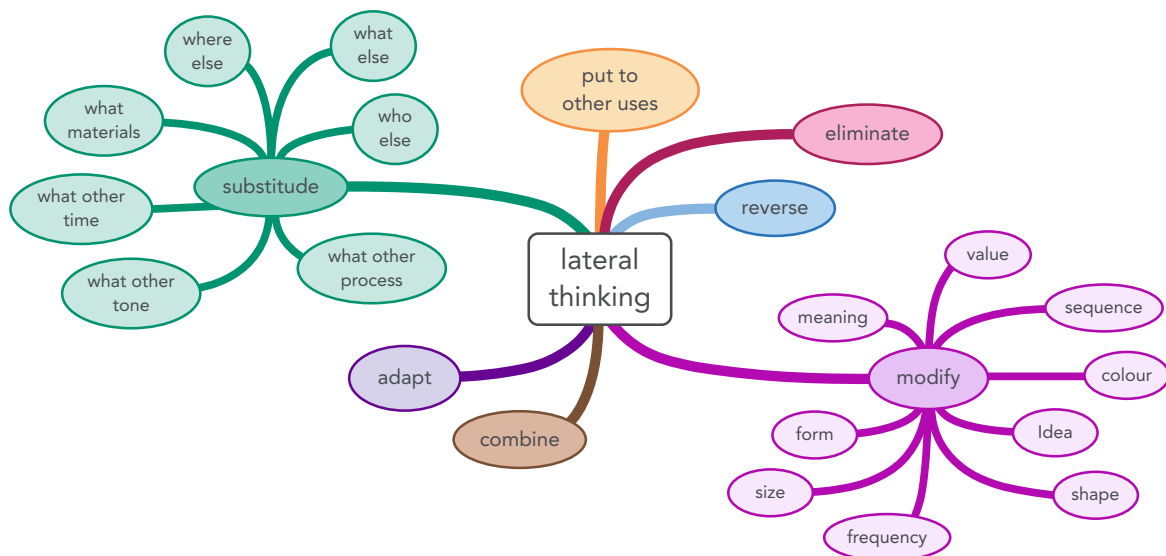
- ✓ Lateral thinking defines the mathematical need for creativity.
- ✓ Lateral thinking is a skill that can be learned.
- ✓ Lateral thinking is solving problems through an indirect and creative approach, using reasoning that is not immediately obvious and involving ideas that may not be obtainable by using only traditional step-by-step logic.
- ✓ Focus on creativity techniques to improve lateral thinking.
- ✓ Brainstorm in an effective way to understand lateral thinking.

10.6.3 EXAMPLES OF ORGANISATIONS THAT HAVE USED LATERAL THINKING

Siemens: A division of Siemens reduced product development time by 50% after incorporating lateral thinking.

Kevlar: The reengineering of a manufacturing process for Kevlar eliminated 9 steps in the manufacturing process as a result Lateral Thinking Techniques saving the company over \$30 million annually.

IBM & Nestle are other companies that have successfully deployed lateral thinking.



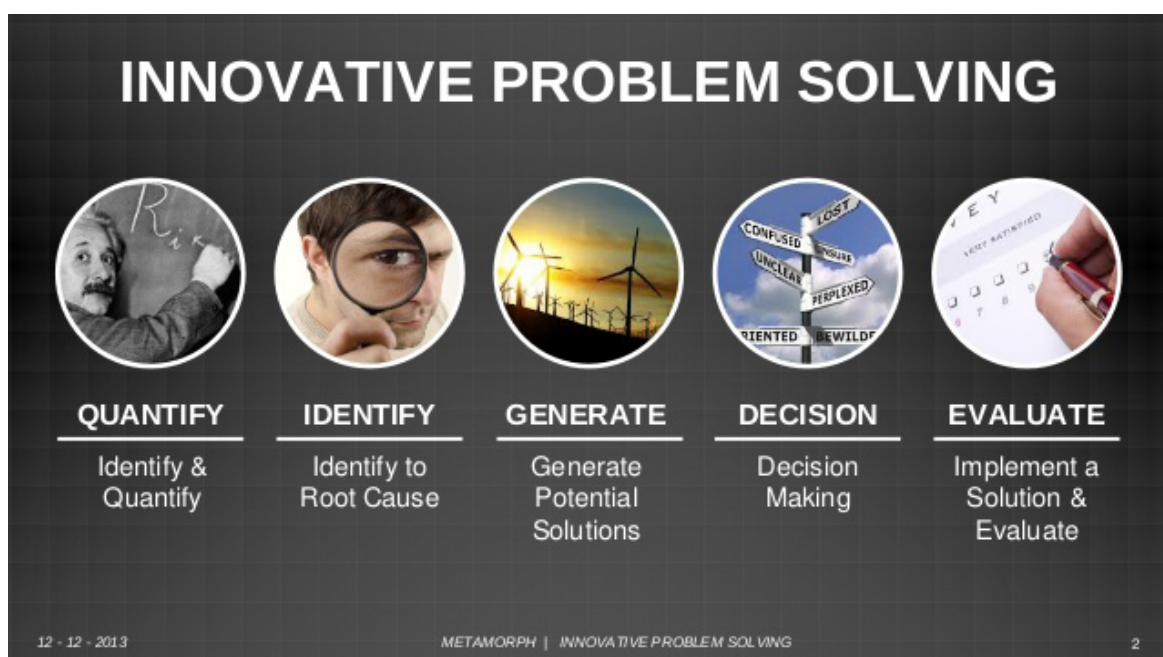
10.7 DIFFERENCES BETWEEN LATERAL THINKING AND LOGICAL THINKING

Lateral thinking	Logical thinking
Wealth of ideas important	How solid are the ideas?
Looks for the least obvious answer	Focus is on the most Obvious
Seeks to challenge methods	Sticks to proven methods
Thought processes move sideways	Step by Step process
Looks for as many solutions as possible	Uses judgement to select & recruit ideas.

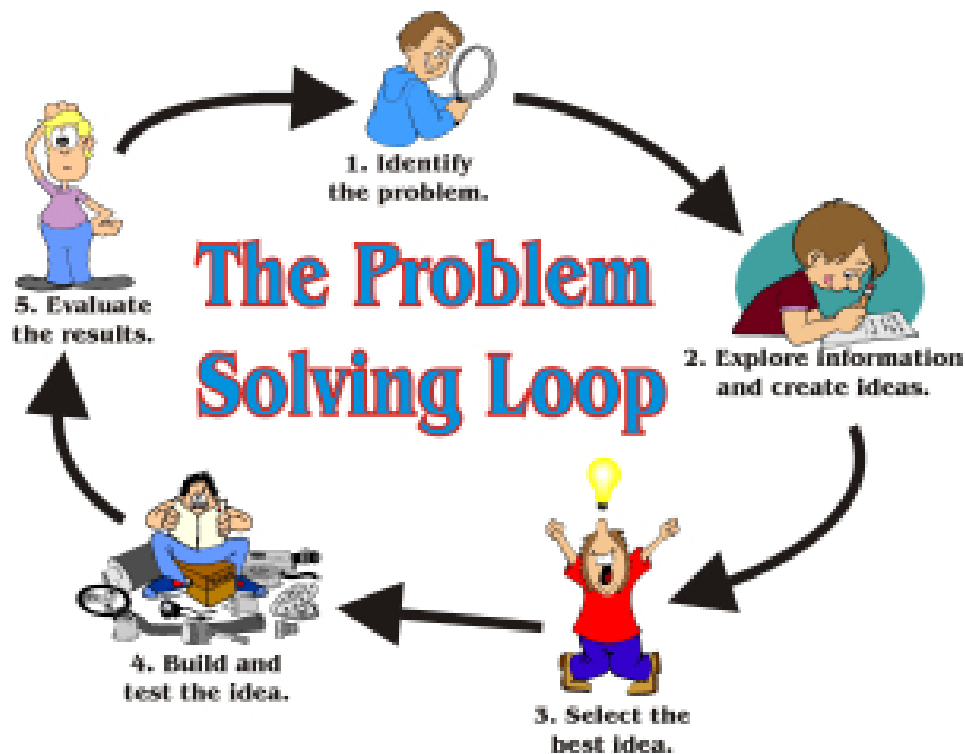
10.8 PROBLEM SOLVING USING INNOVATION

Innovative problem solving is a set of procedures that can be used individually or with groups to define and analyze problems and challenges, generate and select promising ideas or options and develop and find acceptance for those promising solutions. Human factors like motivation, group dynamics are important for improving productivity and effectiveness.

