2009

Innovation Rules: A Step by Step Approach Towards Identifying New Innovation Opportunities

Arcot Desai NARASIMHALU
Singapore Management University, desai@smu.edu.sg

Institute of Innovation and Entrepreneurship

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INNOVATION RULES

A step by step approach towards identifying new innovation opportunities

INSTITUTE OF INNOVATION AND ENTREPRENEURSHIP

SINGAPORE MANAGEMENT UNIVERSITY

Institute of Innovation and Entrepreneurship
Singapore Management University

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Nurture and Grow an innovation culture and entrepreneurial community in SMU and beyond.

Vision

To be the preferred partner for research and practice of innovation and entrepreneurship.

Our DNA

ASPIIRE – Business Acceleration, Innovation Sand Box, Innovation Promotion, Business Incubation, IP management, Research and development and Training and Education.

Our Values

Explore . Experiment . Enrich

Preface

This book is organized in three sections. The first section introduces twenty five innovation rules that reflect how innovations have progressed over time. The second section explains how the innovation rules can be used to identify possible innovation opportunities. The third section explains how to choose innovations for commercialization.

Pay sufficient attention to each of the Innovation Rules when you read the first section. Each rule captures the introduction and evolution of successful innovations. Each rule is listed on one page and its description on the opposite page. Rules have more than one stage, the initial stage followed by one or more additional stages. Description of a rule will list some examples for the rule. See whether you can identify other examples for the rule. Also, see whether you could use any of the rules for identifying new innovation opportunities. Think of a product in the market. See whether the product corresponds to any of the stages in the rule. If it does, then the next stage is a potential innovation opportunity.

Please read each section carefully multiple times so that you get to appreciate the value of the content. The materials in the second and third sections offer an approach to identifying innovation opportunities and deciding on which of the possible innovations ought to be commercialized. You are free to substitute the approaches in these two sections with alternatives that you consider to be better.

Use the ideas presented in this book freely and benefit from them both intellectually and materially. Go Innovate.

INNOVATION RULES 7

QUALIFYING INNOVATIONS 63

COMMERCIALIZING INNOVATIONS 85

You might be wondering what is innovation rule all about. An innovation rule is really a representation of the evolution of an innovation over time. In other words, one could interpret an innovation rule as the path along which an innovative product evolves over time. It represents the manner in which a market shifts or market trends over time.

An innovation rule is made up of two or more stages. Each stage represents an innovation. An innovation normally starts from the first stage and then transitions from one stage into the next stage. There are situations when an innovation might skip some intermediate stages. There are some select innovation rules where some of the stages are not in strict order. In such cases, some of the intermediate stages can be interchanged without losing the generality of the innovation rule.

The beauty behind the concept of Innovation Rules is that the set is both extensible and customizable. Any of you can add to the initial set of innovation rules presented in this book. Better still, you are encouraged to write your own innovation rules. Secondly, not everyone may need all the innovation rules listed in this book. You may choose a subset of rules that are best suited for you or your company.

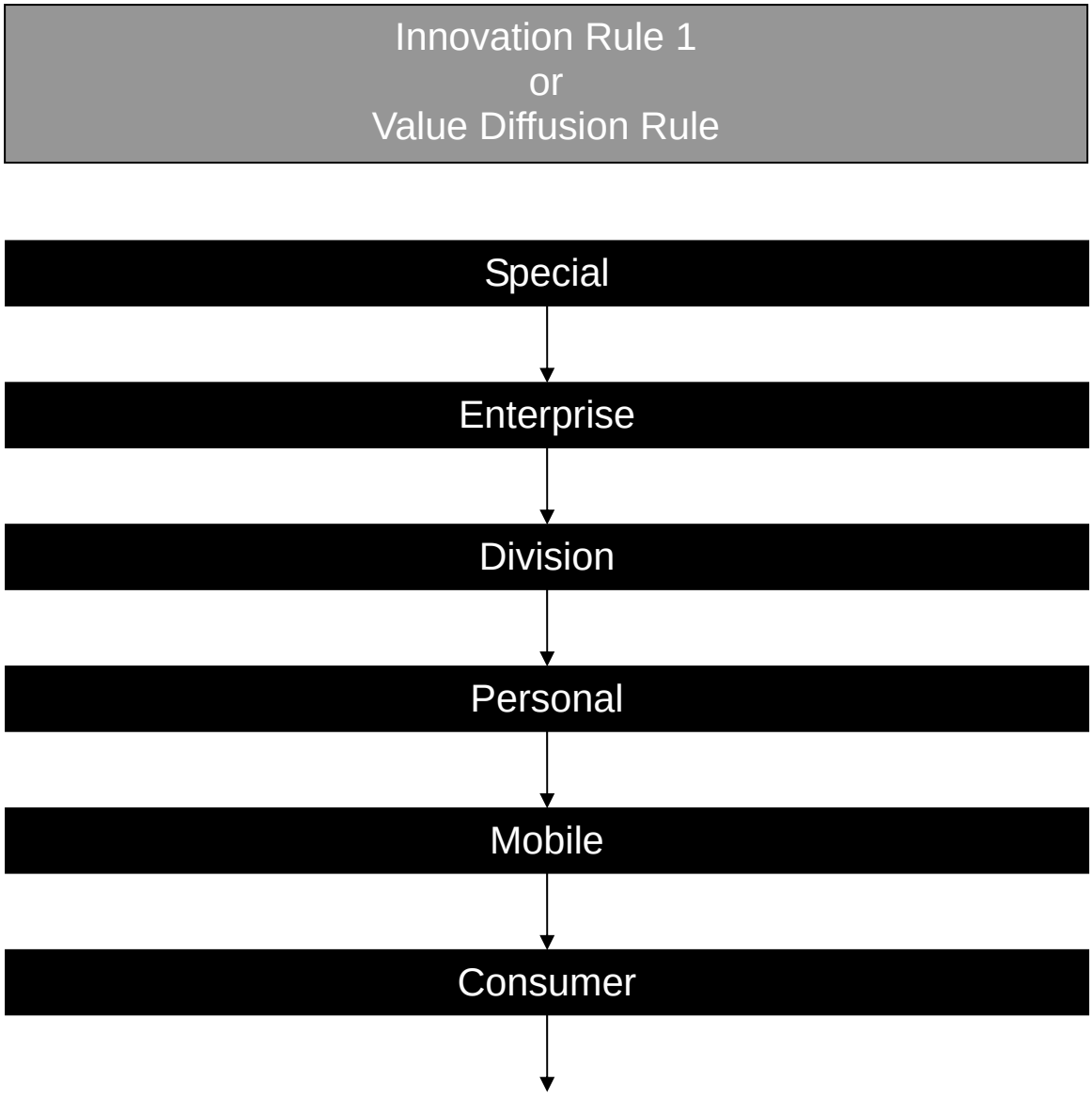
Innovation rules as presented here is based on a framework called Innovation Cube developed from my experience. Innovation Cube identifies the drivers, triggers and enablers as the three dimensions of successful innovations.

Drivers of successful innovations are either the pain experienced or the craving for enhanced experience by a group of would be customers. The more acute the pain and the larger the group suffering from it the bigger the value created from such an innovation.

Innovation Cube was succeeded by Innovation Engine which is an algorithm for generating innovations. This is presented in the section on Qualifying Innovations. Innovation Rules are an integral part of Innovation Engine. Innovation Engine was followed by Innovation Stack and this work is presented in the section on Commercializing Innovations.

Innovation Rules

“Learning and **innovation** go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.” William Pollard


Innovation Rule 1
or
Value Diffusion Rule
Special
Enterprise
Division
Personal
Mobile
Consumer

Have you ever thought about how we ended up with the Personal Digital Assistants (PDAs) such as the Blackberry.

Computer is one example of an innovation that took roots for a niche application. Well, it all started with the Department of Defense in the US requesting for the development of computers for their use. These were primarily meant for simulating war games of different types in order to train the armed forces. Over the years IBM and the BUNCH[1] decided to reposition this innovation for corporate use in large firms.

When firms started using computers, there was a contention for the use of their central computer. The divisions within the firm wanted to use them but then the corporate applications always took precedence. The demand for computing from the divisions resulted in the birth of the Minicomputer. Digital Equipment Corporation, Sun Microsystems, Apollo Computers, HP and others addressed this new market.

When divisions improved their productivity using computers, individual users clamored for their own computers. This demand from individual users resulted in companies such as IBM creating the personal computer.

Individual employees were very happy with the personal computer and wished they can take it along with them where ever they went. This led to the demand for portable computers including the lap tops.

Once consumers enjoyed the benefits of laptops they wanted smaller sized products. This resulted in the Personal Digital Assistants. We call this evolution of products in the same family an Innovation rule.

You could observe similar progression in several other products such as Photocopiers, Printers and Fax machines. Now can you write down other products that you think had followed this progression. Can you identify innovation opportunities using this Innovation Rule?

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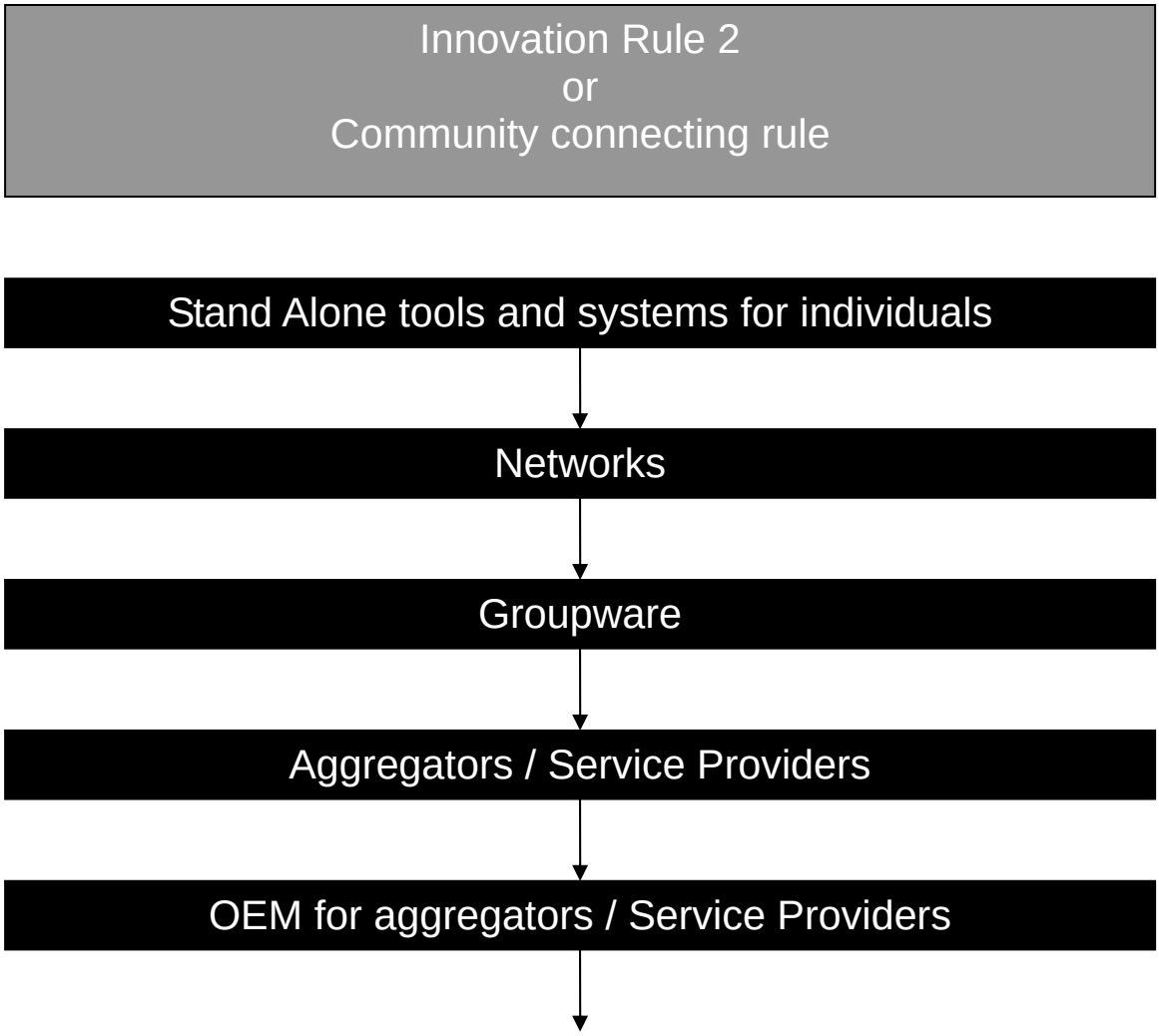
[1] BUNCH Stood for Burroughs, Univac, NCR, CDC and Honeywell


Innovation Rule 2
or
Community connecting rule
Stand Alone tools and systems for individuals
Networks
Groupware
Aggregators / Service Providers
OEM for aggregators / Service Providers

Would any of us be startled if someone asked us “Have you browsed today?” In this day and age it would appear as trivial as the question “Have you brushed your teeth today?” We have gotten used to searching and browsing for information on a daily basis. This was possible only through an evolution involving a chain of innovations.

Although we know that no firm or individual is an island, initially computers were invented for a firm or individual’s use. Very soon there was a demand for connecting computers through a network.

Once networks were in place users embraced software such as email and other groupware to increase the efficiency of the group.

Emergence of the above groupware was followed by the establishment of service providers such as Information Service Providers.

Proliferation of service providers offered innovations in tools to support such service providers.

Other examples of this innovation rule include transportation, telephone networks and publishing.

Feel free to write down other examples that followed this innovation rule.

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Can you also identify innovation opportunities using this Innovation Rule?

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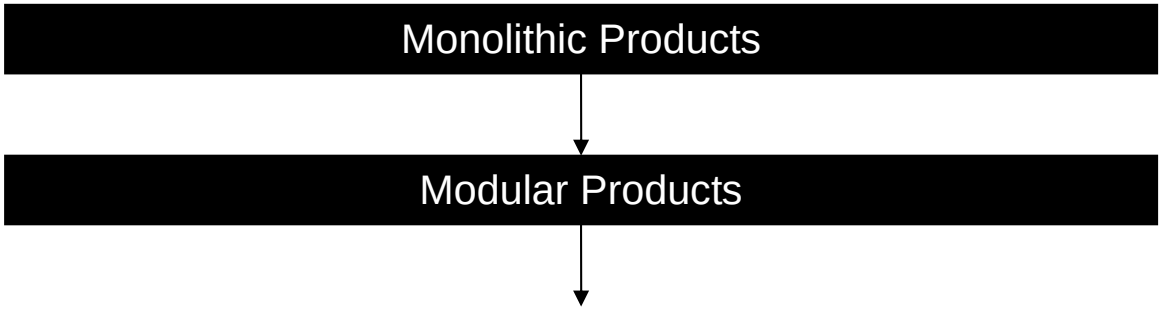
Innovation Rule 3
or
Modularity rule



Have you ever wondered why there are companies making just bolts and nuts?

It turns out when an innovation is first commercialized most of the innovative firms try to make all the parts required for a product themselves[2]. This continues for a period of time until competitors emerge in the market. No matter how sophisticated the product, there are bound to be competitors who will introduce similar products in the market, whether of same quality or different. Competition drives down profit margins. This continues until such time one of the firms decides that it no longer makes business sense for it to make all the parts / components. This is the inflection point when new entrants can enter the market to produce components at lower prices.

The need to get third parties to make parts or components results in the definition of standards. In a number of cases, the competitors get together at some point in time to define a common set of standards so that they can enjoy the benefits from the economies of scale provided by third party component suppliers. The third party new entrants can produce larger volumes of components at lower business costs given their smaller size.

A very important service innovation opportunity often presents itself at this stage. Given that the parts manufacturers may not always be located next to the buyers, there emerges a need for delivery / supply chains. Great benefits await those who can optimize such supply chains. Dell and Olam are examples of companies that greatly benefitted from efficient supply chains.

Can you write down other examples and perhaps innovation opportunities using this Innovation Rule?

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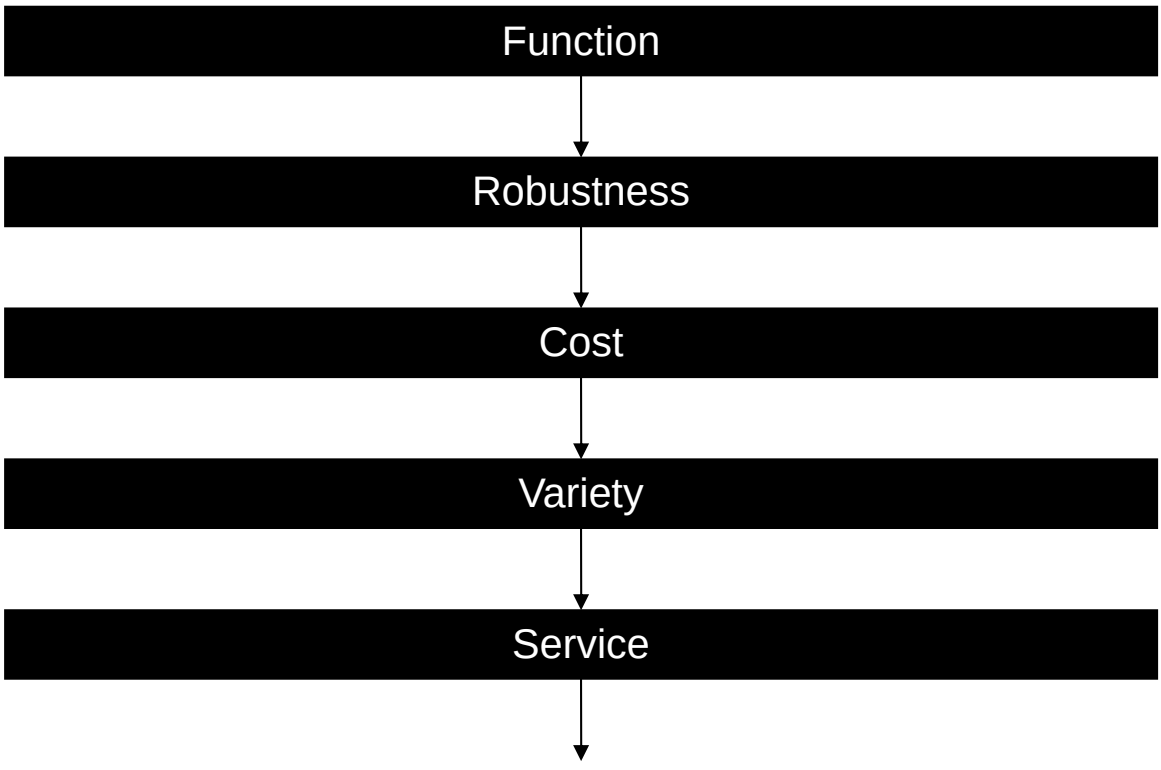
[2] There are exceptions. Sun Microsystems chose to make a workstation using components available in the marketplace. When VCs invested in Apple, they also proactively invested in a company to produce the floppy disks that were to be used in the Macintosh computers.

Innovation Rule 4
Or
Value Progression rule



Do you believe in the often claimed “First Mover’s advantage”? I have seen many business plans bet the future of their companies on this popular phrase.

Have you ever wondered why Ford motor company that invented the assembly line for mass production of cars failed to sustain its leadership?

Its founder Henry Ford is credited with the famous quote “I will give you any color on you car as long as it is black.” If this statement were true why do you think he made it? The truth behind his statement was that he focused on the process and not the customers. Black paint dries faster and hence contributes to improving productivity. Customers wanted variety and not just efficiency.

