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Economics and Management of Innovation Simple (for real)

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# Course introduction

The course will be focused on innovation, ecosystems innovation and different sources/types, firm strategies/competition and case studies.

Innovation as a concept is the perception of something different given to customers and people, having a competitive advantage over old ideas and marking a difference for customers and their relationships. This is made creating products and services, targeting customers overtime and helping the existing ones.

The City Vision event (present in the course schedule) is important, can give bonus points if one goes to it. It’s present on the end of Moodle in the “Events” section. If one manages to be present at least 1.5 h. into the City Vision event, one can get 1 point for the exam (*at least, we were told so*). Remember to sign before entering and signing before going out. Link to the event: <https://city-vision.it/evento/city-vision-2023/>

Key points about inquiring with startups:

1. Founding team
2. Where did the idea come from
3. Main obstacles
4. Main facilitators

About the exam:

**FOR ATTENDING STUDENTS**

The final exam consists of two parts.

1. The first part consists of a written test which includes 3 open questions on the content of the textbook. Each question will be evaluated with a maximum of 8 points.

2. The second part includes one group-work ppt presentation of 8-10 slides (evaluated with a maximum of 8 points). The presentation of the teamwork (composed of possibly 5 students) is made by companies.

* Suggested structure of the presentation:
  + Team name and list of the group members
  + Analysis
  + Results
  + Critical thoughts
  + References

Details on point 2 are available on the Moodle Platform in due course.

To form a group, there is a “Build your team” link.

**FOR NON-ATTENDING STUDENTS**

The final exam consists of a written test which includes 4 open questions on the content of the textbook. Each question will be evaluated with a maximum of 8 points.

# Introduction (Chapter 1)

Innovation stands as a pivotal element in shaping the success of competitive endeavors. Swiftly introducing novel designs, shortening production cycles, managing product lifecycles, and effectively segmenting the market into niche categories can catalyze substantial change and capture global attention. Many times, innovations serve as the differentiating factor that sets industries apart, allowing them to carve a unique niche in the market and make a notable impact across the world.

Information technology advancements have accelerated innovation very much, expediting design processes and reducing production timelines. This synergy between innovation and information technology results in shorter product lifecycles, facilitating swift product launches and fostering diverse market segmentation. Consequently, a broader array of goods and services can be distributed to a global audience.

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Descrizione generata automaticamenteSuccessful innovation requires specific strategies and implementation processes, crafting an *innovation funnel*, a pipeline starting from the idea generation, then accompanying the screening idea, concept development, testing, analysis and commercialization.

Specifically:

1. Foundations of Technological Innovation
   1. Sources of innovation (internal/external)
   2. Types and patterns of innovation (product/process/business model)
   3. Battles to assert industry dominance
   4. Timing of entry in the market
2. Formulating Technological Innovation Strategy (part 1)
   1. Define the mission core, the overall vision and the strategic intent to reach
   2. Choosing innovation projects, a portfolio of new ones, studying risks and decision-making stages
   3. Collaboration strategies, between partners of various kinds and alliances
   4. Protecting innovation competitively, having defensive strategies and creating patents
3. Formulating Technological Innovation Strategy (part 2)
   1. Create dedicated innovation structures to support innovation
   2. Fostering a innovation culture, promoting cross-functional collaboration
   3. Manage the product development, allocating resources accordingly, creating good teams, maintaining leadership and motivation
   4. Crafting a development strategy, carefully planning the enter in the market of services and products, while generating overall brand-awareness

Some natural questions that we may ask ourselves are (coming from the slide, I try to give my answer take, helping the overall discussion):

1. Why is innovation so important for firms to compete in many industries?
   1. It plays a crucial role, whereas the market differentiates, allowing efficiency in costs, adapting to changes, having a long-term sustainability, new growth in revenue and attracting talents
2. What are some of the advantages of technological innovation? Disadvantages?
   1. We may have as drawbacks high costs, fast obsolescence, security and ethical concerns depending on the context and workforce disruption
3. Why do you think so many innovation projects fail to generate an economic return?
   1. Many reasons, like the poor execution, lack of market fit in time and needs, resistance to change or understanding the overall market, being constrained in financial and competitive factors.