When conservative methods do not yield desired results it is better to use a creative approach. The different steps in innovative problem solving are given below. There is a story about an officer in Bihar government. This officer was upset about the manner in which the walls were smeared with betel (pan in Hindi) stains. Those who were visiting the building were used to spitting on the walls. The officer got all the walls painted and then made arrangements to draw the pictures of Hindu gods and goddesses on the walls. Within no time, the practice of spitting on the walls of the building was curbed.



Let us look at the problem solving loop:

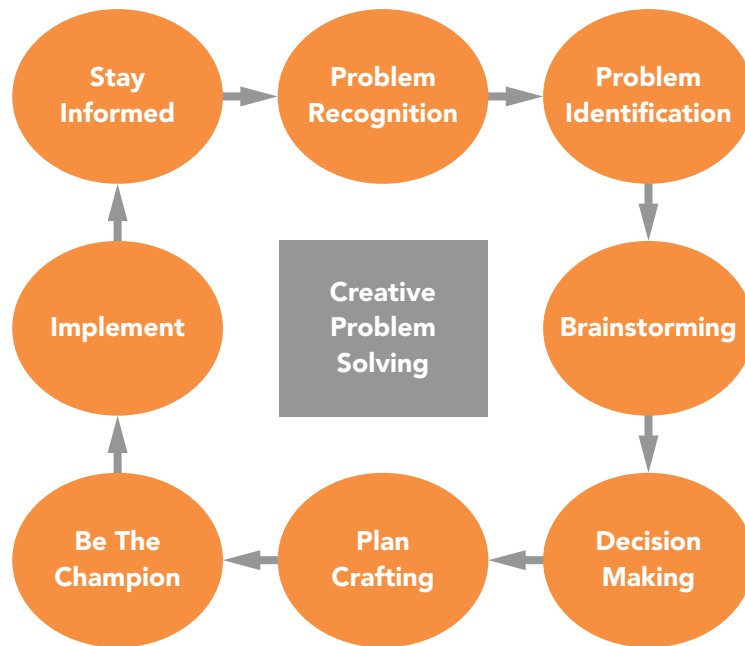


Once the problem is identified, one has to study the information about the problem in detail. This is followed by creating ideas and screening them to select the best idea. Now is the time to build the idea and test it. It is important to evaluate the results and keep in mind future improvements that are needed.

Disruptive Innovation Mindset

- o Develop a disruptive mindset.
 1. What to stop doing...
 2. Start doing
 3. Do differently

10.9 CREATIVE PROBLEM SOLVING



Proper decisions play an important role in creative problem solving. Once the problem is solved, it becomes a learning ground to attack future problems.

10.9.1 MORE ABOUT CREATIVE PROBLEM SOLVING [CPS]

- This is not just brainstorming
- Well-defined process
- Creative ideas result from trying to solve a specific problem or to achieve a particular goal

Albert Einstein, Leonardo da Vinci, Thomas Edison and other creative geniuses did not wait for creative ideas to strike them. Rather they focused on solving a clearly stated problem.

CPS is a simple process that involves breaking down a problem to understand it, generating ideas to solve the problem and evaluating those ideas to find the most effective solutions. Highly creative people tend to follow this process in their heads, without thinking about it.

10.9.2 A 7-STEP CPS FRAMEWORK

CPS Steps

1. Clarify and identify the problem
2. Research the problem
3. Formulate creative challenges

4. Generate ideas
5. Combine and evaluate the ideas
6. Draw up an action plan
7. Do it! (implement the ideas)

10.9.3 CPS AND INNOVATION

Any effective innovation initiative or process will use CPS at the front end. Any effective and sustainable idea management system or ideation activity will be based on CPS.

Systems and methods that do not use CPS or use it badly, on the other hand, tend not to be sustainable and fail early on. Systems and methods which are based on CPS, but in which creative challenges are poorly defined, also deliver poor results either because users do not understand the challenge or the problem is poorly understood and the resulting challenge stimulates ideas which in themselves are good, but which are not actually solutions to the true problem.

10.9.4 HOW DOES LATERAL THINKING HELP IN SOLVING PROBLEMS?

Lateral thinking helps identify what caused the problem and then figuring out ways to fix the problem. For example, a production line has an established run rate of 1000 items per hour. Suddenly, the run rate drops to 800 items per hour. Ideas as to why this happened and solutions to repair the production line must be thought of, such as giving the worker a pay raise.

Creative Problem Solving: Solve a problem in an indirect and unconventional manner. For example, if a production line produced 1000 books per hour, creative problem solving could find ways to produce more books per hour, use the production line, or reduce the cost to run the production line.

Creative Problem Identification: Many of the greatest non-technological [innovations](#) are identified while realizing an improved process or design in everyday objects and tasks either by [accidental chance](#) or by studying and documenting real world experience.

Lateral Problem “Solving”: Lateral thinking will often produce solutions whereby the problem appears as “obvious” in hindsight. Lateral thinking will often lead to problems that you never knew you had, or it will solve simple problems that have a huge potential. For example, if a production line produced 1000 books per hour, lateral thinking may suggest that a drop in output to 800 would lead to higher quality, more motivated workers etc.

10.9.5 INNOVATIVE PROBLEM SOLVING IN LARGE ORGANISATIONS

Tricky problems must be shaped before they can be solved. To start that process, and stimulate novel thinking, leaders should look through multiple lenses.

CEOs like to win. Today, innovation is the playground where many CEOs are seeking to demonstrate their winning prowess. However, it just so happens that large organizations are having a very difficult time putting points on the scoreboard when it comes to innovation.

One recent survey suggests a mere 10–25% innovation success rate on corporate projects. By their very nature large corporations are complex, distributed, sometimes challenging to shift and change when it comes to innovation.

Although innovative ideas may be prevalent, large organizations are rarely structured to allocate the time, attention, and thought required to generate innovation success. Thus the CEO must properly organize and develop the human organization systematically in seven specific ways. When all seven sources of human potential and leadership are cultivated, corporate innovation does indeed flourish.

#1 A well-conceived Chief Innovation Officer [CINO] role stewards innovation success.

#2 The Innovation Steering Committee protects horizons, emboldens the CINO and maintains pace. As a process, innovation is cross-functional, cross-business-unit, and cross-geography, with clear benefits to open and external relationships.

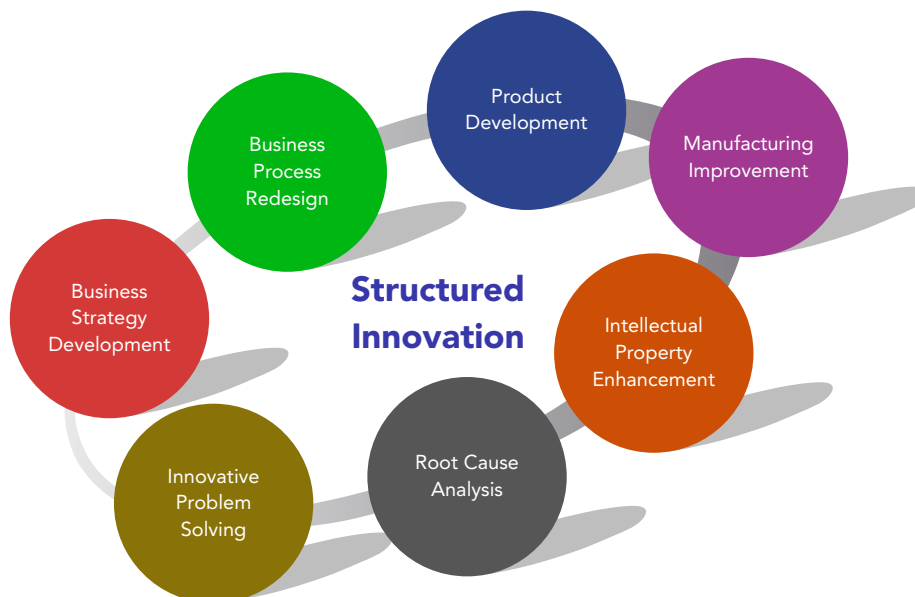
#3 Key Business Unit Leaders with explicit Innovation targets contribute to the overall innovation agenda. The horizon tension is well known and understood: how does one balance the need for immediate results against the need to invest in long-term, more unproven opportunities? Business unit leaders are valued for their ability to meet or exceed expected operating results. However, without a business leader's commitment to new ventures, product or service innovations, innovation success is all but doomed.