It has generally been observed that the early adopters of any innovation are happy with a product or service meeting their need. The first generation products and services are often not robust. This results in a new innovation opportunity – to build reliable or robust products and services. Customers become cost conscious once robustness has been addressed. This is the next innovation opportunity. Although lower cost is generally preferred by most customers, there is often a segment that is willing to pay a premium for differentiated products – in the case of autos on color, shape, model etc. That is the next innovation opportunity. The desire for differentiated product is quickly followed by the desire for good after-sales service. It is important to realize the service is an innovation opportunity that almost always follows innovations for the consumer products.

There are a number of innovations that have followed this rule besides automobiles. Some examples are consumer electronics products and White goods (washers, dryers etc.)

Can you think of other products that followed this Innovation Rule? Can you identify new innovation opportunities using this Innovation Rule?

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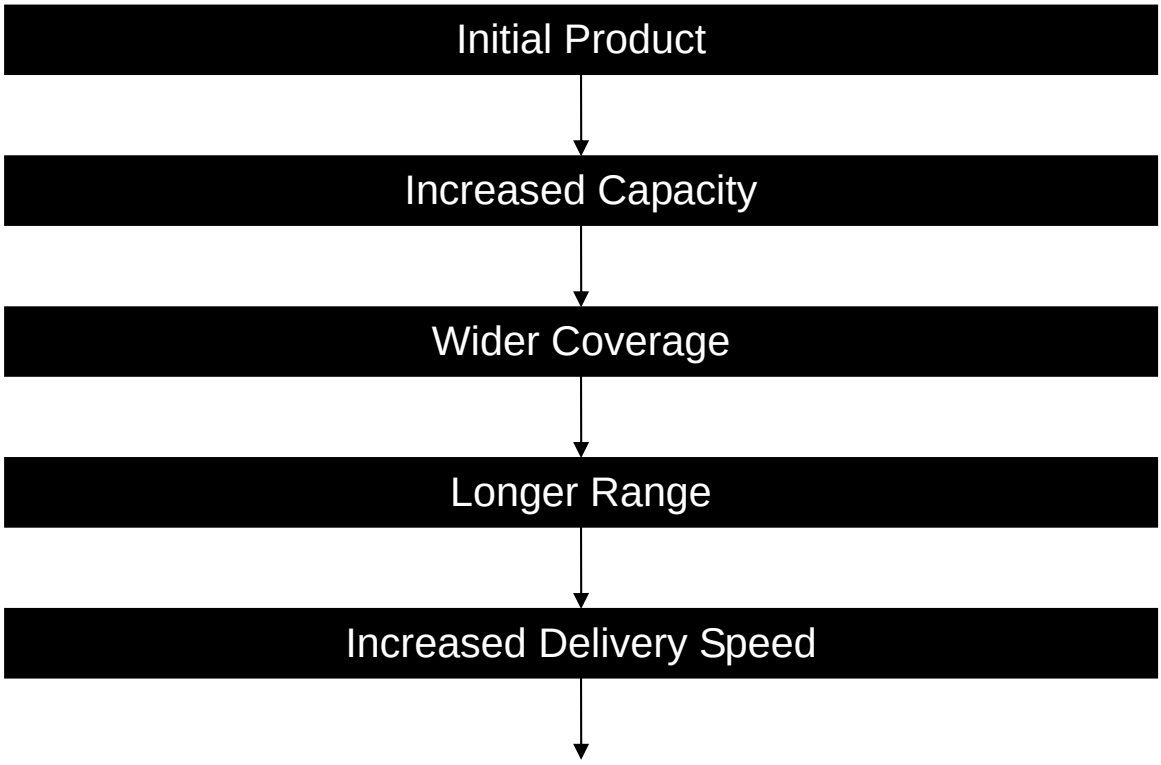
Innovation Rule 5
or
Value Enhancement Rule



The evolution of our transportation systems is amazing. The initial mode of transportation available to mankind was walking. He must have improvised it into running while hunting, obviously to get away from a predator. Humans tamed wild horses to increase the speed of travel. This resulted in travel over longer distances. However, bare back riding must have been uncomfortable resulting in the saddle as an innovation.

Soon, mankind exploited the invention of wheels to assemble carriages that could take more than one or two riders on a single horseback. Single horse drawn carriages soon gave way to a team of horses drawing a carriage over longer distances with greater speeds than what a single horse can do. This promoted travel over longer distances and led to exploring newer geographies.

The same could be said of other modes of transportation. However, this innovation rule does not apply to transportation systems alone. It also applies to other innovations such as telecommunication networks, fax networks and email systems.

Can you think of other products that have followed this Innovation Rule? I am sure there are many you can list. Please feel free to write down innovation opportunities using this Innovation Rule.

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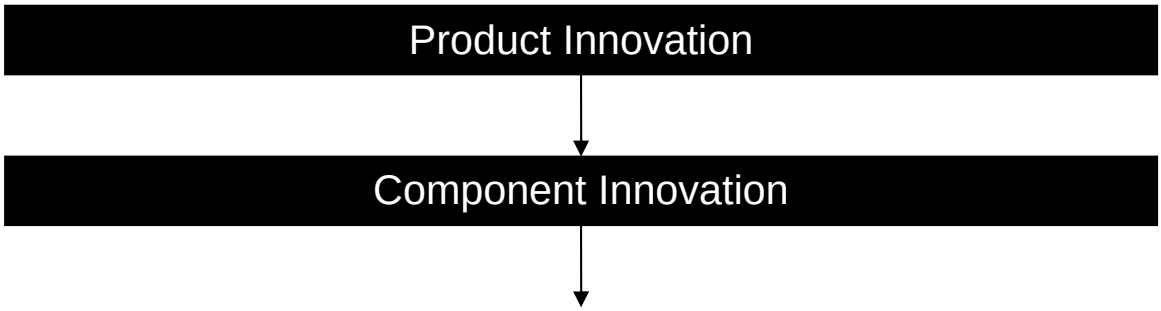
Innovation Rule 6
or
Component Innovation Rule



We discussed about the evolution of computers while discussing Innovation Rule 1. We also discussed how products are monolithic initially wherein the innovating company produces all components by itself and then how parts or component manufacturers come into play when the profit margins for a product shrinks over time due to increased competition while discussing Innovation Rule 3.

As customers embrace an innovation they ask for increased performance. An example can be increased computational speed on a personal computer. When the market demands for product performance rises it has a ripple effect on the parts or components used in the product.

In the case of a personal computer, faster computation will impose demands on faster computing chips and perhaps larger memories, both main and cache. When a personal computer is repositioned or repurposed as a media distribution device, then there is increased demand for storage size and faster transfers between the computer and its storage.

These are some examples of how the continuous innovations in product performance have a tangible impact on continuous innovations on the components or parts of the products. The reverse is also true. When Intel produces faster computer chip, personal computer manufacturers tend to produce better products as well.

This innovation rule can also be observed to be in play in automobile and consumer electronics.

Can you think of other products or industries where this innovation rule applies? Can you also identify innovation opportunities using this Innovation Rule?

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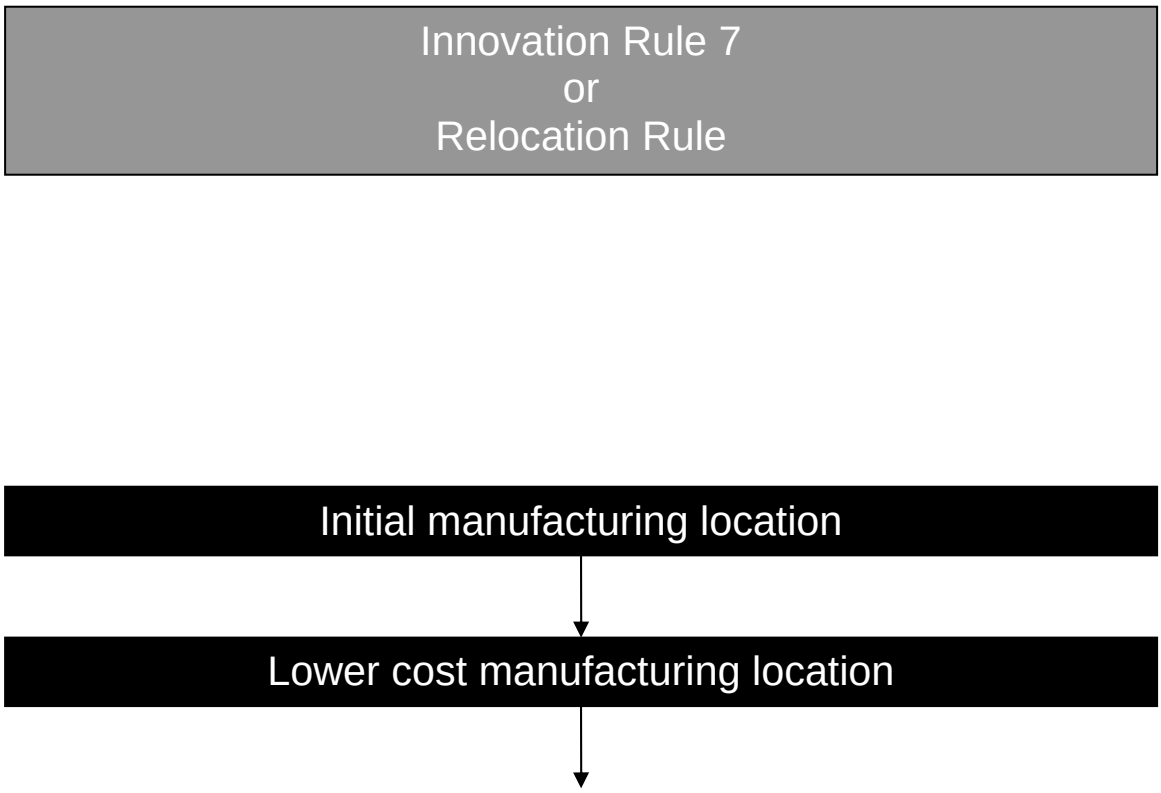
Innovation Rule 7
or
Relocation Rule
Initial manufacturing location
Lower cost manufacturing location

When a new innovation is introduced to the market by a company, there are often many competitors who offer products with near about similar features. This soon results in intense pressure on profit margins. This pressure on profit margins forces companies to look for relocation to new places that offer cost advantages of several kinds including tax holidays, lower wages, and lower logistics costs.

The need to relocate creates many service innovations opportunities including OEM, ODM, BPO, KPO, BA[3] and Research outsourcing. Such relocation also drives need for training of additional human capital. This new demand for well trained human capital further offers opportunities for establishing new training institutions in the new locations.

Sometimes the relocation may also be driven by an unanticipated need. A classic example is the emergence of the IT industry in India. The Y2K[4] problem forced a number of American companies to look for additional computer literate manpower that could provide solutions within a short span of time. India had such manpower and could deliver the solutions requested and the rest is history.

Examples of relocation include contract manufacturing in electronics and printing services.

Could you think of other examples of relocation of companies? Do you see innovation opportunities when such relocation happens?

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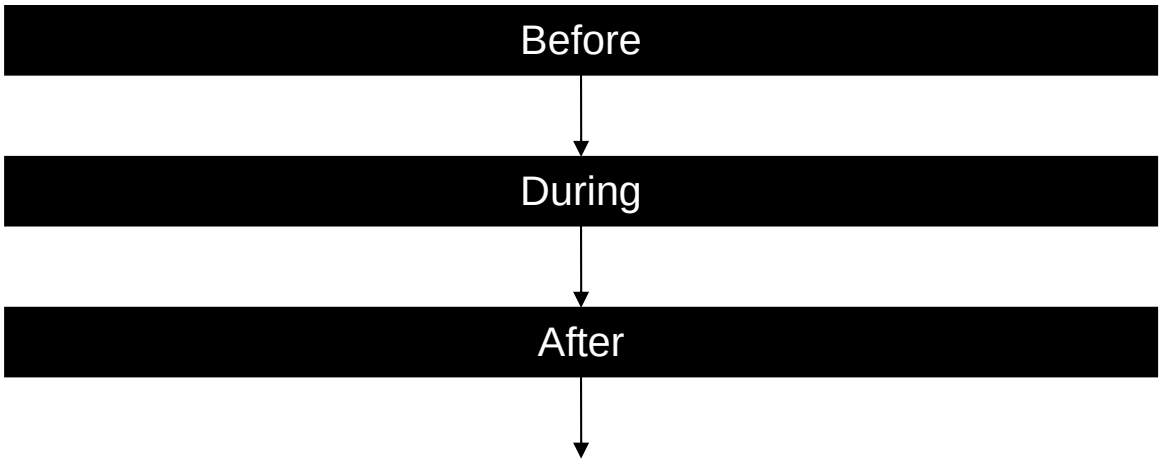
[3] OEM stands for original equipment manufacturers, ODM for Original Design Manufacturer, BPO stands for Business Process Outsourcing, KPO stands for Knowledge Process Outsourcing, and BA stands for Business Analytics.

[4] Y2K problem refers to the attempts to rewrite several applications given that the data fields in these software may give rise to costly errors at the turn of the century.

Innovation Rule 8
or
Temporal Service Innovation Rule



A number of service companies that I interact with believe that service quality matters beginning when the customer is on their premises. While this is indeed true, I have noticed several instances when service quality could have been addressed before the customer arrives at the service provider's premises and also after they leave the premises.

Let us take healthcare services as an example. How wonderful it would be if we are given the freedom to choose our meeting schedules with doctors based on our convenience. How nice would it be if we were informed about the delays long before we arrive at a healthcare facility? And, how welcome it would be if someone followed up the consultations with the doctor with enquiries on quality of service and ask for suggestions for improvement.

Maybe healthcare is a service sector where the clients are at the mercy of the providers given the nature of the business. I did come across an instance where a clinic treated a mother and father to be very differently before, during and after the admission, birth and discharge process. And the satisfied customer mentioned to me that he paid a premium and it was well worth every additional dollar. May be there is room for market segmentation in service industries all within perhaps the same premises.

We find that there are several examples of service industries such as air travel, dining and cinema where service qualities can be significantly improved before, during and after servicing a customer.

Can you think of other service segments where such attention to the customers before, during and after a service brings in great value to the service providers? Can you identify new innovation opportunities using this Innovation Rule?

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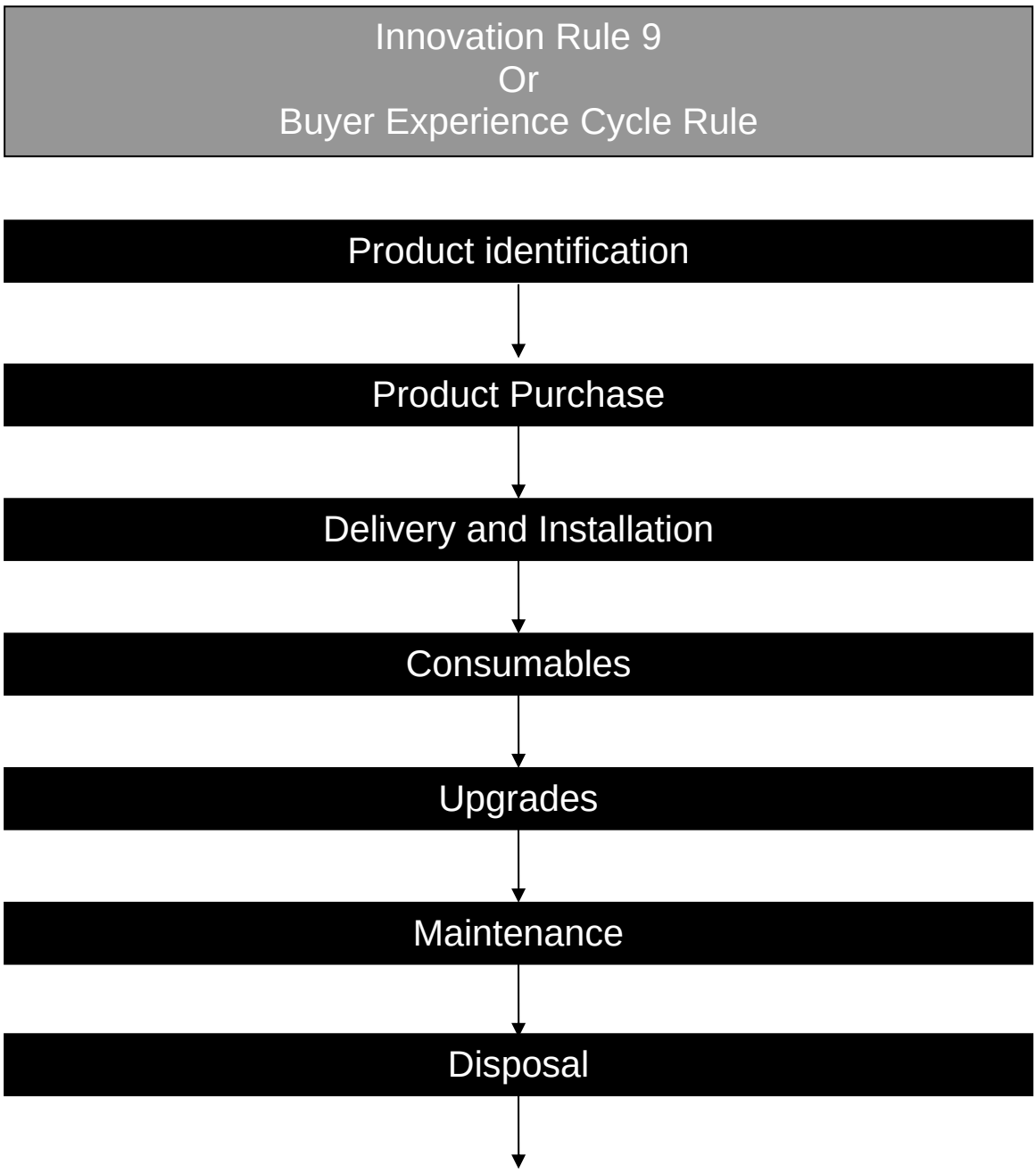
Innovation Rule 9
Or
Buyer Experience Cycle Rule
Product identification
Product Purchase
Delivery and Installation
Consumables
Upgrades
Maintenance
Disposal

Chan Kim and Renee Mauborgne in their book titled Blue Ocean Strategy identify a process that they labeled “Buyer Experience Cycle”. This Innovation Rule is derived from the Buyer Experience Cycle.

Many of us buy white goods product such as washing machines from time to time. The process starts with our looking for a product of interest to us. This might mean we are looking out for the model of interest to us and the retailer who offers the best deal for the chosen model. Notice that the Buyer Experience Cycle does not include this part.

Once we identify the store and the product we often go down in person to look at the product. Exceptions are standard products such as books and music CDs that do not come in different models. When we end up in a store we expect to get good service from a knowledgeable service person.

Once we purchase a bulky product we need to decide how to get the product home. In such situations, we need the product to be delivered to our home at a fixed time on a preferred day. This results in opportunity for innovations in services.

Some of the products need to be installed by the manufacturers or their service agents. This has to be aligned with the scheduled delivery date and time. Further, some of the products use consumables such as detergents. These offer innovation opportunities as well. Some products can be upgraded in situ. This requires support for upgrades. We will need maintenance of the products as well as a service for disposal of the product when their usefulness comes to and end.

Each of the links in the Innovation Rule offers an innovation opportunity. Although we discussed washing machines, the same applies to other products such as printers, fax machines, copiers and television sets.

Can you think of other products that follow this Innovation Rule? Can you use this rule to identify new innovation opportunities?