The source of innovation arises both from the company/industry vision and from the individuals themselves, which determine how a dominant design will be selected above others.

# Sources of innovation (Chapter 2)

The development of cultured meat, also known as "clean meat," is a clear example of innovation stemming from both internal and external sources in the food industry, introducing entirely new ways of producing meat without traditional methods.

Jason Matheny founded New Harvest, an organization dedicated to promoting research in this field. Collaborations with Dutch scientists and the government highlight external sources of innovation, having a clear understanding of the environmental problem and posing itself as a new solution to this overall issue and challenge, using very few calories and having new startups bringing this problem to the overall attention.

This overall is a sustainable choice, ethically good and healthy for the market, while at the same being technologically complex and expensive to both produce and have the market accepting it. Even here, market creates links between corporations, organizations and institutions, to create a good perception of both laws, market companies’ vision and people buying alike.

Immagine che contiene cerchio, diagramma, linea, schermata

Descrizione generata automaticamenteInnovation can arise from many different sources and the linkages between them is strong, central and decentralized at the same time. This is briefly summarized by the following figure.

It’s interesting to analyze creativity as the ability to produce useful, novel work based on personal development and knowledge in a specific environment, but not only that (having a mix of knowledge and culture to create new ideas overtime, both with personality and motivation). Essentially, it’s a convergence between the best ideas in the field and a mix or our own, without judging feasibility in the immediate term.

We might manage to categorize organizational creativity as creativity of individuals within the organization and the crafting of new social processes that help shape new forms of interactions and trainings, encouraging creativity in action (Google for example, which encourages its employees to spend time working on personal projects and gives awards for new ideas).

Innovation involves the practical application of creative ideas to create new devices or processes. Take *inventors*, for instance - they master the fundamental tools and operations of their respective fields. They constantly seek new challenges to expand their unified knowledge. They question established assumptions and engage in a continuous process of ideation, refinement, and experimentation. This approach results in the development of numerous new devices, though only a select few are eventually commercialized.

This way we can see innovations are made with faith into realistic actions, made of hard work, modest means and constant self-teaching. The perspective is this: the key to success is made by making, thinking by thinking and proving yourself wrong overtime. When the moment is ripe, your ideas and actions will align for success.

Many other times, innovation can come by users (innovation by users), because they have a deep understanding of their own needs practically and tend to solve their problems themselves. Also, there is Research and Development by firms (R&D). Research refers to both:

* *Basic research* aims at increasing understanding of a topic or field without an immediate commercial application in mind
* *Applied research* aims at increasing understanding of a topic or field to meet a specific need (more likely to have commercialization than the basic one)

Development refers to activities that apply knowledge to produce useful devices, materials, or processes. In this case, we have two specific approaches:

* *Science Push* approaches suggest that innovation proceeds linearly:
  + Scientific discovery → invention → manufacturing → Marketing.
* *Demand Pull* approaches argued that innovation originates with unmet customer need:
  + Customer suggestions → invention → Manufacturing.

Immagine che contiene testo, schermata, Carattere, numero

Descrizione generata automaticamenteMost frequent collaborations are between firm and their customers, suppliers, and local universities, on which the firms have linkages. These are the usual percentages:

There are also *complementors*, which are businesses, products, or services that, while not direct competitors, provide value by enhancing or complementing the offerings of another company. They often work in conjunction with a company's products or services to create a more complete and attractive solution for customers.

Just to mark difference between complementors and suppliers:

* complementors enhance the value of a company's products or services (you don’t always need them), often in a cooperative relationship
* suppliers provide the necessary inputs for a company's core operations in a transactional relationship (you need them)

Innovation can be External or Internal Sourcing, which are complements.