#4 Democratize and turbo-charge innovation by inviting employees to participate. The days of R&D owning 100% of innovation are long over, at least in most markets and industries. Democratization of innovation is less a matter of information or innovation systems and more about an inclusion mindset, an inherent belief that front-line employees can contribute to opportunity development and problem solving. Large corporations with stable, strong-functioning employee innovation programs seem to achieve measurable success irrespective of industry or market. In most cases, an innovation management system plays a key role in corporate-wide engagement of this nature.

#5 Innovation Champions add a viral dimension to corporate change. Innovation initiatives are resource intensive. Talent, more so than capital, can be hard to secure. An internal talent marketplace for innovation can be a pivotal success factor. Internal innovation champions help to diffuse the innovation strategy across the enterprise.

#6 Open the enterprise to external experts, voices, and innovators to enhance serendipity. Notwithstanding IP and legal concerns, open innovation is here to stay. All Open Innovation strategies have one thing in common: curiosity about the possibilities for innovation from sources outside of the enterprise.

#7 The office of the CEO must set the cultural standard for curiosity, horizon thinking, prudent risk-taking, and talent development. It is well known that the CEO and associated staff have a profound impact on the innovation climate at large corporations.



Structured innovation is more process oriented. Strategy forms the basis for the process. When strategy is well-defined, it leads to redesign of business process. Root cause analysis helps in understanding the problem with greater intensity and this leads to improved solutions that are effective both cost wise as well as operationally.

10.9.6 MORE ABOUT CREATIVITY

Whether it is considered from the viewpoint of its effect on society, or as one of the expressions of human spirit, creativity stands out as an activity to be studied, cherished and cultivated.

- Silvano Arieti

Creativity is a distinguishing characteristic of human excellence in every area of behavior

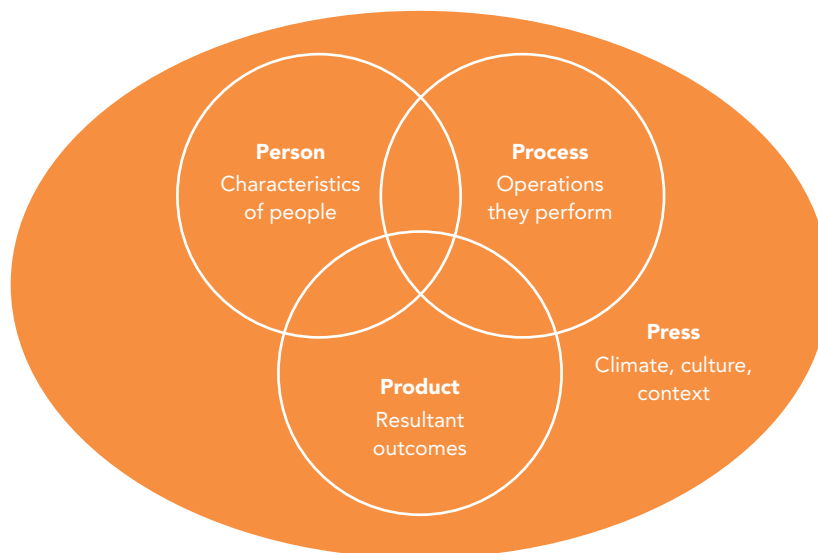
- E.Paul Torrance

$$C = f_a(K, I, E)$$

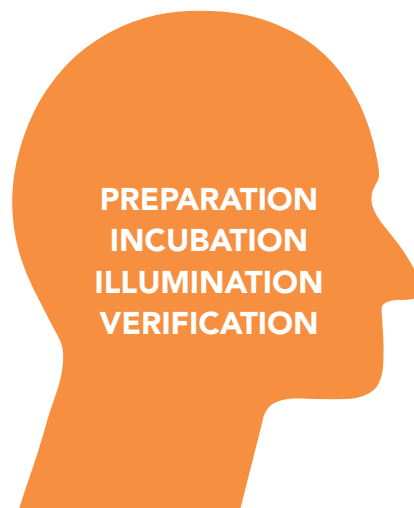
Creativity is a function of Knowledge, Imagination, and Evaluation, reflecting an interpersonal attitude toward the beneficial and positive use of creativity.

Fig: Noller's Symbolic Formula for Understanding Creativity

When people, product and process come together creativity flourishes.



10.9.7 WALLAS' CREATIVE PROCESS



Wallas has suggested four stages:

1. Preparation – investigating the problem in all directions
2. Incubation – thinking about the problem at a sub-conscious level
3. Illumination – the appearance of the happy idea
4. Verification – Validity testing and reducing the idea to an exact form

Creativity may be defined, quite simply, as the ability to bring something new into existence.

– Frank Barron

10.9.8 DIFFERENCES BETWEEN CREATIVITY AND INNOVATION

CREATIVITY

Imagination
Process
Generating
Novelty
Soft

INNOVATION

Implementation
Product
Developing
Usefulness
Hard

10.9.9 HOW CAN ORGANISATIONS ENCOURAGE CREATIVITY?

1. Provide individuals the freedom to do new ways of performing tasks.
2. Point out the value of individual differences, styles and views.
3. Establish a climate in the organisation that supports creative approaches.
4. Empower individuals so that their creativity flourishes.
5. Support the learning and application of creative problem solving tools and techniques.
6. Have a realistic time frame for achieving the tasks.
7. Encourage individuals by telling them that mistakes are opportunities to enhance the effectiveness of learning.
8. Ask provocative questions and let individuals raise the bar of their performance.

9. Encourage self-initiated projects.
10. Be more flexible towards complexity and disorder at least for some time.
11. Create a climate of mutual acceptance and trust among individuals to encourage team work.
12. Encourage high quality of interpersonal relationships.

10.9.10 LINK BETWEEN CREATIVITY AND PROBLEM SOLVING

Problem solving is closing the gap between what is and what is desired. Questions are answered. Attempts are made to clarify uncertainties. Linking creativity and problem solving is an example of Janusian thinking. This kind of thinking is named after the Roman God Janus. Janus had to look in two opposing directions at the same time.

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11 GANDHIAN INNOVATION

Are Western Nations Learning From Innovations in Emerging Economies?

Venkatesh Ganapathy*

Extract of “Innovation’s Holy Grail” by C.K. Prahlad and Dr. Mashelkar. HBR, July–August 2010

11.1 INTRODUCTION

This paper discusses how the innovations in emerging economies like India and China are spurring the Western nations to relook at the conservative innovation models adopted by them. The authors label this model as ‘Gandhian model of innovation’ and quote examples to prove their point. The article says innovation can deliver commercial benefits only when it reaches out to a larger customer base through products and services that are affordable to the poorer sections of the population and those that do not cause harm to the environment.

11.1.1 RENEWED INTEREST IN INNOVATION

After the 2008 economic recession, innovation has attracted a greater deal of attention from top managements. Traditional innovation models that were based on affluence and abundance are being questioned. As customers are demanding greater value from products and services, there is a need for driving resource optimization and cost efficiencies like never before. After globalization, trans-national strategies have become the focal point of attention as companies search for locations where manufacturing costs are low, resources are cheap and are available in abundance and where skilled labour is available. Complex supply chains have increased cross-border interdependencies.