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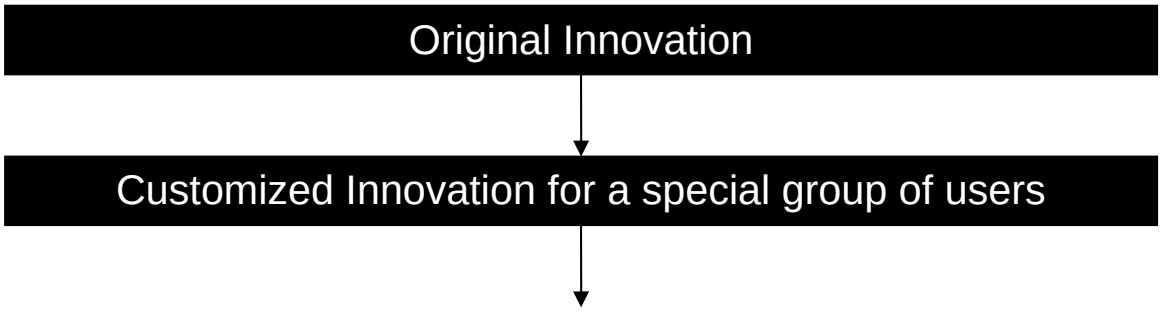
Innovation Rule 10
or
Innovation Customization Rule



Reengineering original innovations for a niche group has been practiced for many years. Some examples for bicycles for ladies and sports products for left handed players. So, whenever an innovation hits the market, it would be fruitful to examine whether that innovation could be reengineered for a special class of customers. One recent example is a mobile phone with a compass that allows the followers of the Islamic faith to determine the directions for their prayer.

We need to be careful in understanding this Innovation Rule and hence the innovation opportunity. The idea is not to create a new to the world product but to address a subgroup of customers whose requirements are different from the features provided by the original product. The markets for such niche innovations will surely be smaller than the original innovation. However, the market size may be still substantial enough to warrant the creation of a niche product.

We can list many additional examples of niche innovations – cameras for the layperson, light weight cameras for ladies, and suits for young people. Accor hotel group created Formule 1 hotel chain in response to a market need for budget business travelers. This is also an example of a customized service innovation.

Can you identify other examples for this Innovation Rule? Can you also identify Innovation Opportunities using this rule?

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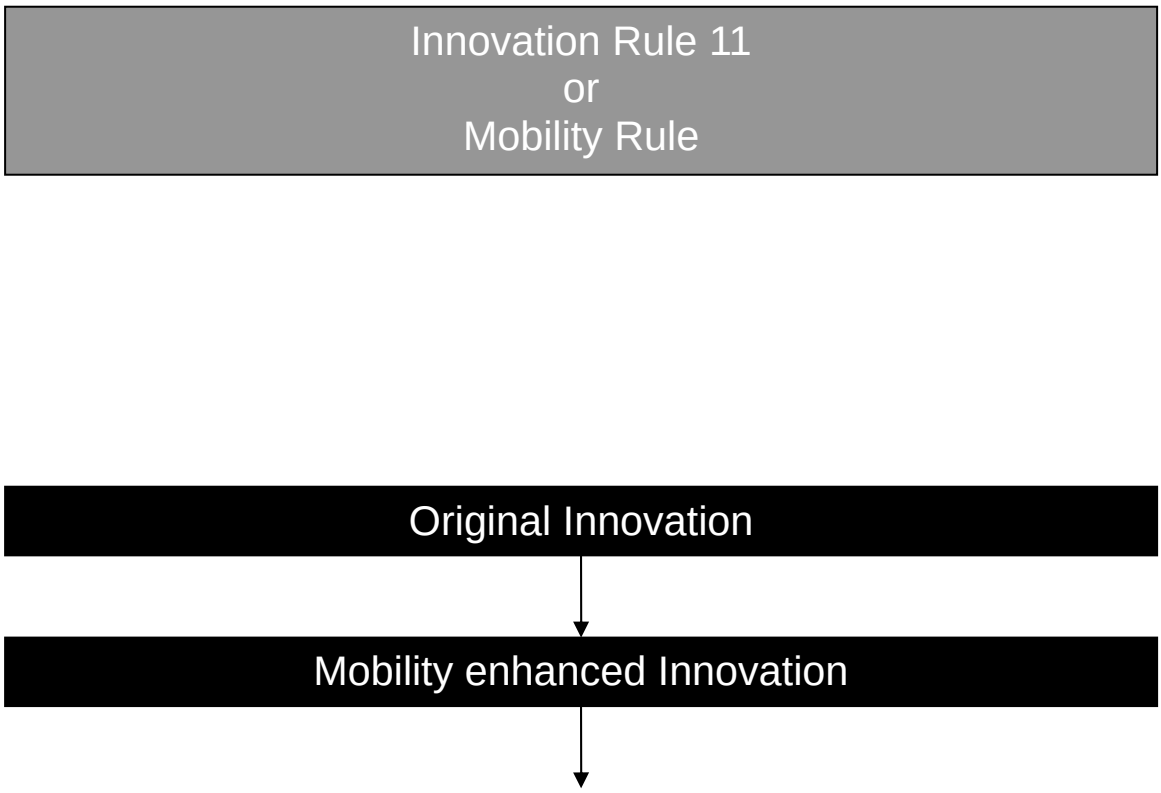
Innovation Rule 11
or
Mobility Rule
Original Innovation
Mobility enhanced Innovation

Can you imagine a life today without a mobile phone? Almost every one appears to be carrying at least one mobile phone, sometimes including the pre-teens.

Phones were initially developed as fixed line connections at homes. Pay phones were invented when people needed access to a phone when they were outdoors. The fixed line phones were very limiting even within homes. When a phone was located in the living room and the family was in the dining room then someone had to get up to answer an incoming phone call. While this was perhaps not as troublesome, there were other situations such as when one was sleeping in a bed room that were more bothersome. One solution to this pain was to create multi-location phones that carried a single phone number. Even this solution was limiting in the sense one had to go to the location where the phone was placed. The need for comfortable access to a phone anywhere in a home led to the development of the DECT[5] phones otherwise known as cordless phones.

The appearance of cordless phones for near field wireless voice communications should have foretold the coming of the hand phone as we know it today. Of course, hand phones offer us the ultimate freedom to communication anywhere and anytime as we please. While phones were the first devices that became wireless globally, there are other devices that are following the DECT model.

Some examples are keyboards and mouses for the computers. There are certainly wireless versions of the keyboards and mouses for the home computers. And, the computers themselves are becoming wireless as in laptops and PDAs that work in wireless environments.

Feel free to write down other innovations that either have gone wireless or are ready to go wireless. The innovations that are ready to go wireless give you new innovation opportunities.

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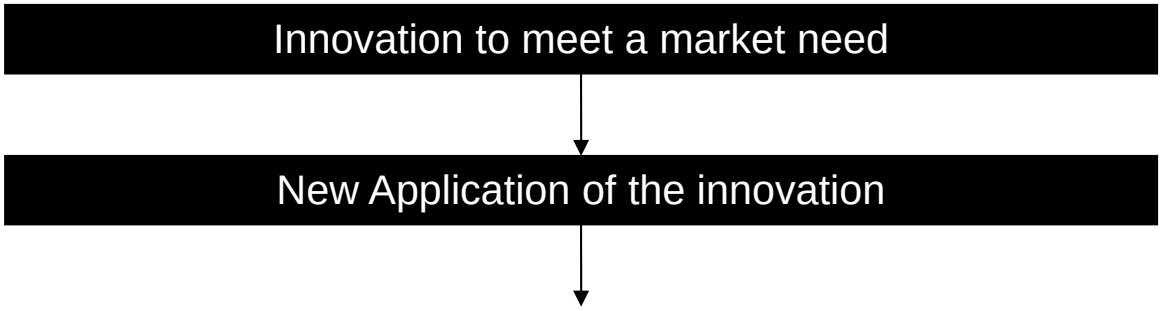
[5] DECT stands for Digital Enhanced Cordless Telecommunications

Innovation Rule 12
or
Translational Innovation Rule



We have witnessed the immense value of the steam engine used in locomotives (rail engines for example). Their value to the transportation systems of the world is immeasurable. They were the forerunners of the modern day internal combustion engines that run on other sources of power.

Have you ever wondered whether steam engines were originally invented for powering locomotives? Actually the earliest application of steam engine was to pump water from coal mine to the surface or ground level. However, the value derived from the humble steam engine has been most felt in rail roads and other early forms of vehicles for transportation.

There are many other examples of innovations meant for an initial application creating a major impact in other situations. Take computers for example. They were originally invented as calculating machines. We now use them for managing information and data, communication and a variety of other functions. Similarly, the transistor was originally invented as a switching device. However, it now forms the building block of computers and several other electronics devices for consumer and corporate markets.

The list of innovations that have created impact in areas other than the initially intended applications is very long indeed. Can you identify some more examples of this Innovation Rule? Also, can you use this rule to identify new applications for current innovations? Feel free to write them down in the space below.

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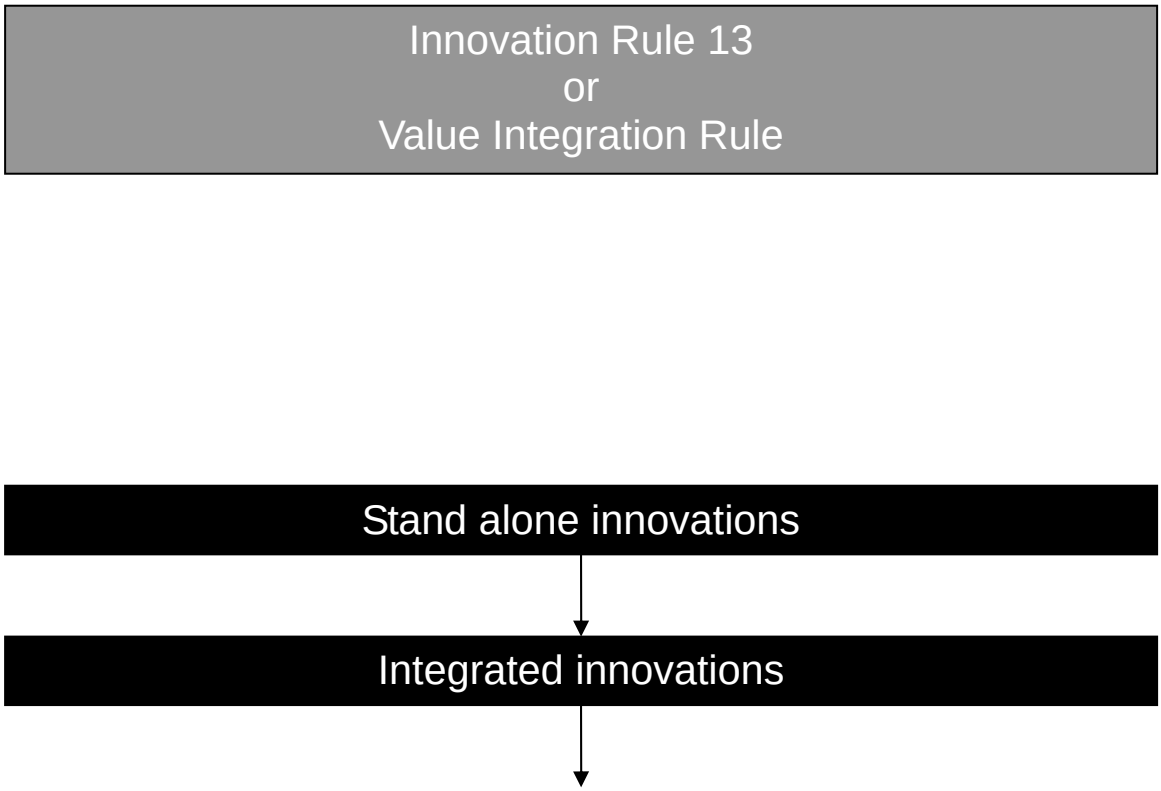
Innovation Rule 13
or
Value Integration Rule
Stand alone innovations
Integrated innovations

Just the other day my colleague walked in and said that our Institute of Innovation and Entrepreneurship at the Singapore Management University was getting a four-in-one device.

My immediate response was that I had known of two-in-one and three-in-one office devices but had never heard about a four-in-one office device. My curiosity was tickled indeed. It turned out to be a printer, scanner, copier and fax machine all four functions in one machine. I was impressed.

The value of integrating several related functions into one product or service is certainly very appealing. It saves space to begin with. It also helps drive down the cost of providing multiple functions by purchasing four different machines.

However, it is important to note that randomly combining functions into an integrated product does not often succeed. I did come across one such product about a decade ago – a radio, VCR and computer bundled into one device. It did not take off at that time. May be the markets were not enlightened enough at that time.

Also, special attention should be paid to usability when such multiple functions are offered through an integrated product.

Other examples of integrated innovations are PDA, tablet PC, Computers, organizers, and hand phones.

Can you think of other examples of this Innovation Rule? Also, feel free to use this rule to identify new innovation opportunities.

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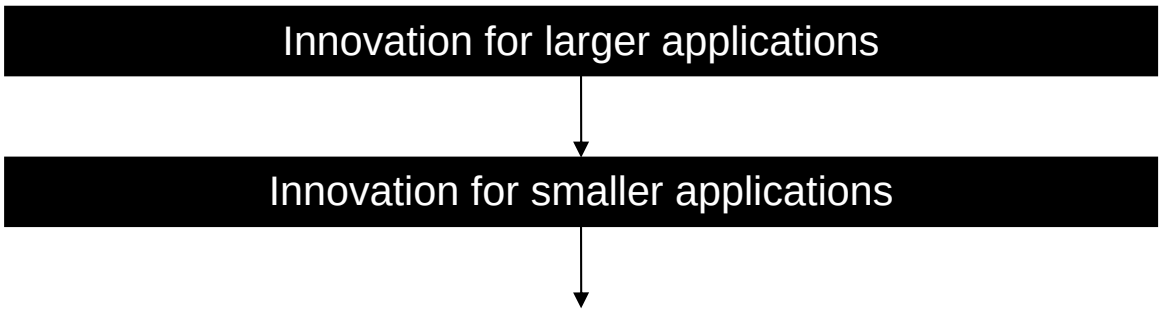
Innovation Rule 14
or
Miniaturization Rule



I wish to talk about innovations once earmarked for larger applications that later get redesigned for smaller (and not lesser) applications. One example I have come across is the MRI[6] machines. The early versions of MRI machines required that a person be put on a bed and scanned through the central hole of a toroid like structure. The process was the same whether the whole body was being scanned or just an arm or a leg was being scanned. MRI machines were invented initially for the scanning of the brain and were later used for scanning other parts of the body. So, the procedure described above made perfect sense for the initial application.

However, later on when arms and legs had to be scanned, it did not make sense to subject the patient to the complex process. Hence innovators constructed MRI scanners with a smaller toroid just to scan an arm or a leg. This was less expensive and hence the cost of medical procedure was lowered.

I am very sure that similar innovations abound. EKG machine and eye testing equipment are other such devices in the healthcare space. Another such example is the transition from valves to transistors and from transistors to integrated circuits. And even in integrated circuits there was a progression from small scale integration to medium scale, large scale and ultra large scale integration.

Can you think of other innovations that followed this Innovation Rule? List some of the potential innovations based on this Innovation Rule.

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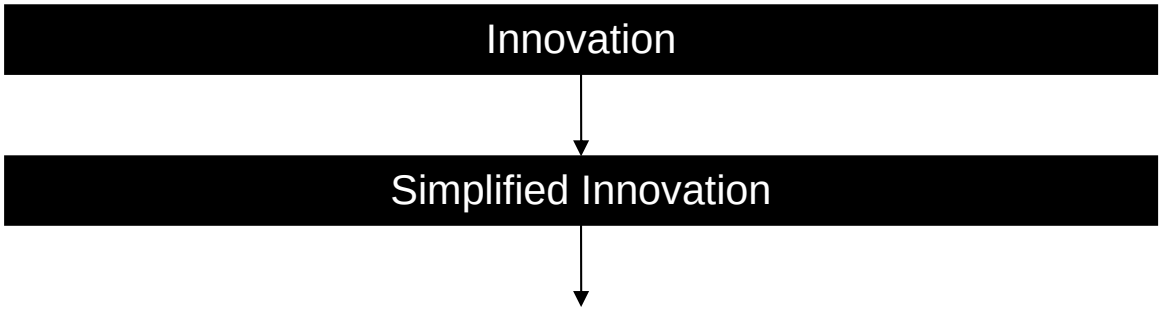
[6] MRI stands for Magnetic Resonance Imaging.

Innovation Rule 15
or
Innovation Simplification Rule



Have you ever noticed the VCRs[7] in your friends' homes? In most homes the clock on the VCR display panel would be blinking. This is not because these VCRs were not smart enough. It was the designers of these VCRs who over-engineered the product.

Remember when an innovation is first introduced by a company competition soon follows. As the market for the innovative product stabilizes, the competitors tend to differentiate their products from others by introducing additional features – often features that are not useful to a majority of the customers.

Sometimes customers have no choice but to pay for the additional features because those were the only models available in the market. At other times, customers end up buying products with lots of additional features not realizing that they would not be using those features. Either way, it is important to realize over-engineered products appeal to a limited customer base.

An example of simplified innovations is the Point And Shoot (PAS) genres of cameras. Early cameras were meant for professionals. It is the simplified version of the cameras that enlarged the market for cameras. So, if a product innovation targeted for professional or high end customers hits the market it often offers an opportunity to create a simplified version of the product that is easy to use by the masses.

There are many other examples of such successful simplified innovations. Can you name a few more of them? Also, can you use this innovation rule to identify new innovation opportunities?

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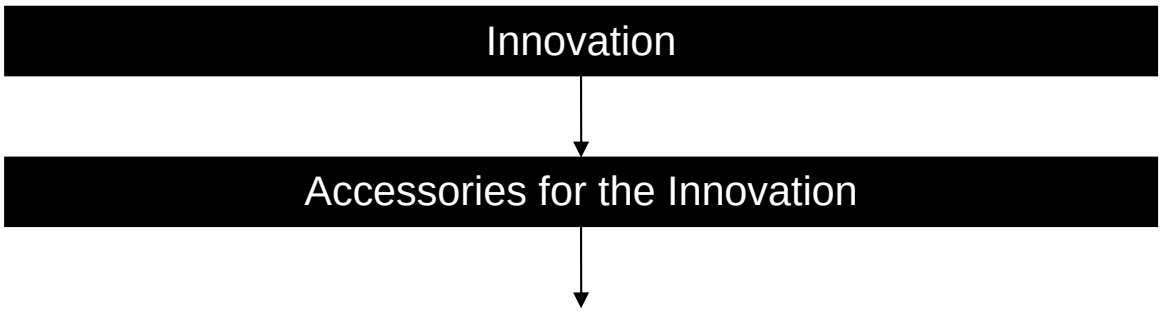
[7] VCR stands for Video Cassette Recorders, a dinosaur for the generation Y. It was used to record TV shows.

Innovation Rule 16
or
Accessory Innovation Rule



Since we last talked about cameras let us stay with cameras. When a company introduces cameras for the first time there arises opportunities for innovating several accessories. Each one of them addresses some pain that a photographer would experience.

For example, flashes were introduced as accessories to allow photographers take good quality pictures in dark conditions including night photography. Tripods were introduced to ensure that photographers can get their pictures shake free and hence without a blur. Filters were introduced to create different types of effects. All these are some examples of how when an innovation is created there are opportunities to create innovations that can enhance the effective usage of the original innovation.

Swatch is an example of another product innovation that allowed for the creation of accessories. Swatch created a line of watches wherein the rims can be changed to match the dress of the watch owner. This accessory appealed to the emotions of the customer.

Have you come across similar innovations that were really accessories to an innovative product? Please write them down for your later reflection. Could you also use this innovation rule to identify new innovation opportunities? Please write them down as well.