* Firms with in-house R&D also heaviest users of external collaboration networks
* In-house R&D may help firm build absorptive capacity (capacity to exploit external knowledge, using tools efficiently in new ways) that enables it to better use information obtained externally

Many universities encourage research that leads to useful innovations, with small revenues, but contributing to innovation trough publication of research results. Governments invest in research through:

* Their own laboratories
* Science parks and incubators
* Grants for other public or private research organizations

Many nonprofit organizations do in-house R&D, fund R&D by others, or both (there are a good number of organizations doing this). The R&D Business expenditure is very much the biggest one, while government spend (apart from India where it’s huge) a good amount of funds on this; also, higher education represents a good investment especially in European countries.

Such collaborations include (but are not limited to):

* Joint ventures (more companies coming together and creating new things)
* Licensing and second-sourcing agreements (patents/intellectual property)
* Research associations (collaborative groups or research and expertise)
* Government-sponsored joint research programs (funding in various sectors)
* Value-added networks for technical and scientific exchange (provide platforms for exchange)
* Informal networks (collaborations of individuals across common interests)

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Descrizione generata automaticamenteCollaborative research is especially important in high-technology sectors where individual firms rarely possess all necessary resources and capabilities. This allows the size and the structure of networks changing and adapting according to alliance activity and broadening the overall spectrum of collaboration (before, much more focused on ready-made alliances, now much more independent):

We can describe collaborative networks between firms in this way:

1. **Collaborative Relationships:** Firms often engage in collaborative relationships, which can take various forms, such as partnerships, alliances, or joint ventures. These relationships involve two or more organizations working together for mutual benefit.
2. **Network Formation:** When firms enter these collaborative relationships, they become part of a larger network. This network includes not only the collaborating firms but also the connections and interactions they have with other organizations, suppliers, customers, and stakeholders. There networks can have many forms, social, communication, supply chain ones, etc.
3. **Information and Resource Diffusion:** Within this collaborative network, information and resources flow between the participating firms. This flow of information can include knowledge sharing, best practices, technological innovations, and market insights. Additionally, resources such as capital, human resources, and technology may be shared or accessed through these relationships. In this way, information and ideas can flow depending on the influence and the impact this can have.
4. **Network Dynamics:** The size and structure of this collaborative network are not static; they change over time. This change is driven by shifts in alliance activity, such as forming new partnerships, ending existing ones, or altering the nature of collaborations. These changes can have a significant impact on the network's effectiveness in promoting innovation and resource diffusion.

The environment plays a huge role in boosting creativity by ideas of individuals, allowing people to engage in research and networks, making the whole society aware in the innovation process. What’s important is stimulating a collaborative network, making people stay where they are. There are two sources of risks: *technological* and *economic* uncertainty, given the acceptance of the market. In a network, the more comes out from a node, the more powerful it is.

Technology clusters are regional clusters of firms that have in common a connection to a technology, made by a variety of actors coming from different fields, coming together for provision of new knowledge (may work with the same suppliers, customers, or complements). It must be something that facilitates knowledge exchange, attracting other firms to area, making supplier and distributor markets help the growth of services cluster and make local labor pool valuable, for example leading to infrastructure improvements.

It depends on the nature of the technology, for example if that can be protected by copyrights or patents, requiring close and frequent interaction. The more the market is concentrated towards fewer players, the more difficult is to enter that market. This is the main downside, increasing fewer competition, polluting the market with fewer solutions possibly copying with only slight improvements the successful ones and leaking the knowledge, congesting the market.

Likelihood of innovation activities being geographically clustered depends on:

* The nature of the technology
  + For example, its underlying knowledge base or the degree to which it can be protected by patents or copyright, the degree to which its communication requires close and frequent interaction
* Industry characteristics
  + For example, degree of market concentration or stage of the industry lifecycle, transportation costs, availability of supplier and distributor markets;
* Cultural context of the technology
  + For example, population density of labor or customers, infrastructure development, national differences in how technology development is funded or protected.