11.1.2 UNIQUE CHARACTERISTICS OF DEVELOPING COUNTRIES

Markets in developing countries are characterized by shortage of capital and technology. But skilled talent is available in a developing country like India. This has made smart companies come up with new technologies along with completely new business models that have the knack of penetrating the untapped rural market. Thus, the constraints in developing countries are being looked at as opportunities and this awareness is driving entrepreneurship in India.

11.1.3 JUGAAD INNOVATION VERSUS GANDHIAN INNOVATION

The authors make oblique references to the philosophy of Jugaad Innovation (proposed by Navi Rajdou and Jaideep Prabhu). In the Jugaad model, scarcity of resources generates out-of-box solutions for problems. The authors opine that the Jugaad innovation model compromises on quality. In the Gandhian model, innovation efforts are directed towards making affordable products that can reach out to the common man. Sustainability was a principle that Mahatma Gandhi strongly believed in.

11.1.4 RESEARCH WORK

To explore the factors that led to the dissemination of Gandhian principles in innovation, the authors studied those Indian organizations in manufacturing and services that have been radically innovative. For the successful innovation models to be replicated, it is important to understand the two variables – viz. source of the technologies involved and organizational capabilities. Companies can use existing capabilities but they have to find a way for reducing costs. Alternatively, companies can create entirely new capabilities.

11.1.5 EXAMPLES FROM INDIA

The article gives painstaking details about Gandhian innovation models adopted by a few Indian companies. Indian software companies used hardware from the West but discovered new ways of organizing work. Tata Motors developed the indigenous small car – Tata Nano – by focusing on technology and capabilities. Tata Motors worked with several companies (India and foreign) to develop components that would fit the Nano's specifications. This collaborative approach helped the company reach the goal of developing the Rs.1 lakh car. Computational research laboratories developed Asia's fastest supercomputer Eka by using standard components at a lower cost. Based on the above examples, the authors propose three kinds of innovation.

11.1.6 THREE KINDS OF INNOVATION

The first type is one that changes business dynamics while the second type involves synthesizing technologies. The third type of innovation is aimed at creating new technologies. Bharti Airtel has been quoted as the example of an organisation that changed its premium pricing strategy to one based on gross profit. This enabled the company to expand its market to cover the entire Indian population. Bharti outsourced non core functions, entered into innovative contractual agreements with service providers and used distribution channels of consumer goods companies. It collaborated with competitors to share infrastructure.

The EMRI (Emergency Management Research Institute) set up in 2004 is an example of an organization that synthesized technologies. Indian companies are scaling up rapidly but keeping costs low by using the PPP (public-private partnership) model. EMRI trained its staff as well as the public to recognize and react to emergencies. Their call centres act as effective conduits between the medical technicians and persons who have sought emergency help. The institute endeavors to reach out to victims in the first 60 minutes – also called as the golden hour – to save the life of a patient. The institute has used technology for mapping locations. Though funded by state governments, this institute has maintained its own distinct legal status as a private foundation. It has good networks with fire and police authorities.

EMRI has collaborated with world-class research institutions to gather wisdom about emergency responses even as it continues to innovate on reducing the emergency response time. The archived information in the system has been used by EMRI to gain meaningful insights about the future. It is also working on enhancing its management of information quality.

The last example of an organisation that has innovated to yield new technologies is that of Lupin Labs. Indian pharma sector has innovated by going to the clinics first, collecting data and then developing target formulations that are then subjected to clinical trials. Lupin collaborated with a Siddha practitioner to develop a drug for psoriasis, achieved success and eventually managed government funding for its project to launch an effective and cheaper drug for psoriasis.

11.1.7 REASONS FOR THE GROWTH OF GANDHIAN INNOVATION IN INDIA

More than four decades of socialism spurred local invention in India. Indian economy started growing only after 1991 but until then the sizes of companies were small. After 1991, Indian entrepreneurs started scaling up but were circumspect about proper use of capital. Indian companies have been forced to relook at the price-performance equation because catering only to a niche consumer base using premium prices does not result in growth of business. Gandhian innovation became a model to serve the large customer base. Companies realized that rather than defining the market segment through their cost structures, it is business wisdom to tweak the cost structures for exploring new market segments.

Limited research budgets, smaller size and lower prices, coupled with big ambition, are what have propelled Gandhian innovation to the spotlight. Commitment to the ambitious goals, managing to work through the constraints and focusing on people instead of profits – all these are vital for the success of innovation.

11.1.8 INCLUSIVE GROWTH

One common thread that links all the Indian companies mentioned in the article is the fact that all their innovations were driven not just by the need for material gain. The original idea behind Tata Nano was safe and affordable travel. Bharti Airtel wanted to make telecommunication reach every nook and corner of India. Lupin Labs wished to make a drug for psoriasis that was not only effective but also affordable.

11.1.9 IMPLICATIONS

Top management involvement contributes a great deal to the success of Gandhian innovation efforts. Constraints trigger the need for establishing stretch targets and unwavering focus on people contributes to the success of efforts to prime the innovation pump. If the Gandhian innovation is different from conservative innovation models, then there is no reason for performance measures to remain the same. Gandhian innovators track return on capital employed and cash flow and not just profits. They track innovation efficiency and focus on creating new markets.

11.1.10 CONCLUSION

The Gandhian innovation model has proved to be successful and can be imbibed by other nations across the globe. The model is unique in the sense that it teaches entrepreneurs how to deal with constraints in a constructive fashion and also promotes inclusive growth. The model looks at innovation through the twin lenses of affordability and sustainability. This is where it starkly differs from traditional innovation models.

12 JUGAAD INNOVATION

12.1 JUGAAD INNOVATION – AN AGENDA FOR THE MNCs

Polycentric Innovation: The New Global Innovation Agenda for MNCs

The ingenuity of Indians has always come to the fore when situation demanded it. Indian women are adept at innovations of all kinds in the kitchen. A friend had once visited an Indian home in Singapore. The lady, a senior citizen, was alone at home and the vegetables had not yet been stocked in the kitchen. The only thing that was available was rice, curd and ginger. In a matter of 60 minutes, the host had prepared a delicious meal for the guest. She prepared ginger rasam for the guest accompanied by curd rice. She did all this while she was engaged in a conversation with the guest enquiring about the well-being of his family.

Puffed rice upma (aloo poha as it is called), rava upma are some of the items in Indian cuisine that can be made in the shortest time possible. If guests arrive unexpectedly, we Indians know how to peel off potatoes and make a quick curry or grate an appetising carrot salad. If we are suddenly informed that water supply is going to be cut off in the next 20 minutes, we will lose no time in filling water in every bucket, mug and vessel that we can lay our hands on. This is what is meant by “jugaad”. In the Indian context, a scarcity of something is never a hindrance. Indians are smart to find a way out.

Navi Rajdou deserves the credit for selling this Indian concept to the West. Navi feels that multi national companies must leverage the opportunities presented by emerging markets like Brazil, China and India. He believes that MNCs must abandon their ethnocentric innovation model and adopt the polycentric model. What better way than getting inspired by the very Indian way of doing things – jugaad.

In this model, R&D capabilities are distributed globally to seize the opportunities in each region and obtain synergistic benefits from the same. MNCs have a role to play in shaping the emerging markets by empowering the local R&D eco system. But is this effort merely a regional one? The innovation model so built can be scaled up for implementation in the West. The cost of doing R&D in India is 1/6 the cost of doing it in US.

I was fortunate to be part of one such project called as “Technology Trends – So what?” while I was working for Castrol. This involved researching about future technology trends in the automotive sector that would affect the Castrol business worldwide. For example – how would a lubricating oil company react to the trend of a long drain oil? (Long drain oil meant that the oil in your car needed to be changed only after a substantial period). How would smaller engines affect fuel efficiency? I even went to Pune to meet a research expert from Tata Motors to learn about small engines and the insights were revealing. A similar research effort (though not in the same area) was being carried out in the Americas, UK, Germany and South Africa. The idea was to cross pollinate these inputs on a global scale to arrive at an overall trend.