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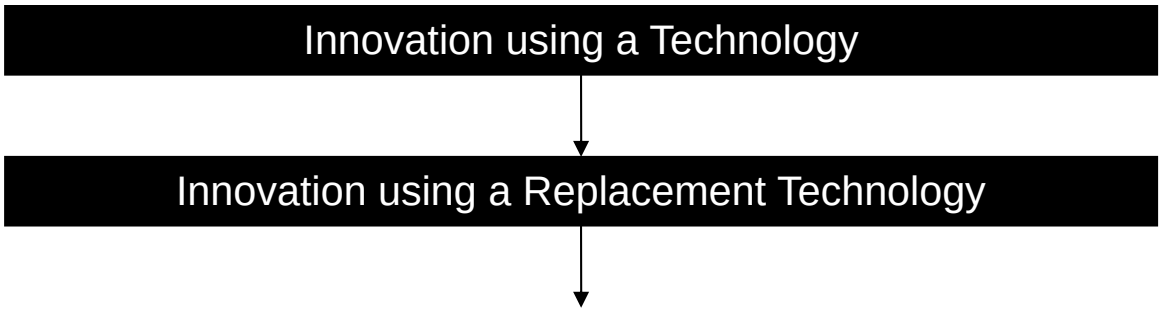
Innovation Rule 17
or
Alternative Innovations Rule



Biometrics is a technology that is often used to validate the identity of a human being. The early biometric systems used finger prints as the means of establishing the identity of a person. Finger printing worked very well in certain circumstances such as for prison inmates. However, there were some countries where finger printing was used only for registering criminals and foreigners. In such countries use of biometrics for identifying other members of their population became a taboo. Some other societies considered using scanners to scan finger prints to be unhygienic. So, for several reasons there was interest in finding alternatives.

Hand print, retina, facial features based identification systems have since emerged as alternatives to the finger print based identity verification systems.

We can observe many such examples. Diskettes replaced floppy disks and USB[8] disk storage devices or Thumb drives™ have replaced diskettes in turn. Digital cameras have replaced film based cameras. In other words, the same function is achieved by a different technology.

Can you name other such innovations that can be related to this innovation rule? Please note them down for your own reference. Can you also use this Innovation Rule to identify new innovation opportunities?

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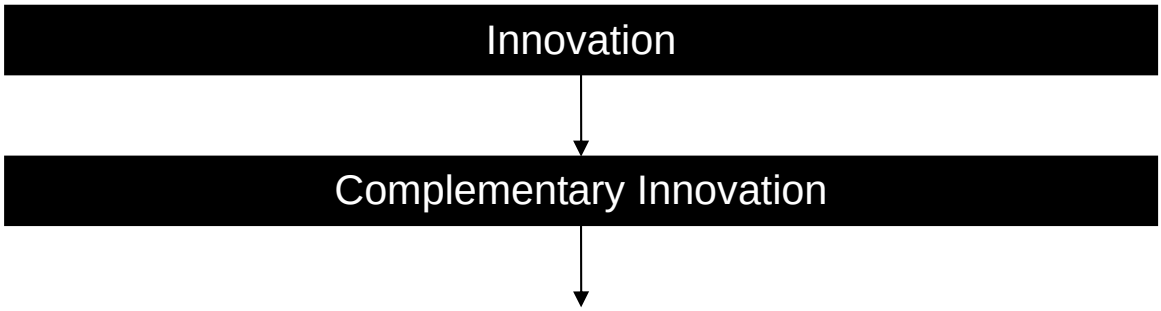
[8] USB stands for Universal Serial Bus

Innovation Rule 18
Or
Complementary Innovations Rule



At times the introduction of a new innovation creates room for a complementary innovation. Let us consider Television as an innovation. Some of us could not watch our favorite programs at the time they were broadcast. The need for us to watch a broadcast program at a time convenient to us resulted in the innovation opportunity for a Video Cassette Recorder.

Once a Video Cassette Recorder was invented, it in turn created the opportunity to innovate a video camera. The innovation of a video camera in turn gave the opportunity to create automatic video editing software.

So, complementary innovations are not always terminal. An innovation that was created as a complementary innovation to an original innovation can in turn create the opportunity for other complementary innovations.

Flashes, tripods, lenses, and carrying and cleaning kits can all be considered innovations complementary to a camera, the original innovation.

Can you think of other examples of complementary innovations? Write them down. Also, can you use this Innovation Rule to identify new innovation opportunities? Write them down as well.

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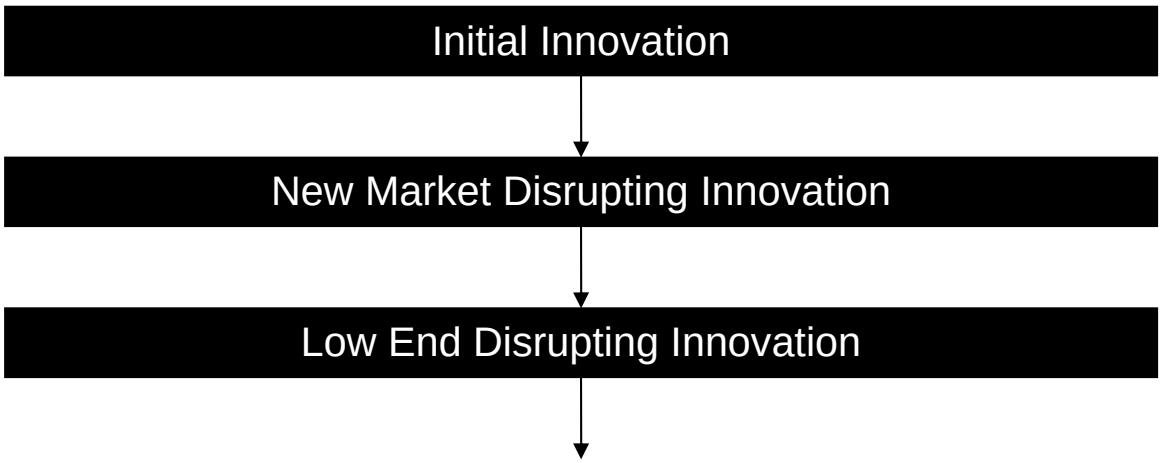
Innovation Rule 19
or
Disruptive Innovation Rule



Innovation rule 19 is derived from the Disruptive Innovation, a concept first enunciated by Professor Clay Christensen of the Harvard Business School. He was studying the evolution of the disk drive industry when he came across an interesting observation. He found that the incumbents in an industry almost always missed the opportunity to exploit the next stage of an innovation rule. New innovations in an industry often came from a different firm, typically a start up. He found this phenomenon to be true in several cases.

Let us take the example of computers. The main frame market was dominated by IBM. However, Digital Equipment Corporation was a leader / pioneer in the minicomputer market. IBM created the personal computer market. Toshiba is often credited with promoting the laptop market. The PDA market was successfully created by the Palm computers.

He also noticed that there are incremental or sustaining innovations that keep improving an existing innovation in small steps to meet the increasing demands from the market. He called it the sustaining innovations. He observed that the disruptive innovation can occur either at the high end of the products as New Market Disruption or at the lower end of the product spectrum as Low End Disruption. For more information on his observations please look up his book titled “Innovator’s Dilemma.”

Can you name other industries that experienced disruption? Can you use this innovation rule to identify markets that are ready to be disrupted? Please write them down below.

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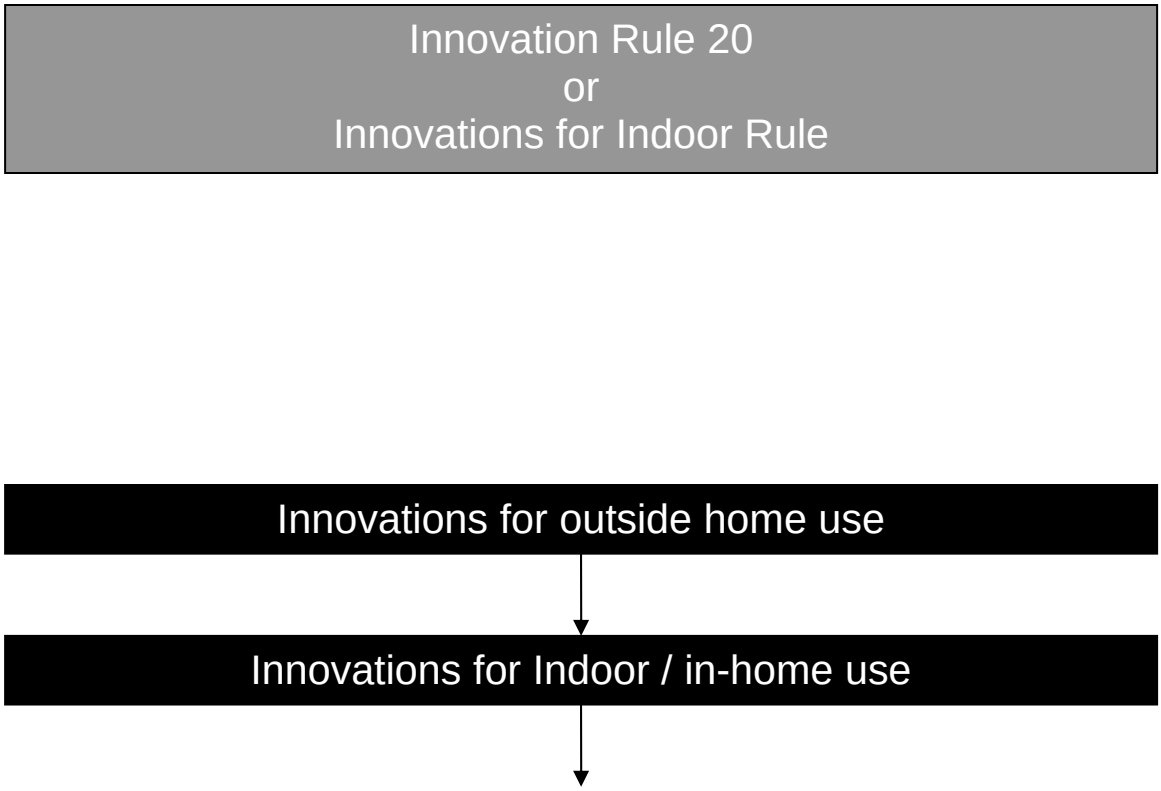
Innovation Rule 20
or
Innovations for Indoor Rule
Innovations for outside home use
Innovations for Indoor / in-home use

A number of us have enjoyed a day at some beach some time in our life. Some of us go to the beach to get a tan. Those desiring to get a tan often use a sun tan lotion from a reputed manufacturer to get that beautiful tan. So, there were many opportunities for innovations to produce different kinds of sun tan lotions. There were different flavors such as coconut, banana and strawberry, introduced into normal suntan lotion to cater to the customer preferences.

However, what about those who cannot get to a beach and would still like to get a tan? Some clever people came up with a great innovation called the tanning machine. Customers can spend between 12 to 20 seconds inside a tanning machine of their choice and step out with a glorious tan.

The tanning machine is an example of an innovation that pretty much brought about the same effects of an equivalent innovation for outdoors, viz., tanning lotion plus the sunny beach.

Coffee-makers for the home are an example of an innovation for home use to achieve the same outcomes as coffee machines used in restaurants. Other examples are home entertainment centers. Nintendo and others brought arcade game experiences into homes. In each case, it is indeed true that the innovations meant for home use are often not as rich / perfect in their features as those meant for large scale out of home use.

Can you think of other examples of this innovation rule? Can you identify new innovation opportunities using this innovation rule?

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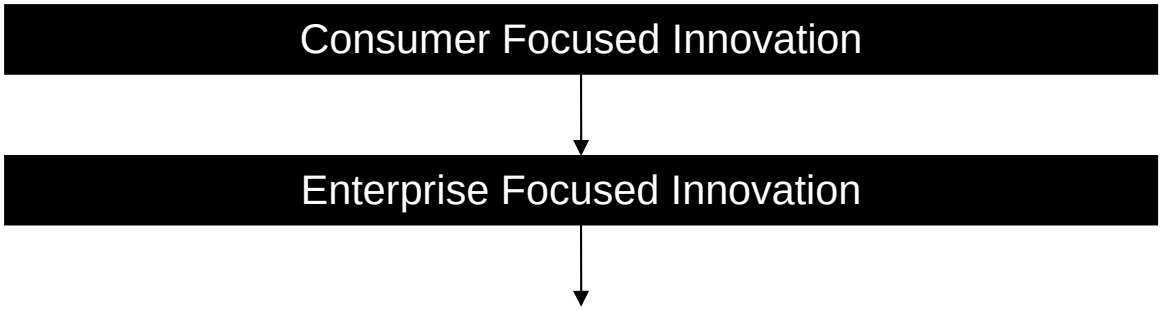
Innovation Rule 21
or
Upstream innovations Rule



While most innovations normally flow from enterprise markets to consumer markets, some innovations move in the opposite direction, from consumer markets to enterprise markets.

A good example is the use of Wikis. Wikipedia was initially set up as an open source encyclopedia. As the popularity of Wikipedia grew, businesses realized the value of using Wikis for corporate applications.

Skype is another example. Skype was initially introduced as a consumer to consumer communication tool. Businesses, especially the Small and Medium Enterprises adopted Skype very quickly to reduce their communication costs.

Yet another example is the use of Internet Messenger. Many businesses have begun using Messenger as a group communication tool.

Can you think of other examples of innovation that were initially introduced for the consumer market making inroads into the enterprise markets? Please write them down.

Can you use this Innovation Rule to identify new innovation opportunities?

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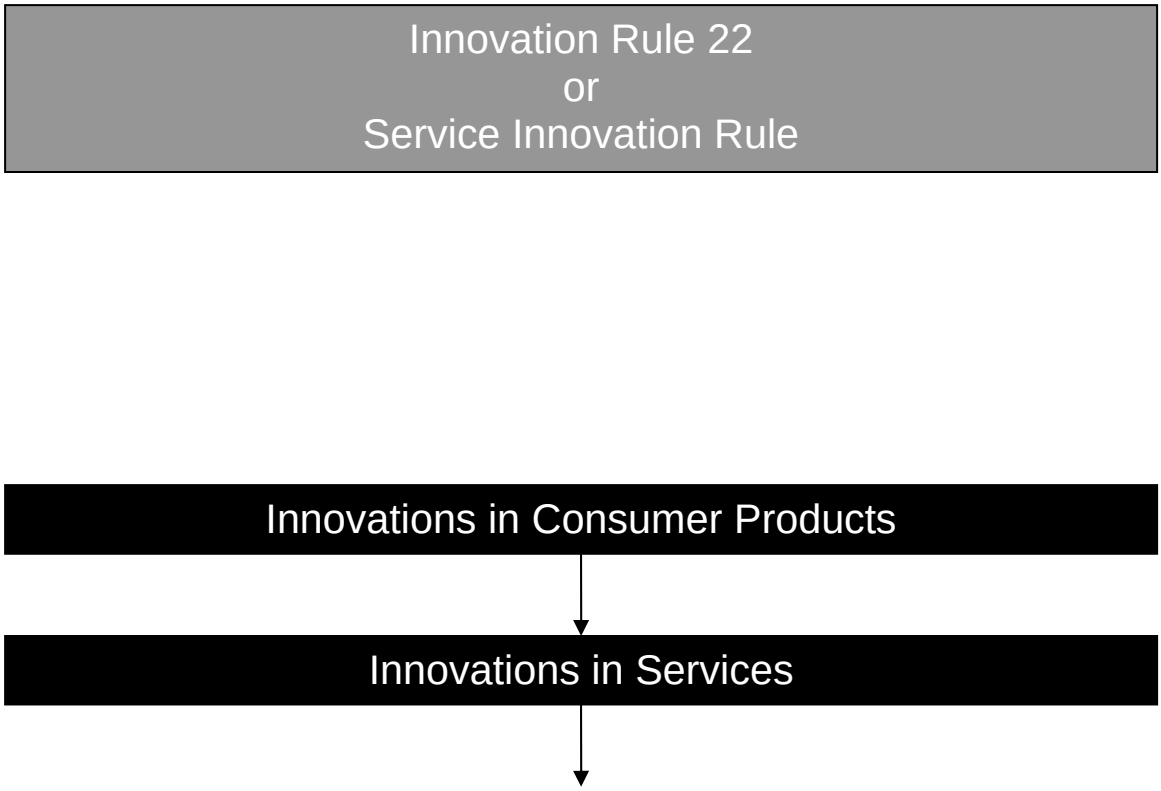
Innovation Rule 22
or
Service Innovation Rule
Innovations in Consumer Products
Innovations in Services

When innovations are first introduced for the businesses, they are normally priced high and often include maintenance costs on an annual basis.

However, when these innovations are reengineered to address consumer markets, it is very difficult to expect annual maintenance contracts. Consumers are often content on making use of service providers to repair their possessions when they break down and pay a fee on a need basis.

Let us discuss a washing machine as an example. When we buy a washing machine, there is normally a warranty period that could range from a few months to a few years. Often the warranty is split between parts and labor. Many times the period for parts replacement is longer than the warranty for labor.

It is very rare for consumers to purchase additional maintenance contracts for parts and labor beyond the default initial warranty period that comes with the purchase. Once the warranty period is over then the consumers prefer to pay for fixing a broken washing machine on a need basis.

Such consumer behavior or preference immediately offers an opportunity for creating a service innovation.

While still on washing machines, there is yet another service innovation creation opportunity. In some countries, there may be some segment of the market that cannot afford to buy washing machines. Such a situation offers the opportunity to set up Laundromats as a service innovation.

Can you think of other examples of consumer innovations leading to service innovations? Please write them down. Can you also think of new consumer products just released that might offer opportunities for service innovations? Please write them down as well.

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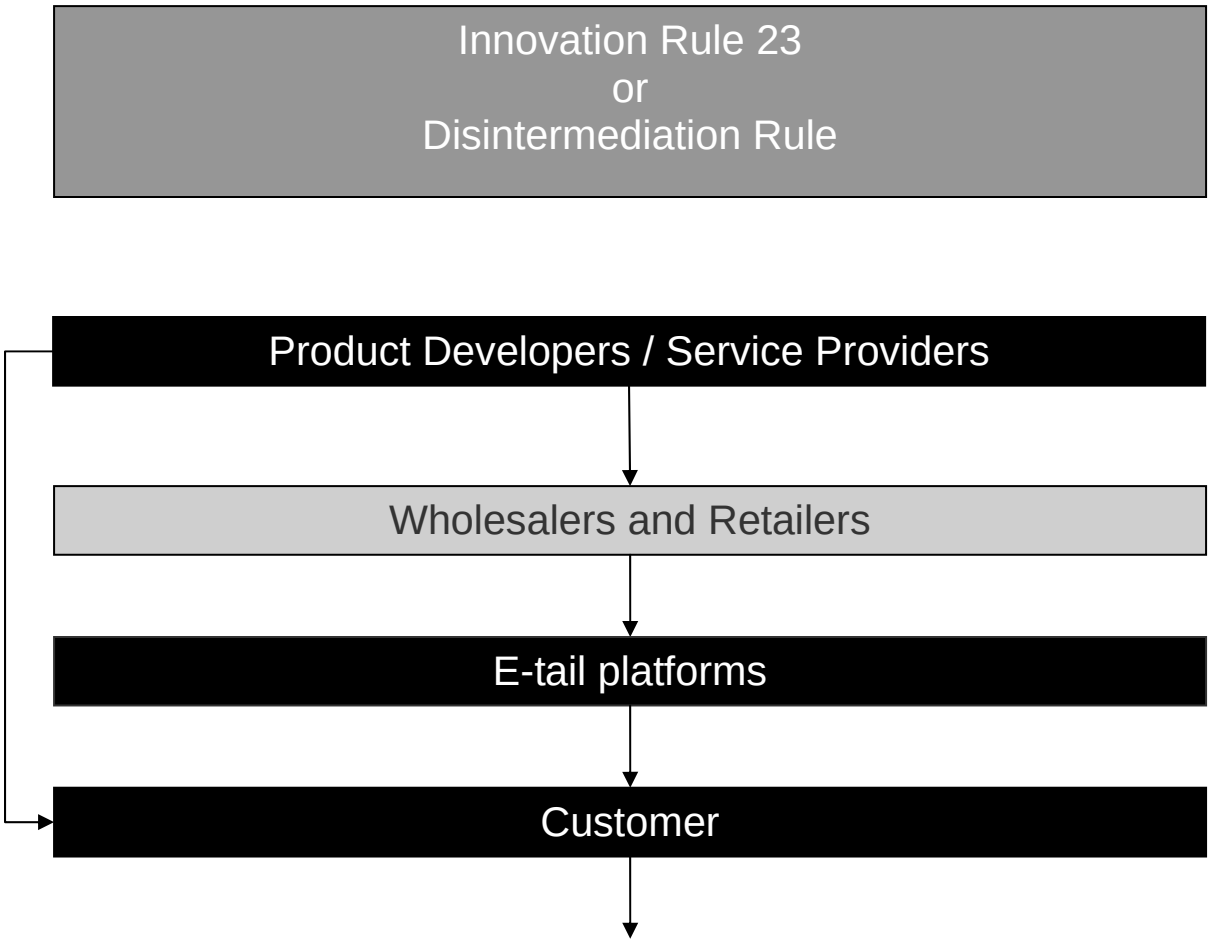
Innovation Rule 23
or
Disintermediation Rule
Product Developers / Service Providers
Wholesalers and Retailers
E-tail platforms
Customer

We know very well that any product or service, however original and innovative it might be, attracts imitators and hence competition arrives soon after its introduction into the market. The imitators are many, fast and furious especially if the innovation is hugely successful and promises a large market size. We observe this phenomenon in products ranging from consumer electronics to aircrafts for civil and military use.

Companies often add bells and whistles to their innovative products once the competition gets intense. It is also at this stage, the product and service providers become more dependent on their channels, i.e. wholesalers and retailers.

This was quite true for a long time since the original manufacturers of products or providers of service could not reach the different corners of their market directly. However, the advent of Internet changed this dramatically. E-Commerce allowed vendors to reach out to their customers in any part of the world using Internet. This gave rise to E-Commerce and E-tailing[9] platforms such as Amazon and E-bay.

Can you think of other innovations that followed this Innovation Rule? Please write them down in the space provided below.

Can you also think of new innovation opportunities using this Innovation Rule? Please write them down in the space provided below.

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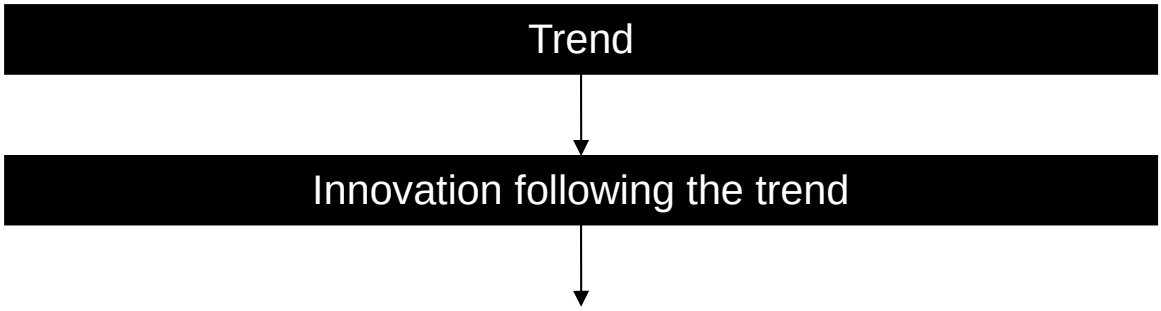
[9] E-tail is a term used to denote retail on E-commerce platforms.

Innovation Rule 24
or
Macro Trends Rule



We all observe trends from time to time. For example, there are two major trends in play. A first trend is that a large majority of the world's population is graying. Second trend that we note is that there is an increasing awareness to keep our environment clean.

Some movements end up as trends and others remain as weak movements or peter out. A movement is generally termed as trend when there is a monotonic increase in the number of people embracing the movement and there is no possibility of looking back on the movement.

Let us examine the cute little toy called Furby[10]. When it was first launched, many parents hunted for the toy high and low across several stores in their respective cities and countries. However, after a few years no one cared about Furby any more. So, the frenzy initiated by the introduction of Furby is perhaps better described as a fad.

Our concern for environmentally friendly products is increasing by the day. Toyota is an early leader in identifying and responding to this trend by designing and manufacturing the Prius[11] model of cars. Others are quickly following its lead.

Many companies are beginning to focus on elderly friend products and services. Such products include a robot which detects smoke and can alert others of a fall, and an alarm that can be set off at the press of a button to put the aged person in touch with an operator.

Have you come across other examples of this Innovation Rule? List them down. Can you think of new innovation opportunities using this Innovation Rule?

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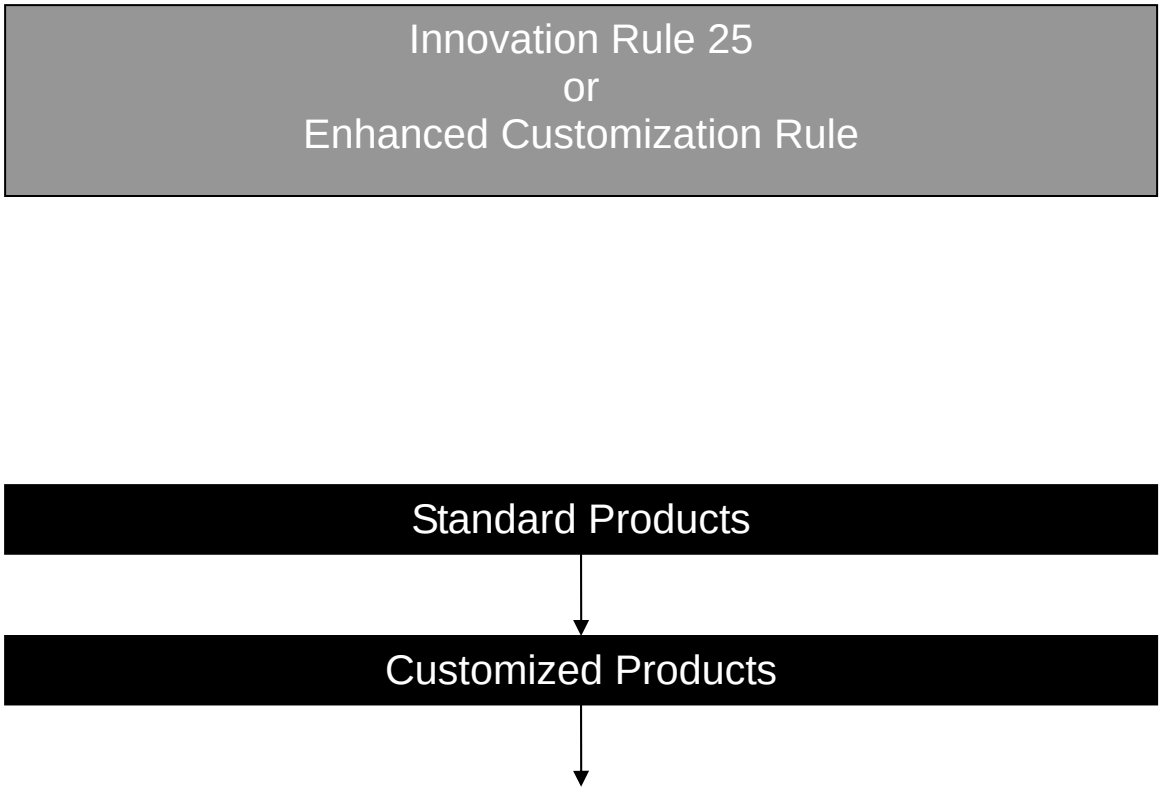
[10] Furby was a toy introduced by Tiger Electronics. See http://en.wikipedia.org/wiki/Furby for more details.
[11] Prius is a hybrid car manufactured by Toyota. See http://en.wikipedia.org/wiki/Toyota_Prius for more details.


Innovation Rule 25
or
Enhanced Customization Rule
Standard Products
Customized Products

Have you bought a personal computer lately? In the early days of personal computer era, we normally visited a computer store and looked at different preconfigured models of computers from different vendors before we made a decision on which model to buy.

All that changed when Dell computers offered enlightened users the option to customize their computers. Suddenly users did not have to buy the computers that the vendors offered. They could decide on the screen type and size, the amount of main memory, the number of gigabytes of disk storage they wanted in their computer and many other options. Letting the customers configure what they want was a clever means of Dell giving customers total control over the products they wanted to purchase.

The new approach introduced by Dell was very successful and those computer makers who depended on wholesalers and retailers to distribute their products were caught flat footed. Dell saved the money they would have normally paid the channel partners and instead passed on some of the savings to their customers by giving them better products for their money.

Dell created several other innovations. They had the customers pay for their purchases first. This reduced pressure on their cash flows significantly. Dell also ensured that the inventories were supplied to the assembly lines just in time. Dell also harmonized their internal processes with those of their suppliers for achieving optimal results.

Can you think of other examples of this Innovation Rule? List them down. Can you also think of innovation opportunities using this Innovation Rule. Please list them down as well.

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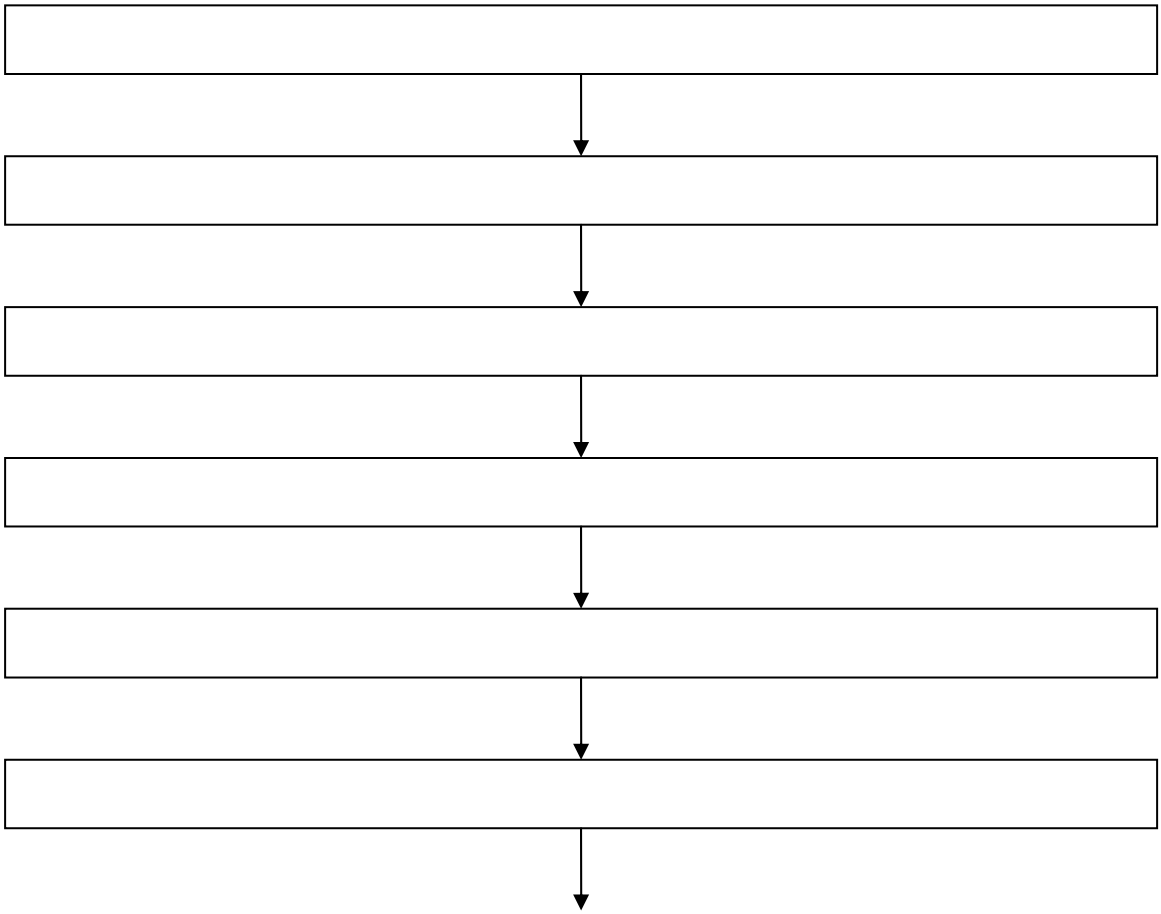
Write Down Your own Innovation Rule 1



Write a description of your innovation rule. Give examples.

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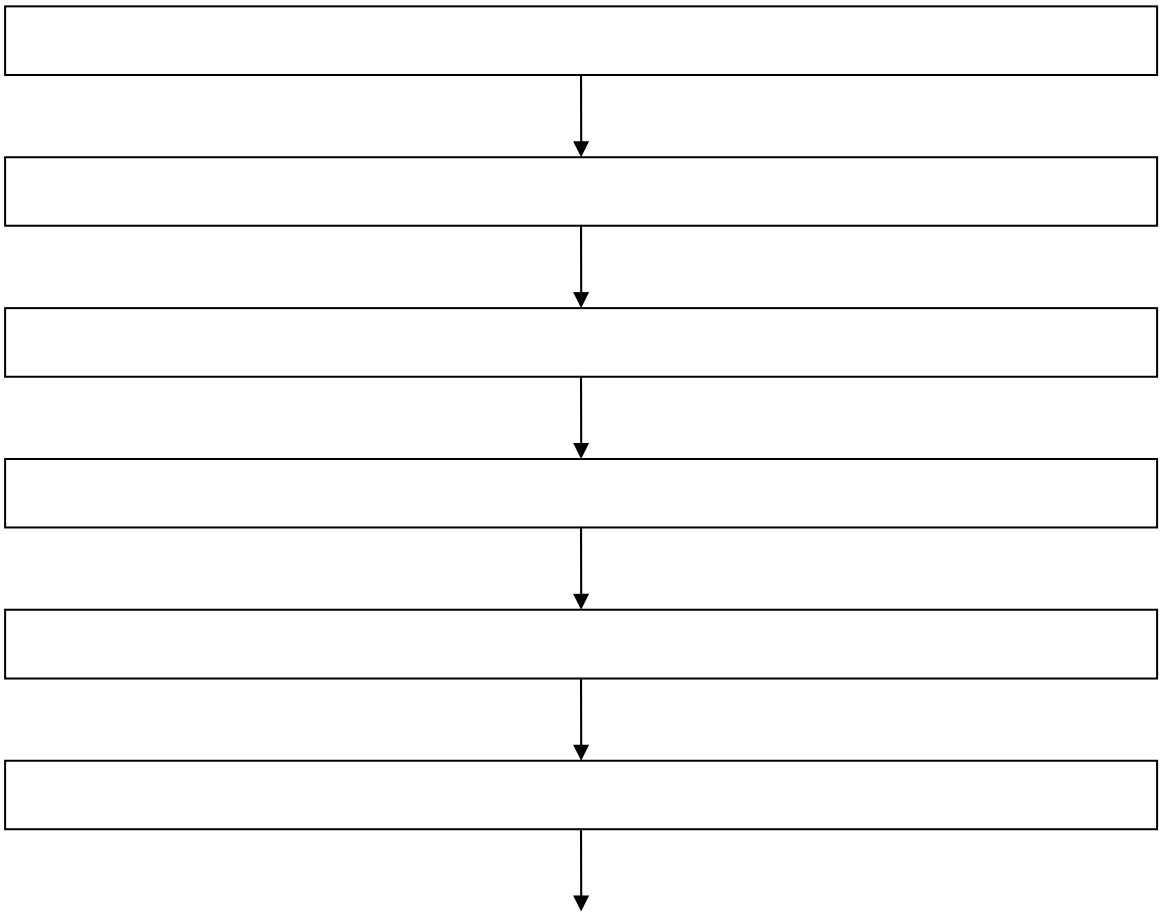
Write Down Your Own Innovation Rule 2



Write a description of your innovation rule. Give examples.

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Innovation opportunities abound in this world. They lie hidden just beneath the surface of the labyrinth of our daily lives. A good method for discovering or qualifying such innovation opportunities will lead to improving our lives significantly.

I defined Innovation Engine to be a finite and step by step method to help innovators identify innovation opportunities of significant promise. This section is dedicated to introducing Innovation Engine in simple terms to you. This method can helps you find golden ideas from all walks of your life.

Innovations fall under two categories. The first category can be called compelling or “must have” innovations. The second category is often called “good to have innovations. In some sense the first category addresses the needs and the second the wants of human society.

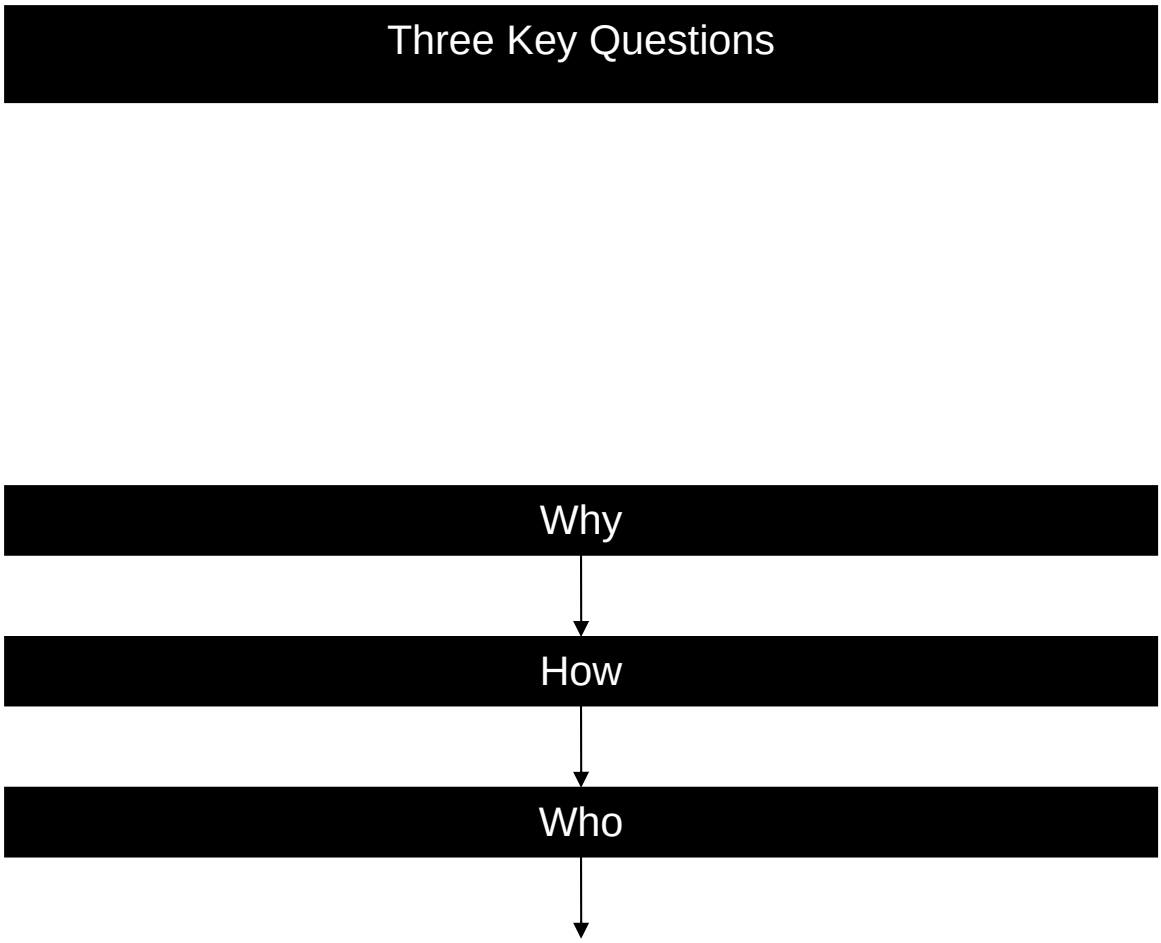
Innovators who can identify innovations belonging to the needs category will have a better shot at creating a new product that could end up as a market leader. Customers, whether consumers or businesses, are generally willing to pay for the products and services belonging to the needs category since it addresses a must have solution. An inventor can easily introduce such a product or service to the market with a small advertisement budget.