So fascinated was the team with this idea that they (Navi Rajdou, Simone Ahuja and Jaideep Prabhu) brought out a book on Jugaad innovation and linked this with green thinking and sustainability.

Jugaad is all about dealing with unforeseen situations and uncertain circumstances, thinking in an innovative way to arrive at intelligent solutions. Jugaad is about doing more with less.

Tata Nano is one such classic example of a four wheeler. With every obstacle, Tata Motors became more resilient, sometimes taking decisions on hunch. Mr Karsanbhai Patel sold his Nirma detergent powder on his bicycle; he went door-to-door selling his powder with the only asset that he had – belief in his abilities. Vico Turmeric ayurvedic cream has managed to stay in the market for decades with the formula of turmeric + sandalwood remaining its core competence. **Haier, a Chinese consumer goods company is scaring the daylight out of other home appliance makers. The company has made rapid strides not only in the Indian market but in also markets like North America and Europe. The company’s core competence lies in its ability to sell quality products at competitive prices.**

GE designed a mobile ECG device in the R&D centre in Bangalore (at a fraction of the cost that would have been incurred in USA) and then sold it in the Western market. Xerox set up a global R&D centre in South India and fostered partnerships with academic institutions, research establishments and industry partners.

Rajdou says, “If necessity is the mother of invention, then scarcity is its grandmother”. He couldn’t have been more right!

13 REVERSE INNOVATION

13.1 REVERSE INNOVATION: A STRATEGY FOR THE FUTURE?

Prof Vijay Govindarajan is considered a pioneer of the concept of Reverse Innovation. A few years back GE invited him to be its first professor in residence and chief innovation consultant. [Isn't this a great example of industry-academia collaboration?]

Prof Govindarajan believes that reverse innovation will reshape the future and change the world. Reverse innovation, to put it simply, is innovation that is first adopted in the developing world. The implications of reverse innovation for multi nationals are great.

He believes that growth opportunities in emerging economies can't be driven by a prescriptive approach. We all know the popular slogan – “If you do not innovate, your competitors will”.

An opportunity lost in the emerging markets today means that companies may have to face competition in the home country later on. Today there are examples of companies developing products in emerging economies like India and China and then having a world-wide distribution of the product.

The early examples of Reverse Innovation are Gatorade, the energy drink – whose origins can be traced back to Bangladesh. Chicken Tikka masala, a rage in the US was developed in India. Yoga is now a global craze and yoga has its roots in India. Turmeric was always considered as having healing power and the US has tried to patent it. Ayurveda's roots are Indian though it is an extremely popular alternative therapy across the world.

Prof Govindarajan also says that though the objectives of reverse innovation and glocalization are the same, the fundamental difference is that reverse innovation is targeted at meeting the needs of customers in poor countries. Glocalization is an innovation that is meant for developed world customers. For instance, if Mc-Aloo Tikki is an example of glocalization, developing an affordable drug for the poor can be an example of reverse innovation. The common thread linking both the concepts is that there is a greater degree of customization involved in both these strategies.

Reverse Innovation is based on the premise that the needs of customers vary across the globe. Customers in emerging economies desire products that are suited to their needs and are affordable. The price-quality curve is not the same across the globe.

That India is becoming a global R&D hub for automotive sector, pharmaceutical industry and biotech sector is no secret. India is now reaping the benefits of its demographic dividend that is very much unique to her. Reverse innovation can cast a magic wand in health care. This is a great opportunity for multi-national companies to make a windfall gain in profits. The costs of research and development in emerging economies have been estimated to be almost 1/6 of that in developed countries. This is one of the reasons the center of gravity for innovation is shifting from rich to poor countries.

For all we know, with improve R&D, Tata Nano may taste success in other emerging markets. Extrapolating the same logic, Shahnaz Hussain's herbal beauty products were developed in India but are gaining popularity across the globe. Multi nationals will do well not to underestimate the intellectual capacity and scaling power of the giants in emerging economies. Time and again it has been proved that the experience gained in domestic markets in India has provided rich fodder for scaling up opportunities in other emerging economies as well as in developed countries.

According to Prof Vijayraghavan, reverse innovation presents immense opportunities for strategic alliances between global players and regional players. Indian business environment has seen several such alliances in the past – most of which did not sustain.

But when foreign players can match their global capabilities with the regional players' understanding of local markets, a synergy is generated. This is bound to augur well for all the stakeholders in the business.

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14 ROLE AND RELEVANCE OF R&D IN AN ORGANISATION'S GROWTH

R&D (Research & Development) plays a very important role in the success of a business. R&D contributes to sustainability of business. Many companies do not understand the importance of R&D until it is too late.

It is the R&D function that provides a platform for creativity and innovation to flourish in an organisation. Innovative breakthroughs have happened only because of painstaking efforts of the R&D function. Perseverant efforts are needed when one is in pursuit of research. Every failure in a R&D effort increases the pressure to perform.

R&D helps a business to have a competitive edge over its competitors. It is the R&D function that develops plans much ahead other functions. The R&D function needs to have a clear foresight about future problems that need solutions. R&D (in its development role) can act as a catalyst for speeding up the growth of organisation by way of introducing breakthrough products in the market.

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R&D is very relevant in today's competitive scenario when customers are hankering after new products and new technologies. The firm that can successfully leverage its R&D efforts by translating the efforts in building new products will find itself ahead of its competitors. Expenses on R&D can be considered not as expenditure but as an investment.

The ROI on R&D efforts can take a while to materialise. But once success is achieved, the financial returns can be quite high. Pharmaceutical companies, chemical companies, automotive companies, lubricant companies invest massive amounts of capital expenditure and revenue expenditure for this reason. These companies strive to be ahead of others in their learning curve.

Some companies are technology leaders, while others are followers. Some industries prove to be laggards (they are the ones to wake up to the market realities a way bit late).

Let us take the case of mobile phones. Today there are different types of models that are being launched in market are the result of intensive R&D efforts. Apple, Sony, 3M are the companies that are known for their breakthrough technologies – some of these technologies are albeit disruptive because they make the existing technologies redundant.

3M's scotchbrite is one example that brought in the hygiene factor and capitalized on it. The turnaround time for new products in toothpastes (dental care products) has considerably shortened. Many firms have converted problems into opportunities only because of their R&D efforts. These companies eventually became technology leaders as they created a churn in the market

All the modern inventions – laptops, palmtops, music players, iPods, mp3 players, automatic washing machines, dishwashers, water filters are all examples of R&D efforts that had a successful outcome. Who would have thought that mosquitoes would provide an opportunity for new product development in the form of mosquito mats, repellent creams, vaporizers etc.

Digital photography has made the conventional technique redundant. Computers have confined the typewriters to the museum. E-mail has rendered the snail mail defunct.

The world moves on only through scientific inventions and discoveries which are result of sustained R&D effort. Only this leads to long term business sustainability. Sometimes R&D efforts are also necessitated to meet the regulatory norms eg: green technologies that reduce pollution. Hybrid cars, electric cars, catalytic converters in cars are examples of successful R&D efforts.

The true test of R&D function lies in time to market. Business exists for the sake of making profits. So, the role of R&D in shortening the time to market becomes extremely important. Unless the R&D efforts in the lab cannot be scaled up within a reasonable time frame, little can be expected in terms of the functional credit to be assigned to R&D.

In India, the problems faced by R&D functions are one too many. It is high time the scenario changed. Germany is known for world class engineering and US is known for its research agenda. India, despite having a talent pool, still lacks in indigenous research. We have a situation where foreign companies like GE and Shell come and set up R&D centers here and gain competitive advantage globally.

R&D becomes extremely relevant to make an organization future ready, to equip the business with the wherewithal required for commercialization of lab efforts through large scale production.

R&D function can reasonably predict future technology trends. In an environment filled with resource constraints, R&D efforts in the right direction will enable allocation of scarce resources for the right purpose.