Innovations belonging to the “wants” category are often better addressed by market leaders. For example, it is easy for a leader in a television set market to offer a new television set with a larger screen size as compared to a start up company. Such innovations are often incremental in nature and tend to require large sums of advertisement budgets to get the customers’ mindshare.

Pay close attention to how you can identify the most promising innovations belonging to the first category. I hope you can benefit from using the method described in this section and enrich the world and then yourself.

Qualifying Innovations

“**Innovation** is the specific instrument of entrepreneurship. The act that endows resources with a new capacity to create wealth.” Peter F. Drucker


Three Key Questions
Why
How
Who

Whenever someone came to me with an “exciting” new business innovation, I would ask them to consider finding truthful answers to three simple questions.

The first question I ask is in two parts and is largely to do with “why”.

Why would anyone buy your product or service? In other words, this question will help you establish whether there is either a need or want for your product or service.

The second part of the question is “why would they buy this product or service only from you?” This is a powerful question indeed. It makes you think about your unique selling point (USP) and get you to think about how you could erect entry barriers.

The next question I ask them is also in two parts and has largely to do with “how”.

How much will your customers pay for the product or service? The larger the pain or desire for enhanced experience, the higher the sum the customers would be willing to pay.

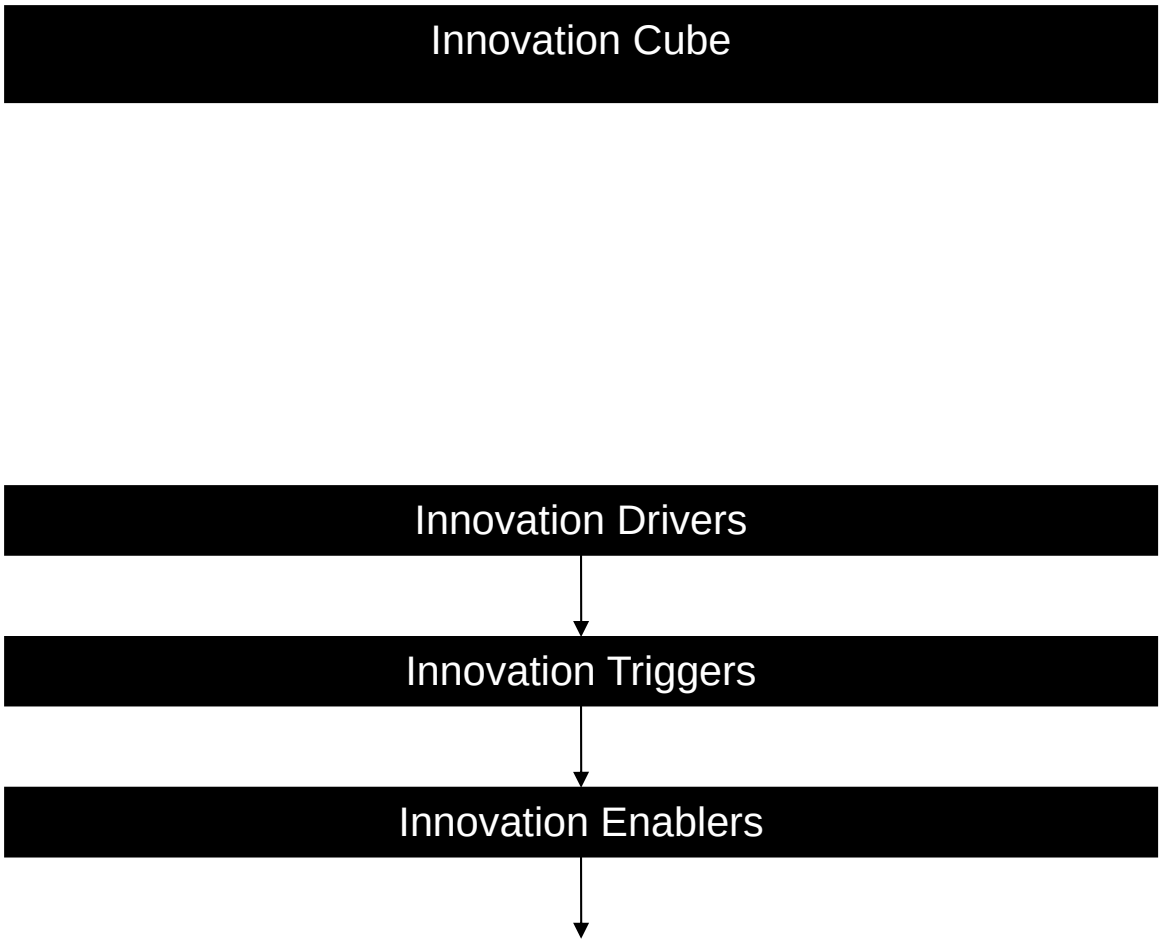
The second part of the question is “How often will they pay?” The answer to this question will help you determine whether there is room for regular revenues.

The last of the three questions addresses the “Who” dimension.

Who will pay for your product or service? The answer will help you determine the size of the market.

A second part of the question could be “From which market segments?” The answer to this question will help you prioritize the geographies and the segments of the markets that you would like to address.

These three questions look simple. However, the answers are not simple at all. If honest answers to these questions are found to be compelling and convincing then you would have identified a good business innovation.


Innovation Cube
Innovation Drivers
Innovation Triggers
Innovation Enablers

I have been blessed with truly exceptional opportunity to get first hand experience in innovation and entrepreneurship. I thought it would be useful to “codify” my experience into a framework so that others could benefit from it. I have named this framework “Innovation Cube”

My approach towards creating Innovation Cube framework was to study successful innovations to identify the attributes they share. Hopefully these attributes can be used to identify new innovations.

The first attribute I identified amongst successful innovations was that they satisfied either a “need” or a “want” of customers.

A need opens up opportunities for new product or service whereas a want often is an improvement over an existing product or service. Need is defined as a must-have solution to a problem faced by a community of customers. Want is defined as good-to-have solution for a group of customers. Either Need or Want is a driver of a successful innovation.

The second set of attributes I identified was market shift and technology shift. I found that some innovations failed despite being a need or a want. In such cases it was clear that the markets and technology were not ready. Hence for a solution to a need or a want to be successful as an innovation I found that the market should be ready and the required technology should be available. I call the market and technology shifts the triggers of successful innovation.

Some innovations had failed despite satisfying the above conditions. On closer examination, it was clear that there were another pair of attributes that determined their success. One was the price point at which the innovation was introduced to the market and the other was the rate at which the innovation attained market leadership. I call them enablers of successful innovations.

I find that innovations that satisfy the innovation drivers, triggers and enablers are often accepted warmly by the market place. The drivers, triggers and enablers of successful innovations are the three dimensions of the Innovation Cube framework.

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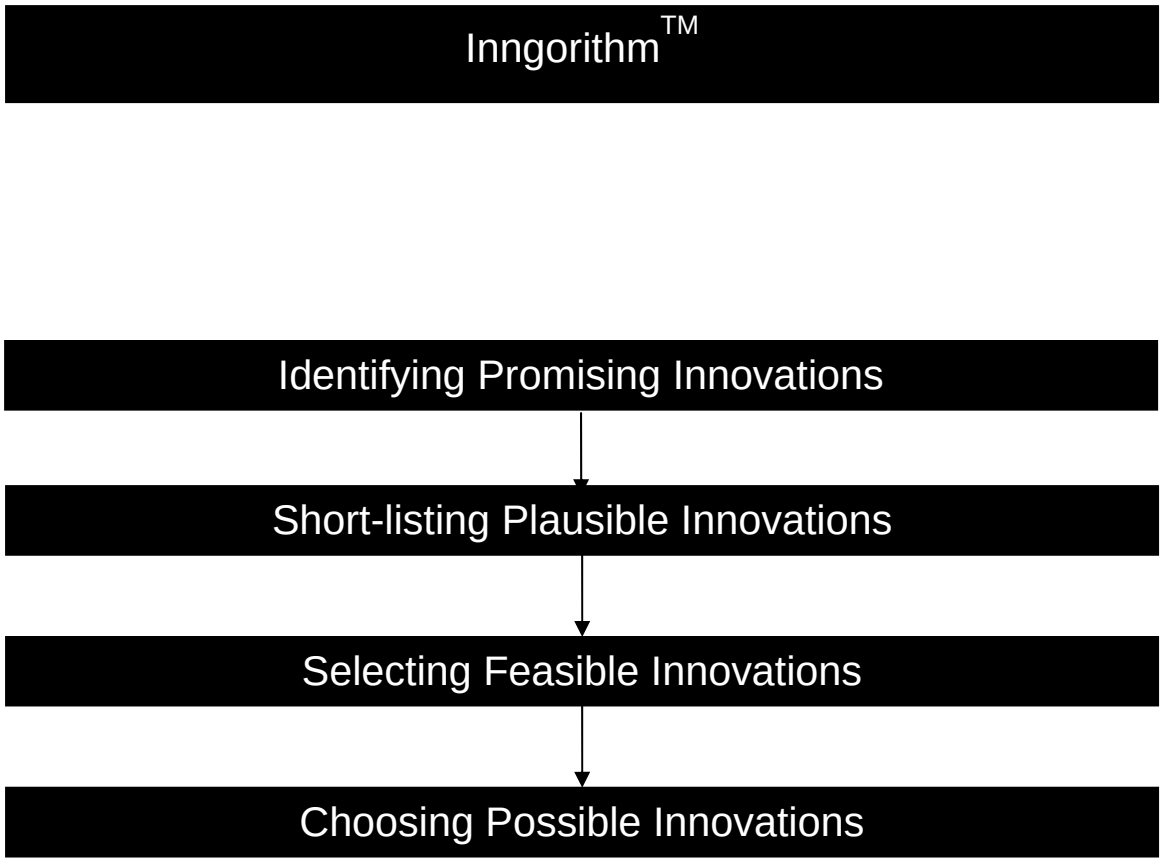
Inngorithm™
Identifying Promising Innovations
Short-listing Plausible Innovations
Selecting Feasible Innovations
Choosing Possible Innovations

Inngorithm refers to the method that can be used to identify successful innovation opportunities. The word Inngorithm was derived by combining the first four letters of Innovation with the last seven letters of algorithm.

Inngorithm has five parts – identifying promising innovations, short-listing plausible innovations, selecting feasible innovations choosing possible innovations and finally qualifying promising innovations.

The first part of Inngorithm uses Innovation rules and the pain pleasure dimension of the Innovation Cube framework to generate a list of promising innovations. This list has to be scrubbed to produce a short list of plausible innovations.

The second part of Inngorithm uses the market readiness from the innovation trigger dimension and the adoption hurdles to reduce the list of promising innovations to plausible innovations.

The third part of Inngorithm uses the technology shift from the innovation trigger dimension of the Innovation Cube framework to identify feasible innovations.

The last part of Inngorithm uses the innovation enabler dimension of the Innovation Cube framework to generate a list of possible innovations.

The list of possible innovations will have to further be prioritized for investment purposes and that will be taken up later.

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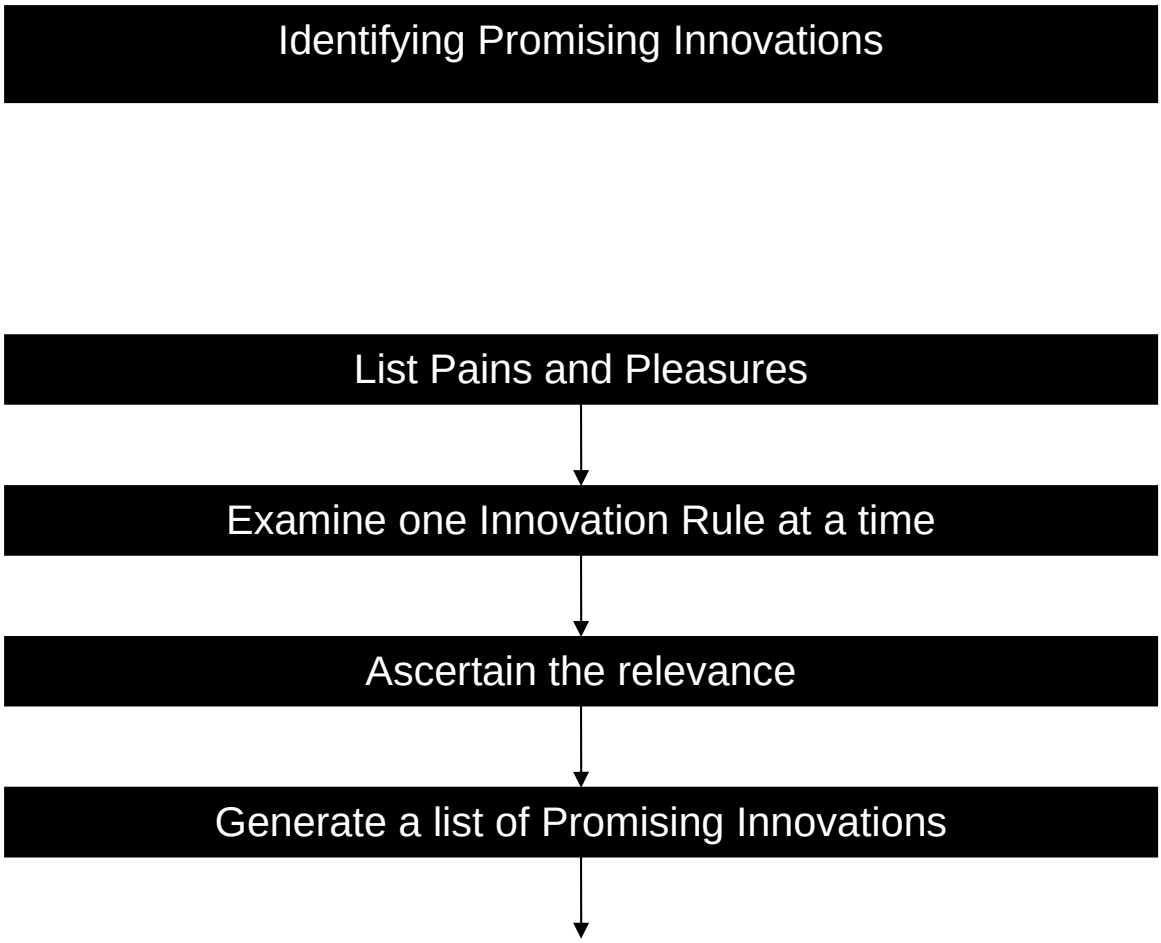
Identifying Promising Innovations
List Pains and Pleasures
Examine one Innovation Rule at a time
Ascertain the relevance
Generate a list of Promising Innovations

Let us discuss how we can use the Innovation Cube framework and the Innovation Rules to identify a list of promising innovation opportunities.

You can start by creating a list of pains suffered by the customers that is ordered with the pain listed on the top being the severest and suffered by largest number of customers. Add to this list the pleasures / enhanced experiences sought by customers and once again order it such that the pleasure listed on the top is the most sought after by the largest number of customers.

You should then consider one innovation rule at a time. For each innovation rule determine the current stage of innovation and whether the next stage of innovation will address the pain. If the next stage of innovation will address either a pain or a pleasure in the list, then it is certainly a promising innovation opportunity.

Let us consider innovation rule number 10. You can start with any current innovation in the market, look at the pains that a subset of customers using that innovation might be suffering from and discover an innovation opportunity. Start with an original innovation such as fishing lines. There are some people who like to fish during night times and fishing lines are not visible during night time. As a result, small boats or animals may stray into a fishing line. The night fishermen themselves may wish to know where the line is leading to. For these reasons, a promising innovation opportunity is luminous fishing lines.

Do not be surprised if none of the pains or pleasures is addressed by the chosen set of innovation rules. It may just mean there is a new innovation rule is waiting to be discovered by you or there is probability no innovation opportunity at present.

Identifying an innovation opportunity is only the beginning. Translating an opportunity into a product or service is not always simple. We will discuss the issues related to execution in later parts of this book.

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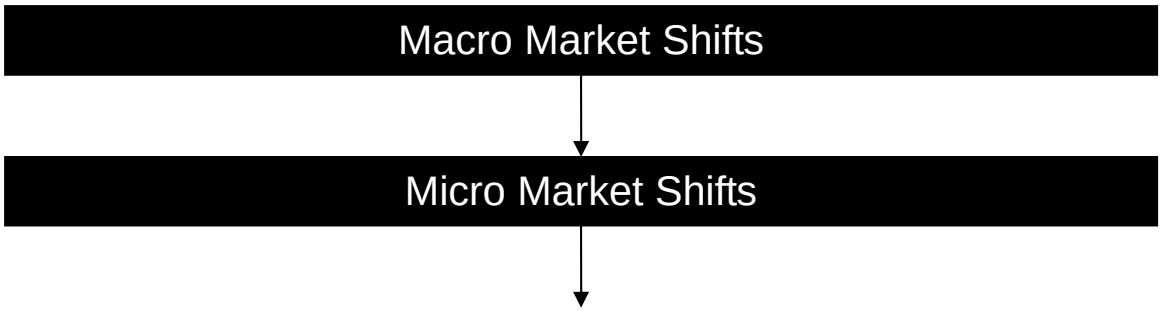
Examples of Market Shifts



We need to gain some understanding of the concept “market shift” before we can proceed to short-listing plausible innovations. Market shifts can be at either Macro or Micro level. Let us discuss each of them in some detail.

Macro market shifts have large scale, typically global impact. One category of macro market shift is new regulations or deregulations. For example, when the telecom sector was deregulated it created tremendous opportunities for new entrants who could create innovative business models for competing with the incumbents. Another example of macro market shifts are e-tailing (electronic retailing) where people could buy and sell goods and services without leaving the comfort of their homes. Ageing, environment friendliness (green movement), and global warming are some other examples of macro market shifts. Such macro shifts have a universal impact on a number of countries.

Micro market shifts on the other hand are often local. The improved literacy of women in a generally male oriented country is an example of micro market shift. Another example will be the rise in the size of middle income earners in countries such as India and China. Computer literacy, desire for branded goods, and increased filial piety are other examples of micro market shifts. Regulations specific to a country is another example of a micro market shift.

Market shifts in general offer opportunities for innovations. They trigger new innovations for the global or local markets. Innovators should keep a constant vigil for market shifts and leverage the shifts for creating new innovations.

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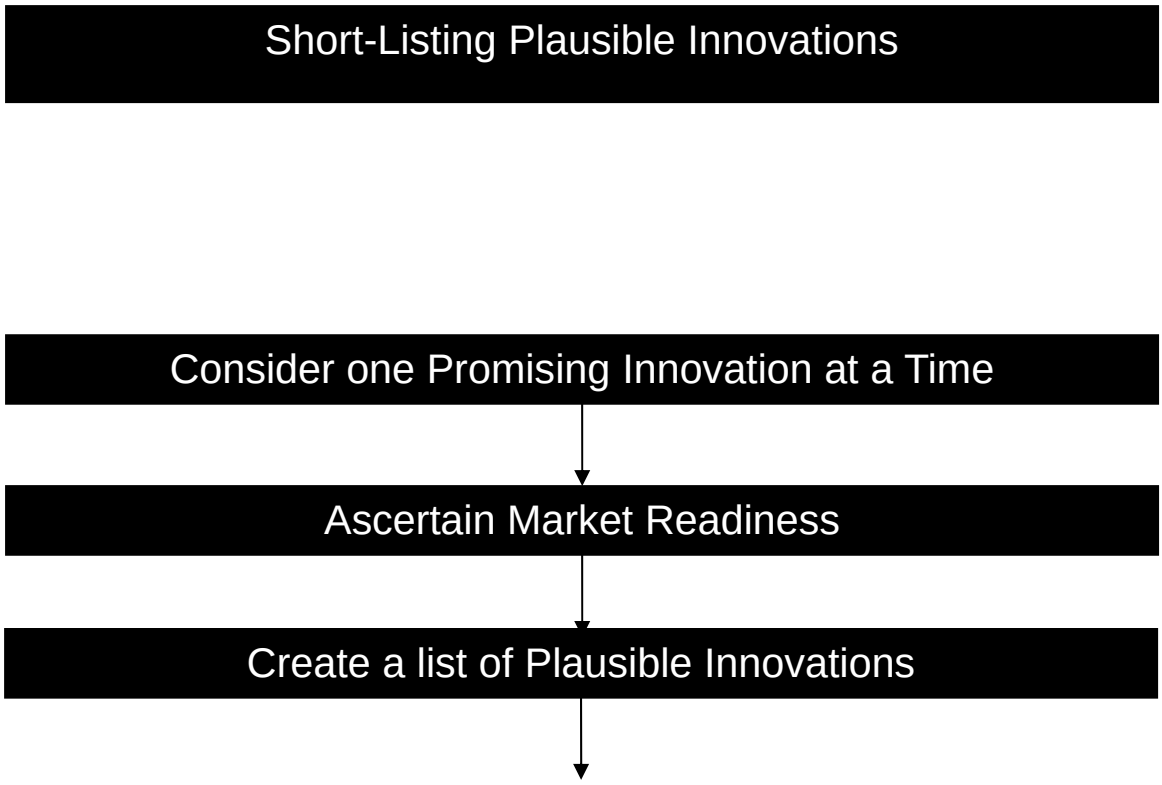
Short-Listing Plausible Innovations
Consider one Promising Innovation at a Time
Ascertain Market Readiness
Create a list of Plausible Innovations

We had earlier identified the luminous fishing line for night time fishermen as a possible innovation opportunity. Let us examine whether we could short list this as a plausible innovation.

Let us examine whether there are enough night time fishermen. Firstly, anyone watching television serials such as Lobster Wars[12] or Deadliest Catch[13] can easily see there is massive night time heavy duty fishing activity. These are professional or enterprise markets. However, it would be useful to find out whether luminous lines, either fishing or in their case ropes, would be of use for such fishermen. A quick check with the captains of such boats would validate the need for such an innovation.

Secondly, one could talk to amateur fishermen who go crab or crayfish fishing at nights. They are likely to be more in numbers than the professional fishermen.

If the total of these two markets is big enough then the innovation should be considered seriously. If the numbers are still small it would be better to wait for more professional or amateur fishermen take to night time fishing. Such increase in night time fishermen would be a market shift.

The adoption hurdle could appear if one uses toxic material for achieving luminescence. There should not be any adoption hurdle otherwise since the innovation is neither immoral nor illegal nor unethical. It will not cause any new inconvenience or damage to either human beings or creatures of the sea. Hence, one needs to only ensure that the material used is non-toxic to clear the adoption hurdles.

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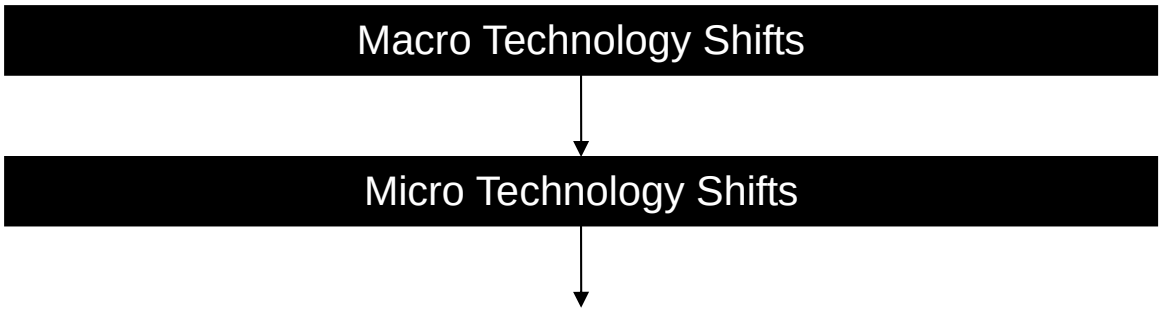
[12] Lobster Wars is a television serial on lobster fishing.
[13] Deadliest catch is a television serial on Alaskan King crab fishing.

Examples of Technology Shifts



It is important for us to understand the meaning of “Technology Shift” before discussing feasible innovations.

Universities and Research Labs around the world pursue basic and applied research for new discoveries and technology innovations. A number of engineers tend to first create technology innovations and then search for the problems that can be solved using the technologies.

Let us take the example of LCD displays. Large panel LCD displays were invented to address the television market. However, it was the MP3 player and Mobile phone manufacturers who ended up being the largest consumers of that technology.

Macro technology shifts that those which affect the world at large. An example is the Internet. Another example is the mobile phone.

Micro technology shifts are those which affect only one or two products. An example of a micro technology shift is an improved audio device for hearing aids. Another example is an improved lens technology for underwater cameras.

Macro technology shifts create market tsunamis of significant impact. Micro technology shifts create small ripples in limited markets.

Macro technology shifts give rise to a plethora of product innovation opportunities whereas micro technology shifts often lead to sustaining or incremental innovations.

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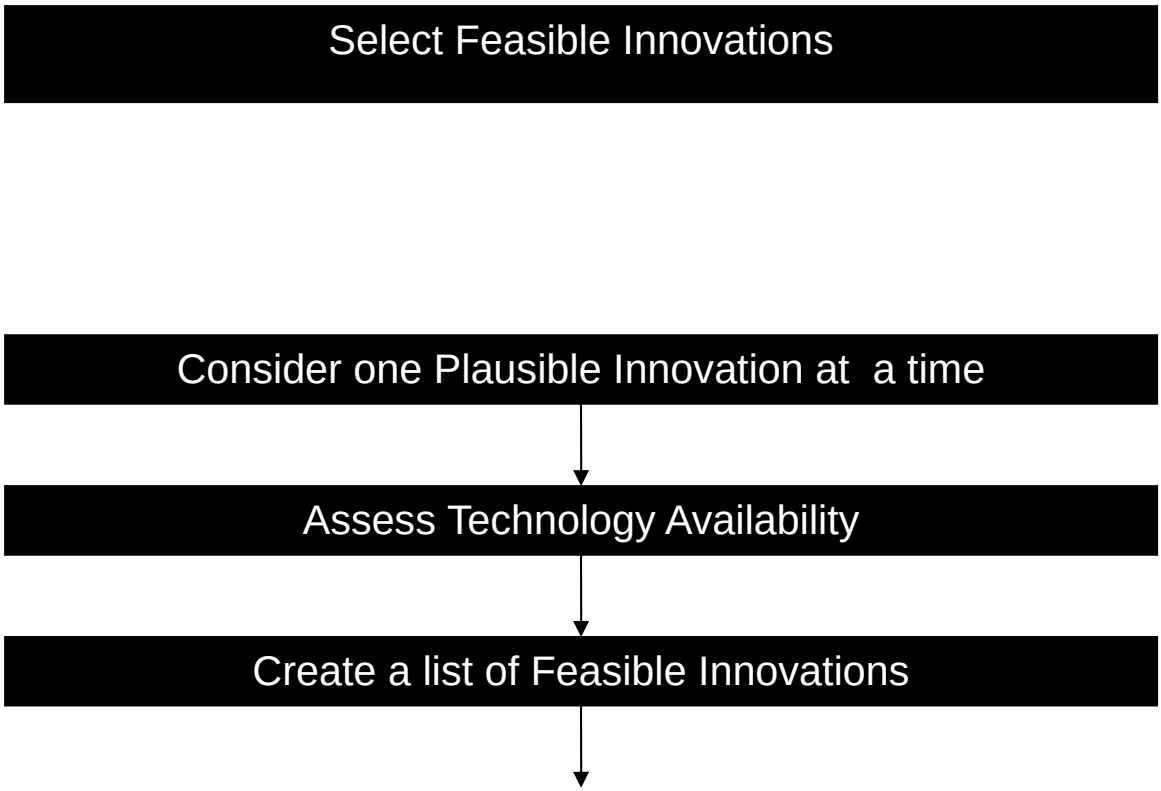
Select Feasible Innovations
Consider one Plausible Innovation at a time
Assess Technology Availability
Create a list of Feasible Innovations

The most recent section of Innogorithm generated a list of plausible innovations. We will extract feasible innovations from the plausible innovations in this section.

Let us go back to the discussion about the luminous lines for fisherman. Once the fishermen of the world interviewed have unanimously agreed that there was indeed a great benefit from such luminous line then it is important to check out whether the technology for creating this product is available.

If the technology for a plausible innovation is available then such an innovation is selected as a feasible innovation.

The question then is what should one do if the technology is not available? There are two possible approaches, one reactive and the other proactive.

If one is really very busy with creating other business innovations then it would be prudent to put this innovation on the backburner and wait for the necessary technology to come along. This is obviously a passive or a reactive approach.

The other approach would be to find a technology development partner to create the required technology. It would generally not be advisable to undertake the technology development in house even in the case of large companies. The early development is best carried out in partnership with an academic partner. It is important to reward the academic partner appropriately, either by giving them immediate or deferred rewards.

I would personally recommend the second approach.

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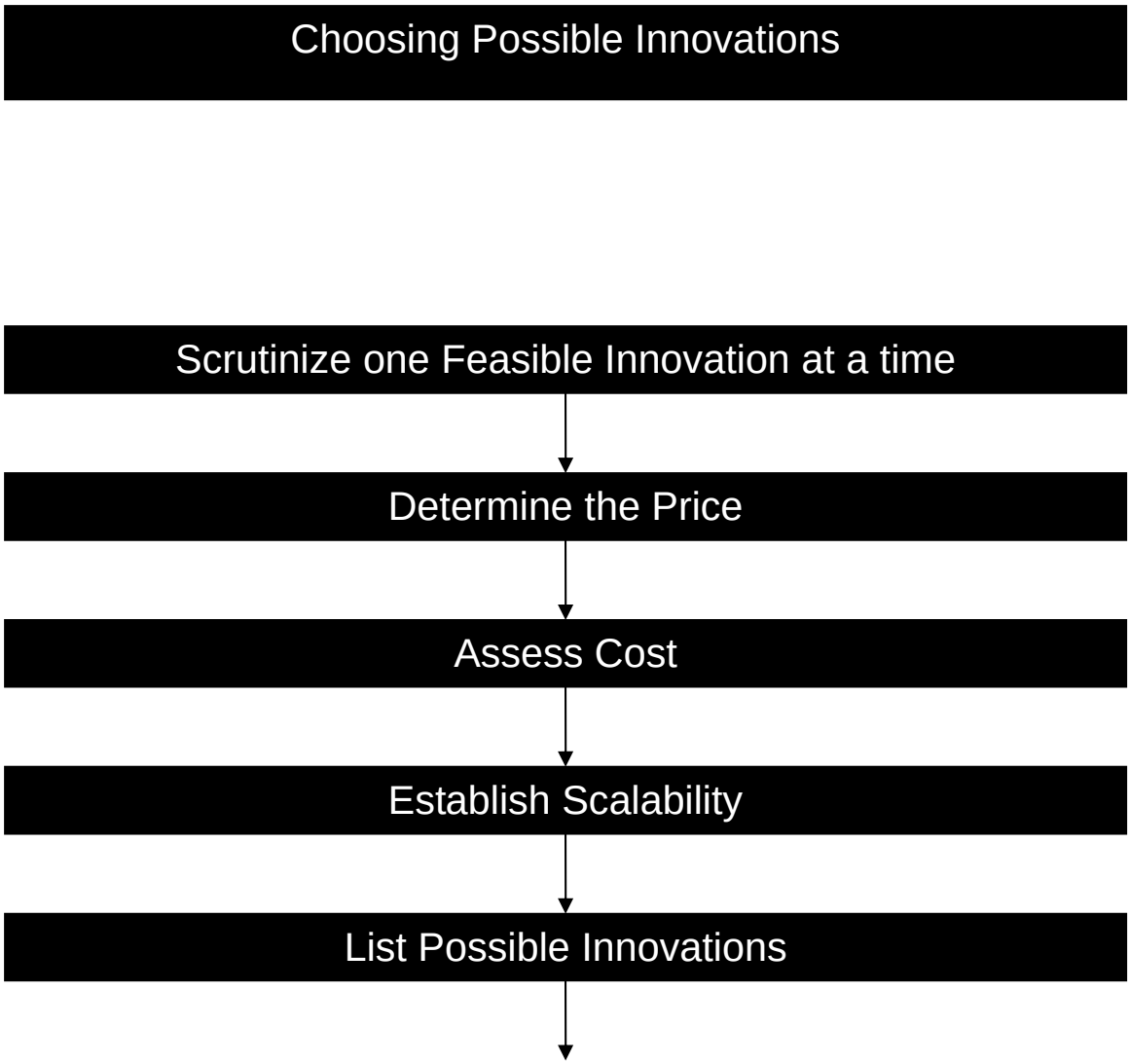
Choosing Possible Innovations
Scrutinize one Feasible Innovation at a time
Determine the Price
Assess Cost
Establish Scalability
List Possible Innovations

Once we have a list of feasible innovations the next step would be to further narrow down possible innovations. There are three major aspects to be considered herein – cost, price and scalability.

It is first important to determine the price the markets would pay for a feasible innovation. This sets the upper bound for the product or service innovation in terms of price. One can ascertain the price either by direct or indirect means. Direct means will be to ask those who had expressed an interest in the product or service on a range of price they would be willing to pay for the innovation. Indirect means will include finding a proxy in the current market and use it as the basis to derive the price the market will be willing to pay for the innovation.

Once having determined the price that the markets are willing to pay, it is important to ensure that the product or service can be manufactured at a cost that offers significant margins in the early stages of the innovation's life cycle thus providing for reduced profit margins in the later years. It is for this reason an innovation with an initial razor thin margin may not be sustainable under competitive pressures.

The last aspect to consider is the innovator's ability to fulfill the perceived market demands. It is important that an innovator is able to become the Gorilla of the target market and not let the competition become a market leader. Hence, issues such as availability of raw material, parts and other elements required to create the innovation and the ability the manufacture them in the required scales and deliver them to the customers in good time are all aspects that need to be thought through thoroughly before deciding the proceed with an innovation.

A feasible innovation that satisfies the price, cost and scalability is ready to be labeled as a possible innovation. It is at this stage one can become confident that they have the makings of a successful innovation.

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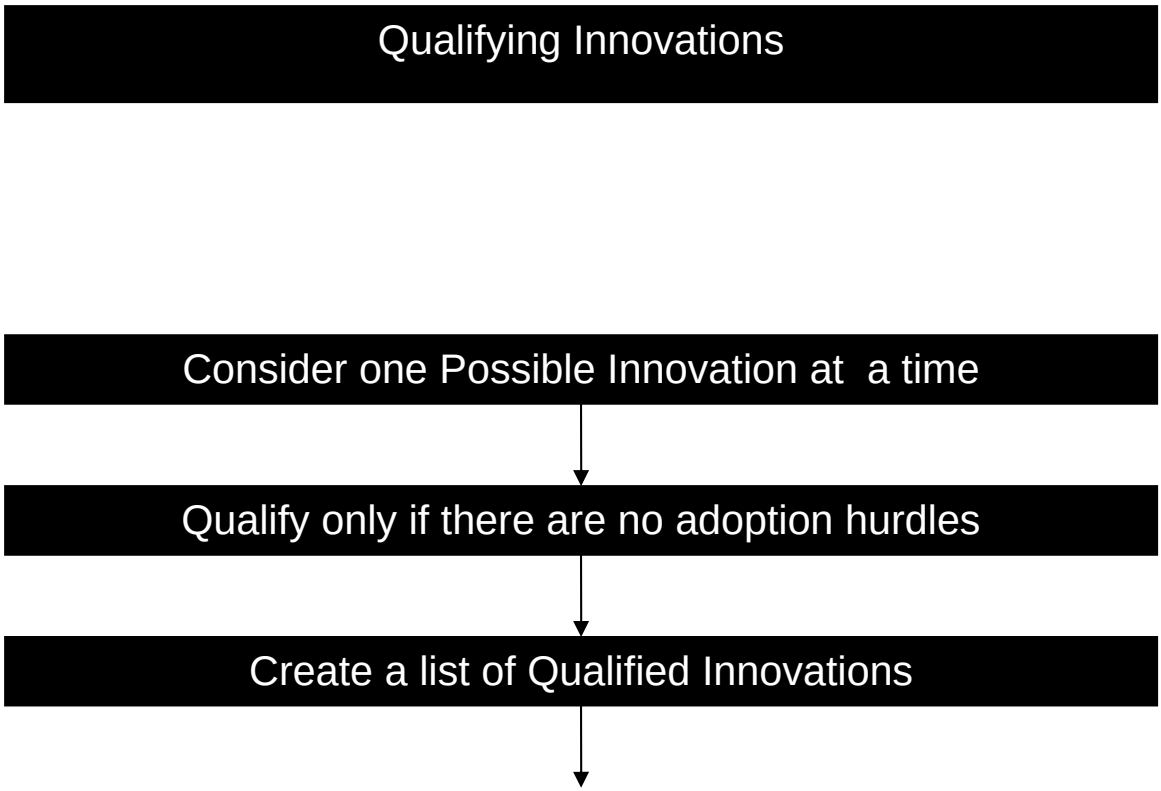
Qualifying Innovations
Consider one Possible Innovation at a time
Qualify only if there are no adoption hurdles
Create a list of Qualified Innovations

Once you have generated possible innovations run them through some form of litmus tests to see whether they would face any adoption hurdles.

Adoption hurdles could arise due to several reasons including moral, ethical, social, and educational dimensions. It is important to understand that even the best of innovations will not become commercially successful if the consumers do not accept if for any reason.

It is therefore important that every possible innovation be examined against a list of potential adoption hurdles. A possible innovation becomes a qualified innovation when it does not face any adoption hurdles.

Qualified innovations offer the potential to create successful entrepreneurial companies.

This section is written especially for first time innovators and entrepreneurs.

You may often be faced with the pleasant challenge of deciding which of the several innovations opportunities you have identified ought to be commercialized first. This requires some means of prioritizing the innovation opportunities based on factors that will determine the likely success of bringing them to market at the earliest possible time with the least challenges.

There are at least five factors that you should consider in prioritizing the innovations for commercialization. They are return on capital invested, reuse of available technical and other resources, the amount of capital required to bring an innovation to market, the time taken to bring the innovation to market and the risks in commercialization.

Each of these topics is dealt with at some length in the following pages. Please read them carefully and use them to plan the commercialization of your innovations.

Commercializing Innovations

“We must beware of needless innovations, especially when guided by logic.” Winston Churchill


Commercializing Innovations
Evaluating Returns
Ascertaining Reuse
Determining Attractiveness
Assessing Time to Market
Mitigating Risk
Innovations for Commercialization

Once we have identified qualified innovations, it is important to decide which of the qualified innovations should be commercialized first.

This process involves five features or considerations.

The first consideration is to ensure that there is adequate return on investments. Every innovation chosen for commercialization ought to have healthy return on investment. It is best not to pursue those that do not promise reasonable return on investment.

The second consideration is to determine whether some of the existing resources could be reused for the manufacturing of the innovation.