R&D helps a business earn revenues through licensing of technology, technology transfer too. The information technology has developed so much in the last few years that change has become the norm in such sectors. There needs to be greater co ordination between academic research and industry research.

Companies tend to focus more on “development” and less on “research” mainly to meet short term operational goals. It must be understood clearly that R&D has a strategic orientation and using the R&D function to meet short term operational goals is anything but a wise more move. Some firms use R&D as a cost center because of the depreciation allowance given by the Income Tax dept. This is indeed sad.

15 THE INNOVATION SPECIALIST

C K Prahalad is often hailed as the Bottom of the Pyramid guru who reinforced the message of consumer co-creation and service customization to the world. The scope of innovation is huge and credit has to go to management scholars like Prahalad who were able to show to the world the importance of looking beyond Google and Apple, the technology czars.

In November 2007, C.K. Prahalad was named the world's most influential management thinker by the Times of London. After the path-breaking innovation to meet the needs of the marginalized bottom-of-the-pyramid population, Prahalad shifted focus to customer involvement and customer co-creation.

The book that Prahalad co-authored with his colleague M.S. Krishnan [both of them taught in the University of Michigan] – “The New Age of Innovation: Driving Co-created value through global networks” (McGraw Hill Books, 2008) is often recommended for realizing the value of customer experience.

Prahalad, more often than not, was way ahead of his times. In 2008, he spoke about customer experience driving value and today every industry (retail, banking, insurance, to name a few) is talking about CEM (Customer Experience Management).

In the book, Prahalad and Krishnan talk about two formulas namely

$N=1$ and $R=G$.

$N=1$ signifies that value is based on unique, personalized experiences of consumers. $R=G$ argues that as no company can hope to satisfy varied expectations of so many consumers, a company must diversify its operations. Companies should focus on accessing resources and not necessarily owning them. The book has cited examples of successful companies including some which do not believe in hogging the limelight unnecessarily.

Clearly, it is the examples illustrated in the book that rekindle the interest in the subject and the book. Customers of UPS had to drop off parcels at a central collection point. To make it easy for the customer, UPS decided to pick up packages from customer's homes. Thus, the focus of UPS shifted from one on business process to one on creating a unique customer experience. Madras Cements eschewed the idea of using GPS technology to track the movement of its trucks and goods and chose to give mobile phones to all its drivers. The latter were instructed to communicate their whereabouts via text messages. Using an IT infrastructure that could convert the raw data from drivers into useful insights, Madras Cements was able to track the performance of drivers. This led to savings to the tune of \$4 million.

The book quotes the example of an auto major that chose to source various parts from China. But this proved to be a hasty decision and we all know that haste is waste. The logistical problems eroded cost benefits and longer lead times affected the company's internal processes. This example illustrates the importance of stepping back and thinking about the big picture in stark contrast to capricious decisions that are solely intended to reduce costs.

Managers must use technology and analytics to empower a customer to co-create business solutions that serve his needs. Empowering employees to create and analyse experiences with customers can produce dramatic results. Business sustainability depends on tapping potential of IT to deliver solutions by using customer knowledge. This can lead to a better cost-quality trade-off.

No business can afford to take its processes for granted. Feedback about a process has to be fed back into the process design for delivering greater value. ICICI bank used Prahalad's principles for an image makeover as a bank that caters to the needs of the burgeoning Indian middle class. Bridgestone, a tire company, used technology to service its clients on tire safety, costs and durability. Execution of an innovative strategy needs a thorough knowledge of the business processes, IT and data analysis. Social capabilities and technical capabilities of a business needs to be synergized to emerge as a winner.

If we look at Gen Y and Gen Z, they all wanted to be treated specially. They are interested in being part of the process. These customers want to shape their own experiences. This is why crowd sourcing is becoming more and more popular. Connecting with customers and employees both at an emotional level as well as at an intellectual level is becoming more important. Supply chain agility depends a lot on customer engagement.

It is uncanny to think about the fact that LIC (Life Insurance Corporation of India) has attempted to reach nook and corner of India even during the time when there was no big noise about "Bottom of the Pyramid" or "Financial Inclusion". At the same time, it cannot be denied that consumer engagement is becoming the key differentiator in the insurance industry.

The book presents a glimpse of the rapidly changing business landscape in an engaging manner.

16 DISRUPTIVE TECHNOLOGIES – RESEARCH BY MCKINSEY

16.1 MCKINSEY'S RESEARCH DOCUMENT ON DISRUPTIVE TECHNOLOGIES

This document talks about the impact that disruptive technologies will have on life, business and the global economy. It talks about combining analytical tools of economics with the unique insights of business leaders.

We are now having access to improved technology at reduced prices. Between 2013 & 2025, the report estimates a surge in the number of knowledge workers across the globe and the tremendous impact of Internet. Technologies like hydraulic fracturing and horizontal drilling will lead to production of oil from North America by 2025 and this will increase global oil production and reduce the concerns of scarcity of oil due to depletion of fossil fuels. Solar and wind energy will make a greater contribution to generation of electricity by 2025.

Disruptive technology is that which disturbs the status quo and changes the way people live and work. It changes the economic equation and forces complacent businesses to think out-of-the-box. Joseph Schumpeter spoke about this long ago by coining an **oxymoron** – “*Creative Destruction*”. Creative signifies creation of something new using technology (hence leading to an economic impact) and destruction talks about destroying the old ways of working by incumbent businesses (disturb the status quo).

100 potential disruptive technologies were screened and scaled down to 12 most promising technologies based on 4 characteristics

- Rate of technology change
- Scope/impact of technology
- Financial returns (economic value) that can be impacted
- Potential for disruptive economical impact (drive business growth, change comparative advantage for nations).

The 12 most promising technologies identified are: Robotics, Cloud, Advanced Materials, Intelligent knowledge workers, oil exploration, energy storage, mobile internet, 3D printing, autonomous vehicles, genomes, the internet of things and renewable energy.

Each of these technologies can drive economic growth and change the comparative advantage among nations. Robots and 3D printing can increase productivity in the manufacturing sector. These technologies pose legal and regulatory challenges. But businesses can turn the disruptive threat into an opportunity. Big data analytics can reveal new ways to reach new customer groups. Use of robotics can lead to lean production that can result in higher productivity at a lower cost. Skills have to be continuously upgraded.

Think about some innovations – Color TV, LED TV, LCD TV, Flat screen computers, Scotch brite, Mosquito mats, Liquid vaporizers, MP3 player, Digital camera...all these technologies have changed our lives and have made the earlier technology redundant (Scotch brite may be an exception – it is more of a marketing stunt by 3M). Print media has to battle the onslaught of online news.

Businesses have to ponder about how their competitive strategies will be impacted by emerging technologies. Policy makers (Governments) should also assess the impact of these technologies on society and the global economy. How can people prosper even during the advent of emerging technologies? How will the new technology affect the comparative advantage of the nation? Governments have to plan the regulatory framework prior to the advent and scaling up of these technologies.

The report says that GDP is not a sufficient metric for looking at the value of disruptive technology as it does not consider the surpluses earned by the consumers due to such technologies.

Technology can thus power growth and transform economies at a global level. Businesses and Government need to be prepared for it. Technology comes along with associated challenges and risks but if we have the leadership to manage it, we can exploit their potential.

17 SERVICE DOMINANT LOGIC – A PARADIGM FOR THE FUTURE

Learning Outcomes

- Understand the meaning of service dominant logic
- Identify dimensions of service dominant logic that can impact service innovations
- Study the differences between goods dominant logic and service dominant logic
- Learn the foundational premises of Service dominant logic.
- Understand the essence of Service dominant logic and its pitfalls.
- Review the changing role of marketing as identified by Service dominant logic.

17.1 INTRODUCTION

Growth in service sector has been due to technical innovations, structural changes in the division of labour, institutional development, changing customer needs and worldwide increase in income. (Baltacioglu, 2007). Supply chain is the context in which goods, services and information flow from the earliest supplier to the end user. Today the supply chain concept is expanded to include the flow of material, information and finance in the opposite direction [reverse logistics].