The third consideration is to guide the innovator in picking the most attractive of the possible innovations for commercialization.

The fourth consideration is to determine the time it would take to bring a possible innovation to market. One has to think very long and hard to assess whether to commercialize an innovation that might take too long to bring to market.

The last consideration is to ensure that all risks are identified and managed. This is also the step where one should plan a mitigation strategy for any identifiable risks.

Each of these considerations will be discussed in some detail in the next four sections. These important considerations do not have to be sequenced. One can decide whether to create some form of function out of it or to arrange them in a sequential manner. We recommend it is best to use the five considerations and establish a scoring system to pick the innovation(s) for commercialization.

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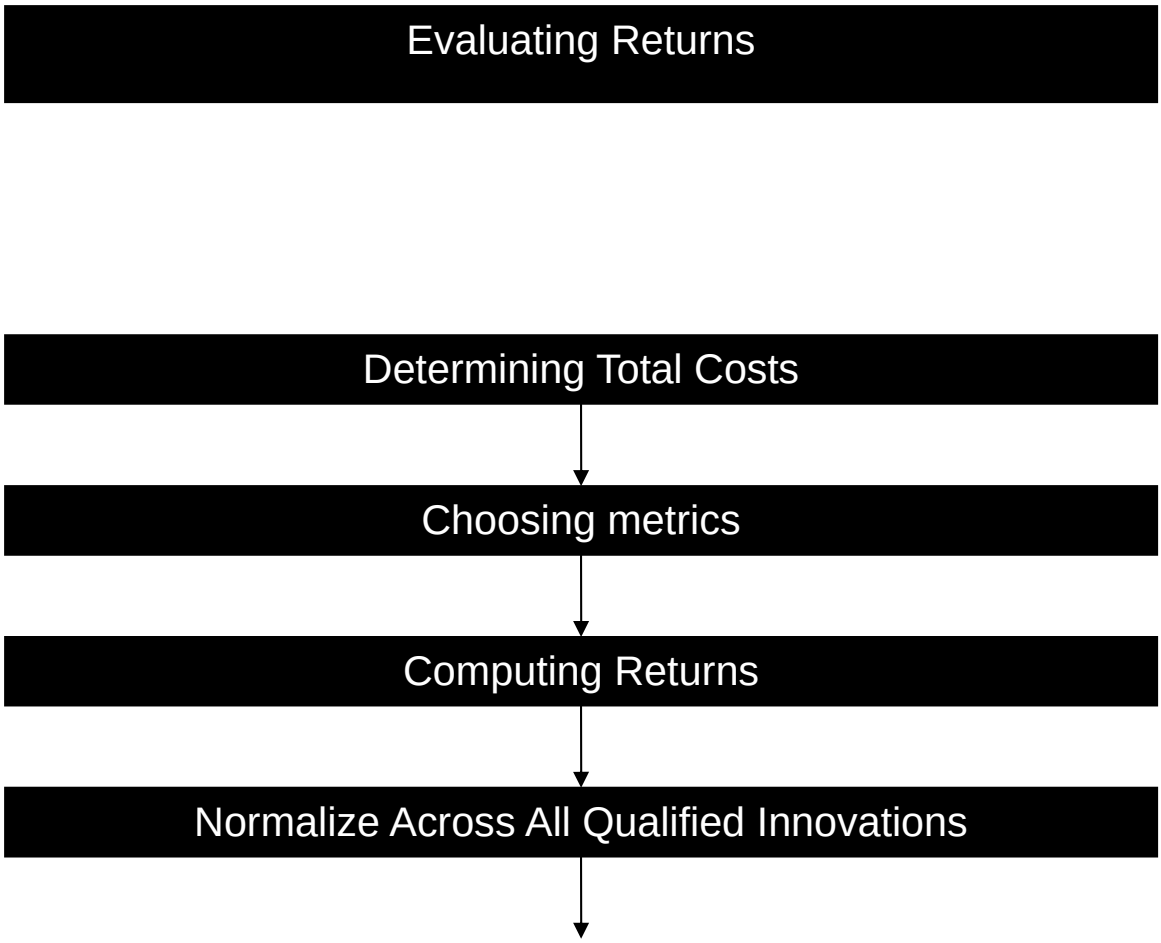
Evaluating Returns
Determining Total Costs
Choosing metrics
Computing Returns
Normalize Across All Qualified Innovations

Often first time innovators do not take into account total costs involved in bringing an idea to market. The “idea to market” process will include the following costs.

- Human capital, Prototype development, Marketing and Sales costs, Logistics cost, Intellectual Property protection costs, Cost of establishing channels, Travel costs, Insurance and many more.

If you are a first time innovator or entrepreneur it is important that choose the appropriate metrics for evaluating returns. Return on Capital Employed, Net Present Value and Internal Rate of Return are some of the metrics often employed to assess the wisdom of launching a product in a company.

Returns should be calculated for all the innovations under consideration using the chosen metric.

You should next normalize the returns based on the total costs involved. It may turn out that two innovations yield the same return and one of them requires lesser investment than the other. Normalizing the returns with respect to the total costs and sorting the innovations on a descending order of normalized returns will yield an ordered list of innovations such that the innovation at the top of the list would be the most attractive.

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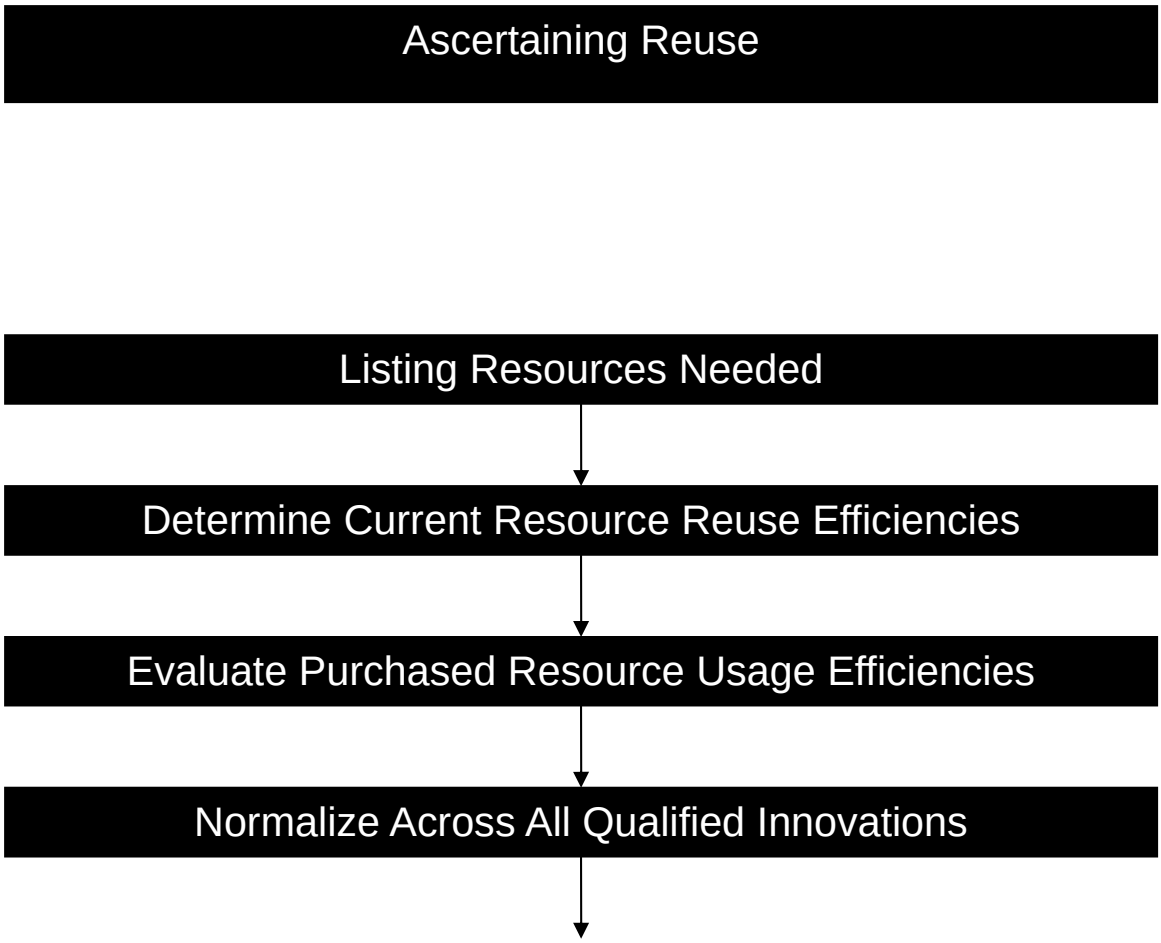
Ascertaining Reuse
Listing Resources Needed
Determine Current Resource Reuse Efficiencies
Evaluate Purchased Resource Usage Efficiencies
Normalize Across All Qualified Innovations

There is often a tendency amongst the first time entrepreneurs to buy new equipment of all sorts for developing their innovation. While this should not be ruled out, it makes immense sense for you to consider efficient use of resources. Resources could include human capital, equipment, channels and office space.

You will find that the following guidelines can help you in managing your resources most effectively.

1. First check whether existing resources can be reused for building the new innovation.
2. If you do not have the required resources, check whether you could hire / rent / lease the required resources. The suggested process could include outsourcing the parts and retention of control over the final assembly.
3. If for some reason you need to acquire a new resource check whether you could use the resource for more than one purpose. The more you can benefit from a new resource the more effective your organization can be.

The above rules appear simple and obvious. However, they are often not practiced by those developing innovations.

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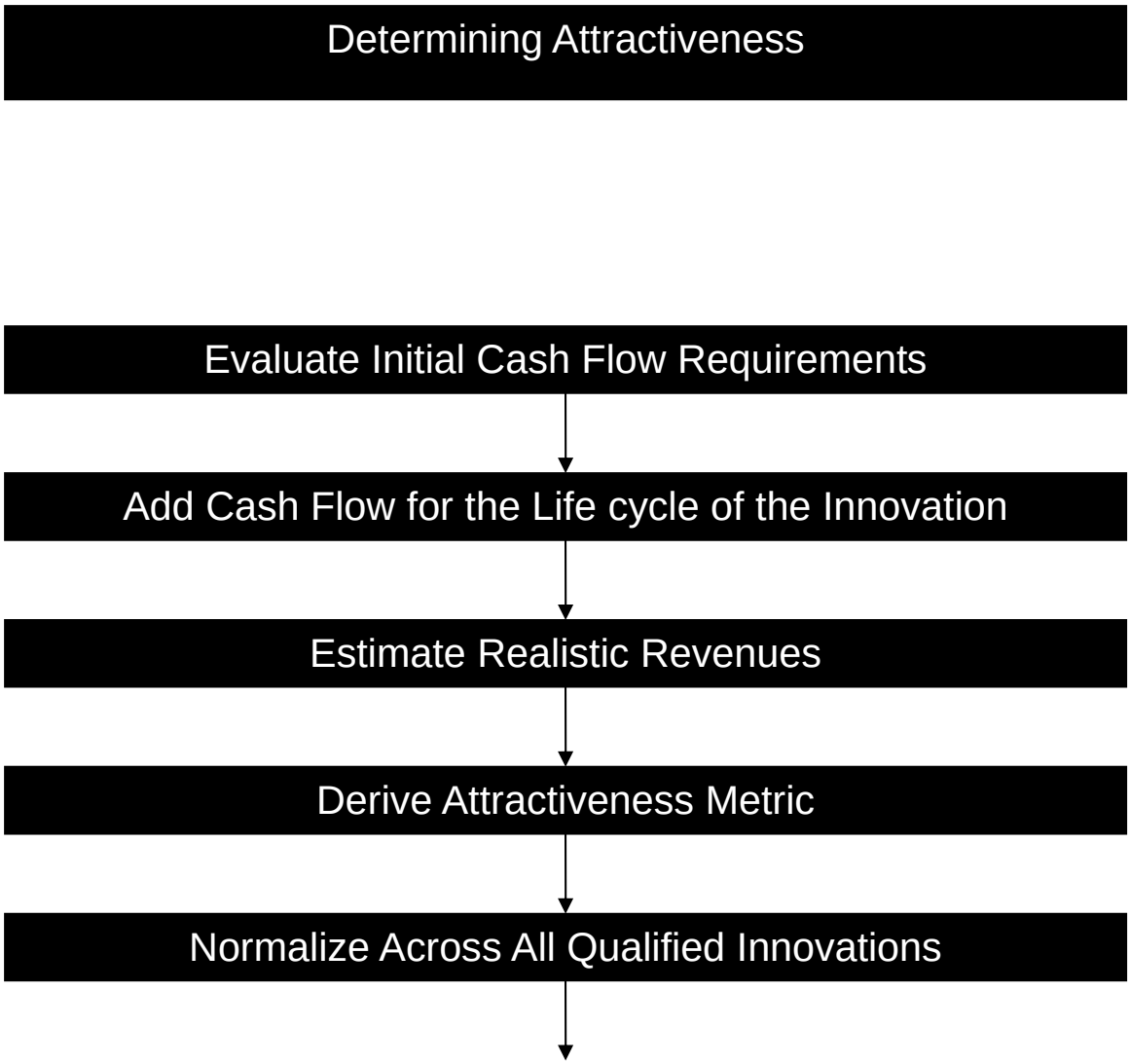
Determining Attractiveness
Evaluate Initial Cash Flow Requirements
Add Cash Flow for the Life cycle of the Innovation
Estimate Realistic Revenues
Derive Attractiveness Metric
Normalize Across All Qualified Innovations

A number of innovations do not reach the customers because of poor cash flow planning. You should not fail to do a proper cash flow planning for determining the attractiveness of an innovation.

You should establish the true cost of developing an innovation. Such an assessment would require an in depth understanding of a product development process and knowledge of the costs of materials and services required for the development of the innovation. It would be wise for an innovator to engage a product development maven in the industry to help assess the initial costs.

You should then ascertain the cost of manufacturing, distribution, marketing and sales as accurately as possible. Again, a product marketing maven from the respective industry will come in most handy.

You should thereafter make an honest assessment of the life cycle of the qualified innovation identified for commercialization. The costs should include all costs involved in the life cycle of the innovation including expansion into new geographies.

You should also be very very realistic in the revenue estimations over the life cycle of the innovation. Realistic estimates result in the formation of promising start ups. Investors often use a thumb rule which is to double the time taken and resources consumed to develop the innovation and to halve the projected revenues.

Finally, you should take all qualified innovations and normalize them with respect to some criteria. Criteria for normalization could include estimated total cost of development and the amount of capital that can be raised in the environment where the innovation is being developed.

List all the qualified innovations according to the descending order of attractiveness and choose the top three to five innovations. These qualified innovations merit further consideration for commercialization.

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Assessing Time to Market
Establish List of Suppliers
Determine Lead Times
Provide for Contingencies
Determine the Most Likely Release Time
Normalize Across All Qualified Innovations

The top four of five short listed innovations should now be evaluated for time to market.

You should first determine the list of component or subsystem suppliers. It is best to have a large number of suppliers from whom the components and the subsystems could be bought. Competing suppliers will ensure lower costs and reliable alternative sources of supply.

You should then consider the lead time required by each of the suppliers. The sooner a supplier can get the required supplies to the innovator, the smaller would be the time to market.

You should also plan for contingencies. Ask yourself what might or could go wrong with the suppliers. Cross border trade spats can easily affect the supplies. Hence, when choosing multiple suppliers, ensure that they are located in different countries thus reducing any potential disruptions in supply chains from any one country.

Always factor in additional buffer time in planning the development of the qualified innovations. It is important that you make such provisions in order to accommodate unexpected events.

Armed with all this information you can now make a realistic estimate of the most likely release time of the four or five qualified innovations.

You can now normalize the shortlisted qualified innovations with respect to the time to market. All things being equal the innovation that can be released to the market quickest should be the one chosen for commercialization. Normally, all things are never equal. Hence it is important to establish rules for trade off. While a qualified innovation may be the quickest to market, if the challenges in raising all the capital required is difficult then you should choose the one that requires lesser effort for raising capital.

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Mitigating Risks
List Anticipated Risks
List Risk Mitigation Plans
List Confidence Factors
Derive Risk Management Metric
Normalize Across All Qualified Innovations

The final step should really be risk management. You should list all possible risks for the qualified innovation chosen for commercialization in a very objective and methodical manner.

The probability of occurrence and the likely impact caused should be listed for each of the identified risks. This should be followed by a proper risk management process.

The high probability of high impact risks should be actively analyzed and all the required steps should be taken to avoid, minimize or manage them.

The high probability low impact risks are generally tolerated if the impacts are not likely to affect successful launch of the innovation. They are actively managed otherwise.

The low probability high impact risks merit contingency plans. These plans will outline the trigger conditions and the responses required in case such a risk comes into play.

The low probability low impact risks are often recorded for information. There is generally not much attention paid to this category of risks.

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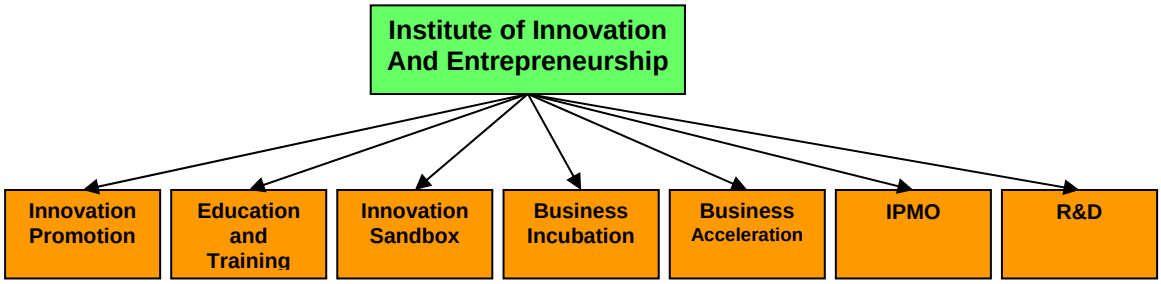
End note

We hope you have learnt something new about how to identify, qualify and prioritize business innovations. We sincerely hope that you would apply the knowledge that you have gained by reading this booklet and enrich this world by creating innovations that benefit human and other societies. We also hope in so doing, you will end up enriching yourself not only with material wealth but with inimitable knowledge and experience that can only be gained by creating products and services.

About IIE

The Institute of Innovation and Entrepreneurship (IIE) has been set up to create and grow innovation and entrepreneurship culture amongst Singapore Management University's students, staff and faculty. IIE is organized into Innovation Promotion, Innovation Sandbox, Business Incubation, Business Acceleration, Joint projects, Intellectual Property Management and Innovation and Entrepreneurship training functions.



The innovation promotion function encourages more students, staff and faculty to take up innovation and entrepreneurship as a career alternative. Innovation and entrepreneurship training functions trains aspiring innovators and entrepreneurs in identifying globally scalable business innovations and build companies using those innovations. Innovation Sandbox supports proof of concept development. The business incubation function helps in building new start up companies. IIE works closely with several early stage venture capitalists to help its start up companies with business acceleration. IIE has established an affiliate program for working with academic institutions such as polytechnics, individual researchers, Small and Medium Enterprises and larger Enterprises.

IIE works with the different schools of SMU to support their academic programs. It works closely with the School of Information Systems on the school's technopreneurship track and with the Lee Kong Chian School of Business on the schools entrepreneurship track.

IIE aspires to become a leading research and practice center for innovation and entrepreneurship in the region.

Log on to http://www.smu.edu.sg/institutes/iie for more information on our Institute and look out for new initiatives and schemes.

Institute of Innovation & Entrepreneurship (IIE)
Singapore Management University
Administration Building
81 Victoria Street, Level 9
Singapore 188065

Contact: (65) 6828-1991 / iie@smu.edu.sg

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