Global Supply Chain Forum (1998) has defined supply chain management as the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders.

Services have made a major contribution to India's economy in the last few years. Contribution of services to GDP has grown to 64% which is much more than the contribution of manufacturing. The impressive growth of IT sector and ITES has spawned a host of services in India that are market driven. Various reasons have been attributed for this growth. The impact of globalization, disintegration of geographical barriers, the FDI policy changes, growth in outsourcing and off shoring, automation – all these have contributed to the growth of services in no small measure. Technology has redefined the way services are managed – be it banking, insurance, logistics, food delivery, transportation, health care. In this scheme of things, Service Dominant Logic (SDL) presents a contrarian view about the services economy. This article traces the evolution of SDL and its growing importance.

17.2 UNIQUENESS OF SERVICE DOMINANT LOGIC

Service research has pointed out the challenges in measuring performance of service supply chains due to the inherent differences between goods and services – namely the IIHP attributes. IIHP stands for intangibility, inseparability, heterogeneity and perish ability and this is a classical view about the characteristics of services. SDL views this from a different lens and highlights the fact that these attributes could be actually a blessing in disguise. SDL also asserts that service economy always existed and it was due to dominance and visibility of goods dominant logic that the relevance of services never got highlighted. However, with growth in outsourcing trends, services have now got the visibility that they deserved.

17.3 TRACING THE HISTORY AND PROGRESS OF SDL

Two academic scholars – Stephen Vargo and Robert Lusch were working for close to 10 years when their research effort on SDL saw the light of the day in 2004. Their paper is now considered a seminal one and it has been cited many times. Since then, Vargo and Lusch have been updating their research every two years.

In 2004, Vargo and Lusch offered eight foundational premises in support of their logic. They refused their logic to be branded as a theory arguing that the logic was still evolving. Later on, in 2008 they added two more foundational premises. In 2015, they have added the eleventh foundational premise and have declared four of the premises as “axioms”. Axioms are propositions that are considered established.

17.4 A SERVICE DOMINANT-LOGIC VIEW

Christian Gronroos, a thought-leader in customer experience believes that service is tough for companies who think that they have done their job once they sell the product. Such firms believe that value is exchanged when a transaction is completed.

Customer perception of value gets created when a company interacts with them to educate, engage and enlighten them. The perceived value of customer lies in value-in-use and not just in the price that they pay for the product or service. It is also important to educate the customer that he is a co-creator of value.

When we buy a washing machine, the maintenance of the machine comes along with it. The same applies when you buy a car or a bike. Thus service is an integral aspect of every product that we purchase.

SDL emphasizes that value is co created by the consumer along with other network players and unless one looks at the customer’s point of view, true value is not delivered to the customer.

17.5 DIFFERENCES BETWEEN GOODS CENTERED VIEW AND SERVICE DOMINANT LOGIC

GD logic views the customer as an operand resource – a resource to be acted upon. SD logic advocates viewing the customer as an operant resource – a resource that is capable of acting on other resources, a collaborative partner who co-creates value with the firm.

SDL says that the application of competences for the benefit of others is the foundation of economic exchange. SDL argues that there was always a service economy but it was invisible due to the focus and attention on goods dominant logic.

Goods dominant logic

- Economic activity concerns making and distributing things that can be sold.
- Things are embedded with utility and value during production and distribution; the products offer consumer superior value in relation to competitor's offerings.
- Decision variables are at a level where profit can be maximized.
- Goods are standardized and produced away from the market.
- Goods are inventoried until demanded by the market and then they are delivered to consumers at a profit.

If value was something added to goods, did marketing contribute to value?

Service centered logic

- Marketing is a continuous series of social and economic processes largely focused on operant resources with which the firm is constantly striving to make better value propositions than its competitors.
- Marketing is a continuous learning process.
- Identify or develop core competencies (the fundamental knowledge and skills of an economic entity that represents competitive advantage)
- Identify potential customers that could benefit from competencies
- Involve customers in developing value propositions
- Gauge marketplace feedback by analyzing financial performance from exchange to learn how to improve firm's offering to customers and improve firm performance.
- Prahalad and Hamel (1990) – Core competences are collective learning in the organization – especially how to coordinate diverse production skills. Core competence is communication, involvement and a deep commitment to working across organizational boundaries. Channel intermediaries and network partners represent core competences.

The service centered view is customer centric and market driven. It talks about collaboration and learning from customers. How can services adapt to individual and dynamic needs of customers. Value is defined and co created with consumer.

Services have now come into focus due to increasing ability to separate, transport and exchange information and the development of increasing specialization. Innovation is not defined just by what firms produce as output but how firms can produce better service. Example – a customer who purchases a smart phone is looking at the various apps (which are services again) which can be accessed via the phone and the ease with which the phone can be serviced and maintained. In that sense, product innovations also have a service element bundled into them.

17.6 THE FOUNDATIONAL PREMISES OF SDL

1. Specialized skills and knowledge as fundamental unit of exchange
2. Indirect exchange masks the fundamental basis of exchange.
3. Goods are distribution mechanisms for service provision.
4. Operant resources are the fundamental source of *strategic benefit*.
5. All economies are service economies
6. Value is co-created by multiple actors, always including the beneficiary.

"I studied English for 16 years but...
...I finally learned to speak it in just six lessons"

Jane, Chinese architect

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7. Actors cannot deliver value but can participate in the creation and offering of value propositions
8. A service centered view is inherently beneficiary oriented and relational.
9. All social and economic actors are resource integrators
10. Value is always uniquely and phenomenologically determined by the beneficiary.
11. Value co creation is co-ordinated through actor generated institutions and institutional arrangement

Today's markets are more about co-operation than competition. In 2015, Stephen Vargo and Robert Lusch have reduced the 10 foundational premises to four axioms – namely propositions 1, 6, 9 & 10 They added a new (11th) premise that has also been declared as an axiom.

Service ecosystem is a relatively self-contained, self-adjusting system of resource integrating actions connected by shared institutional arrangements and mutual value creation through service exchange. A Service system is defined as a configuration of people, technologies and other resources that interact with other service systems to create mutual value.

17.7 ROLE OF INSTITUTIONS IN VALUE CO CREATION

1. Institutions enable actors to accomplish an ever increasing level of service exchange and value co-creation under time and cognitive constraints.
2. Institutions when shared by actors result in a network effect with increasing returns. In fact, the more actors share an institution the greater the potential coordination benefit to all actors. Therefore, institutions can play a central role in value co creation and service exchange.
3. Recognition of the central role of institutions and institutional arrangements and the resultant heuristics that emerge foster co-operative and coordinated behavior among actors in an evolving service ecosystem. This is central to a more complete and realistic portrayal of markets and marketing.

17.8 ESSENCE OF SERVICE DOMINANT LOGIC

1. Maximize customer involvement, assist customer in process of specialization and value creation. Customer should also know that he is also contributing to value creation.
2. Marketing is core competence of the organization. Whether it is New Product Development or Customer Relationship Management or Supply chain management, all the processes must be market driven and customer centric.

3. The need to focus on core competence has led to the emergence of outsourcing strategy. Proper utilization of resource networks and clear understanding of the risks involved is important for success of outsourcing strategy. Companies who have outsourced often lose control leading to deterioration in quality and so some of them have been forced to retract their outsourcing decisions. Just like CRM, managing network relationships is equally important.
4. Marketing is a network integrator that pools resources from different network members. The success of marketing efforts in this direction leads to competitive advantage.
5. Services can replace manufacturing in the following manner. If additional investments are made in manufacturing wherewithal, then need for capacity utilization will make the firm move away from customer focus and deploy a push strategy. When manufacturing is outsourced then it improves customer focus and agility and responsiveness to market demands and customer needs. This is why outsourcing is a viable option but it has to be managed well. Also if a product is maintained well (service) then its life can be prolonged and innovation of new products can be delayed.

Marketing is often claimed to be playing a key role in customer experience management. However, for the networks to be effective and competent there has to be proper risk management, training, coordination and information flow. Customer experience is a combination of both technical quality and functional quality as propounded by Christian Gronroos. Often customer perceptions are based on functional quality (i.e. the way the service is rendered) and so service operations also has to be given greater importance in the scheme of things.

17.9 CHANGING ROLE OF MARKETING

Until the '50s marketing was about production and products that had to be supplied to the market. It was then that marketing began to focus on the consumer. With the passage of time, the drive towards cost savings and operational efficiency led companies to outsource. But outsourcing presented its own risks. With outsourcing, cost savings were achieved but quality suffered. This led to the TQM (Total Quality Management) movement.

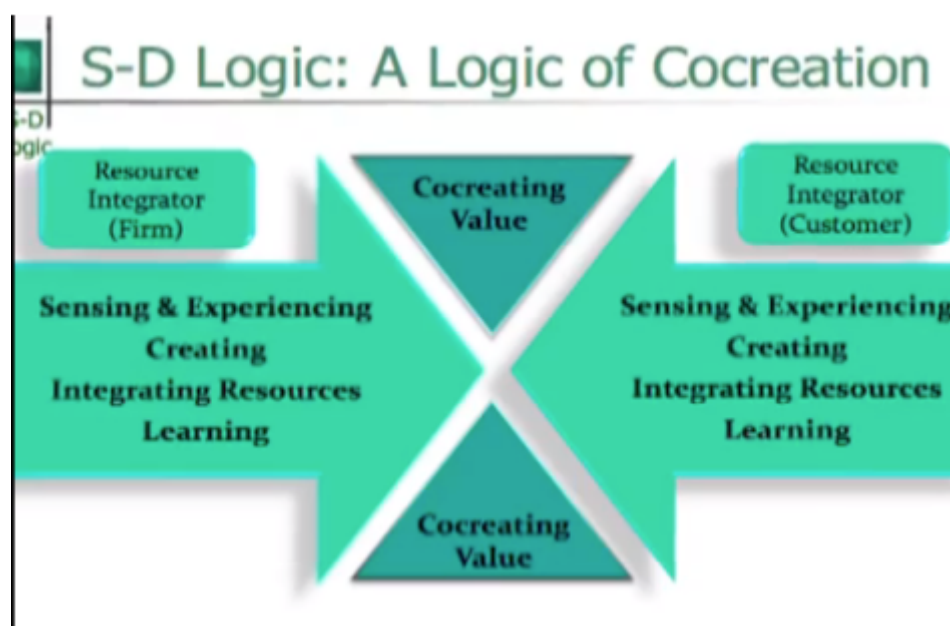
Manufacturing efficiency relied on marketing efficiency. If marketing was able to forecast demand well then it meant effective capacity utilization for manufacturing operations. New investments in plant, equipment and machinery had an adverse impact of responsiveness of marketing function. With new investments, company had to strive to increase capacity utilization and adopt a “push” strategy of introducing products in the market. This dictated marketing to focus on promotional techniques to market and sell such products.

Companies that had outsourced their manufacturing operations realized to their chagrin that outsourcing involved risks in the form of hidden costs. Some of these companies had to retreat their steps and revert to in-sourcing.

The decision by businesses to outsource was an outcome of path breaking work by CK Prahalad and Gary Hamel who proposed their theory on core competence (1990). Core competence is the unique strength of an organization that cannot be imitated by a company's competitors. Core competences are collective learning in the organization – especially how to coordinate diverse production skills. Core competence is communication, involvement and a deep commitment to working across organizational boundaries.

Today marketing is more relational than transactional. Customer relationship management has become essential to retain loyal customers of a firm. Successful companies are using technology to influence customer satisfaction.

However, according to SDL, marketing has a more serious role to play.



17.9.1 THE PRONOUNCED ROLE OF MARKETING AS PER SDL

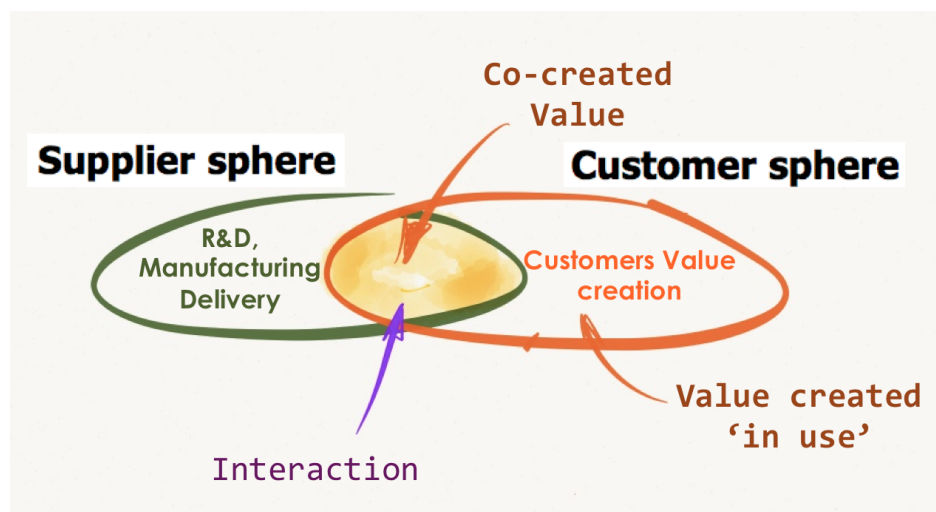
SDL postulates that marketing has a wider canvas as all economies are essentially service economies. When a consumer purchases a product, value is obtained only when the consumer uses the product. Customers are co-creators of value along with the service provider. However, value is created by the entire service network of which customer plays a major role in value creation.

Today in the era of specialization and micro specialization several actors come together in value creation and so marketing acts as a network integrator ensuring the collaboration, coordination and cooperation of all network members. In layman terms, marketing has to be part of an organization's strategic ecosystem. However SDL has touched upon the role and relevance of networks only in the latest revision of its logic.

The role of marketing is not restricted to market research, branding, advertising, sales promotion etc. It has to ensure integration of these efforts with the efforts of other stakeholders in the organization. Marketing has to lead the effort of designing and building cross functional business processes. Traditional marketing theory would use customer feedback to improve the processes. However, in SDL, customer feedback needs to be mapped with financial performance in the market to identify which areas/processes need fine tuning/refinement.

17.9.2 THE GAP IN SDL

While SDL argues that intangibility is of not much relevance, it is silent on “perishability” of services. If services are not utilized during a point of time, they are lost forever. While marketing is at the fulcrum of value proposition, service operations play a crucial role too. Whether it is suppliers of services or products, implementation of new product designs or service blue printing, service operations is a crucial link to the performance of the firm that leads to meeting the requirements of customers; Dealing with perishability aspect of services involves efficiently matching capacity with demand. Services are characterized by uncertainty and variability of demand. Service establishments have often used flexible capacity to meet the vagaries of demand.



17.9.3 CONCLUSION

Service dominant logic has evolved in the last decade as a logic that has highlighted the pronounced role of marketing as a network integrator that integrates the resources from various networks to deliver the customer what he wants. The logic claims that all economies are essentially service economies as goods are only provisions for services. Value of a good or a service lies in consumption. So customers are co creators of value along with other stakeholders in the network. The need for focusing on core competence has led businesses to outsource and this has presented unique challenges. However these challenges can be met with proper risk management and control and information sharing among the networks. Growth in outsourcing highlights the fact that specializations and microspecializations of different network partners have to be collaborated to deliver a value proposition to the customer. Customer has to be engaged with to explain to him that he is a co creator of value. Customer feedback has to be mapped with financial results from the market so that corrective actions can be taken.

SDL is a logic that highlights commitment needed to generate collaborative processes with customers, partners and employees. It is a logic that challenges management at all levels to be of service to all the stakeholders. It is a logic that recognizes the firm and its exchange partners who are engaged in the co creation of value through reciprocal service provision.

Presenting a contrarian view SDL highlights that the differences between services and goods is something that works in favor of services. Two areas need attention. The SDL does not talk about the challenges associated with perishability of services. Service operations need to be part of strategic landscape as much as marketing.

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