Technological spillovers are an important concept, and they occur when the benefits of research or innovation conducted by one entity extend to benefit other entities. The likelihood of these ones can be influenced by several factors:

1. Strength of Protection Mechanisms
   1. Intellectual property protection mechanisms like patents, copyrights, and trade secrets play a significant role. If an entity has strong legal protection for its innovations, it can control and limit the spillover to other entities. This may reduce the likelihood of spillovers.
2. Nature of Underlying Knowledge Base
   1. The type of knowledge being generated or transferred matters. Tacit and complex knowledge, which is hard to articulate and codify, can be less likely to spill over because it's difficult to transfer without direct interaction or collaboration. On the other hand, explicit and easily documented knowledge is more prone to spillovers.
3. Mobility of the Labor Pool
   1. The movement of skilled individuals can also impact spillovers. If highly skilled professionals move between entities, they can carry knowledge and innovations with them, increasing the likelihood of spillovers. Additionally, collaborations and knowledge sharing between entities are more likely when there is labor mobility.

# Social innovation

Social innovation (SI) concerns the implementation of a wide range of activities and addressing of *social problems* and *human needs*. According to the EU definition, “social innovations are new ideas, meeting people and creating new collaborations”. There is a strong relationship between places and innovations, especially considering social ones because societal needs that Social Innovations (SIs) aim to alleviate are *place-specific* (depending on the area, the region, etc.).

The concept itself is debated, but scholars agree on:

* emerging of social innovation as a *response to social needs*
* emerging in *different places*, usually happening in *rural* or *remote* areas, possibly escaping from marginality, given the need of conditions.

The term was *politically* charged and associated with *social reform*, leading to development of further social and physical technology; in recent times, this also led to “technical innovation”. For example, we can quote many programs on this, for example by President Obama in the USA, the EU itself, with flagship initiatives and sustainability programs, while raising awareness.

Innovation mainly addresses economic issues, like:

* products/services
* processes
* organizational structures
* marketing strategies

Innovation also addresses social objectives, like:

* roles (of individuals/firms/institutions)
* relations in all kinds of environment (in private/professional ones, networks, communities),
* formal/informal norms
* giving values, ethics and customs.

*Innovation* is then seen as the “new combination” of production factors, like land, labor, capital, entrepreneurship, while *social innovation* is seen as a new combination of social practices to solve societal challenges, adopted and utilized by individuals, social groups and organizations alike. Both create value equally, among the professional practices followed in any context.

Continuing with definitions, the EU Commission defined social innovations as “new ideas that meet *social needs*, creating *social relationships* and form *new collaborations*, creating products, services and models as innovations, to meet unmet needs effectively and encouraging *market* uptake of new solutions, stimulating *employment*”.

The Commission’s actions on SI (abbreviated as such for the whole chapter) and the Social Investment Package induce uptake and scaling up of SI solutions, having as main objectives:

1. promoting social innovation as source of *growth* and *jobs*
2. *sharing information* about social innovation
3. supporting *innovative entrepreneurs* and mobilizing *investors* and *public organizations*

The EU commissions actions relate to:

* *Networking*, helping organizations across Europe to connect
* *Competition*, having an yearly competition for supporting new solutions to societal challenges
* *Funding*, directly funding different programs
* *Ecosystems*, improve the condition for social innovation and social enterprises in Europe, attracting also private investors
* *Impact*, gathering and disseminating evidence about the ben innovation actions and methodologies
* *Incubation*, supporting structures EU-wide of incubators for innovation
* *Exploring*, looking for new ideas and applications in different fields

There are several approaches on how SI is seen:

* a pragmatic approach, as a complex of “innovative activities and services that are motivated by the goal of meeting a *social need* and are predominantly developed and diffused through organizations whose *primary purposes are social*”
* a systemic approach, as a *complex process* through which process or programs are introduced, leading to a *deep change* in daily routines, resource streams, power relations and values within the *system* affected by the innovation
* a managerial approach, as a new solution to a social problem, which is more *effective, efficient, sustainable or fairer* compared to existing solutions, generating *value for the society*
* a territorial approach, as a process of empowerment and political transformation targeting a bottom-up transformation in terms of *stakeholders* and *distribution* of resources

There are many societal levels according to the Bureau of European Policy (BEPA):

* micro level, where the *social demand* level tackles specific problems faced by *specific groups of the ground* that are traditionally not addressed by the market itself, impact vulnerable people
* meso level, where the *societal challenge* tackles challenges affecting people at a larger scale and across whole sectors, often manifesting through complex *social, economic, environmental and cultural* factors that require new forms of *relations*
* macro level, where the *systemic change* enquires some *fundamental transformation* of the way *society* behaves, in institutions, actors and structures, empowering different sources of well-being (new crafting governance techniques and ideas)

There can be socio-economic drivers, like:

* new sources of competition
* changes of investor confidence
* changing values of assets
* alterations in demand/supply
* employment/unemployment
* poverty

SI addresses social needs and new social needs, for example technological advancements like:

* automation
* digitalization
* platforms advent
* access to information
* ethical and privacy-related issues
* balancing home/work mix
* altering value of property rights

There are also cultural drivers:

* changing local traditions
* fundamentalisms vs democracies
* generational or cultural gaps
* altering values and norms
* role of media in opinions, attitudes and behaviors of people

SI addresses social needs and new social needs:

* Sustainability drivers
  + Environmental awareness (climate change)
  + Social pressures
  + Population changes: demographic dynamics and migration patterns
* Single events
  + Financial and economic crisis
  + Natural disasters
  + Health emergencies

Societal changes can create problems and new needs as:

* Societal and economic inequalities
* Economic decline
* Institutional and political distrust
* Digital divide
* New labor structures displacing previous ones
* Generational gap
* Gender (pay) gap

A possible categorization is born:

1. Objectives
   1. SIs satisfy societal need, including the needs of *particular social groups* (aiming at *social value creation*)
   2. SI does not produce conventional innovation outputs such as patents and publications
2. Actors and actor interactions
   1. SIs are created by actors who usually are not involved in “economic innovation”, including informal actors
   2. SIs often involve predominantly *new types of social interactions*, achieving common goals and/or innovations that rely on *trust* rather than mutual-benefit relationships
   3. SIs often involve different action and diffusion processes but ultimately brings *social progress*
3. Outputs/Outcomes
   1. Early SI definitions strongly relate to production of social technologies (bring at time “intangible innovation”, so advancements not directly tangible or physical
   2. Others indicate social innovation changes in the attitudes, behaviours, perceptions of actors involved, while others stress the public with the good SI creates
   3. SI is often associated with long-term institutional/cultural change
4. Innovativeness
   1. It involves “the implementation of a new or significantly improved product/service/process/marketing method/new organizational method in business practices, workplace organization or external relations”

There can be some related concepts:

* *Corporate Social Responsibility* (CSR), involving initiatives which *extend beyond* meeting immediate interests of stakeholders of enterprises, offering potential to enhance performance, ensuring open-source and sustainable, while also maintaining ethical values
* Adopting a business approach *social entrepreneurs* focus on brining improved social outcomes, creating new solutions in education and healthcare
* The underlying driver is creating social value as opposed to personal/shareholder wealth, characterizing the creation of new solution that benefit communities while also promoting diversity and positivity

Useful tools to check such research cases in SI: ISI Web of Knowledge, ESID

Some slide examples to social innovation cases here:

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Immagine che contiene testo, schermata, Carattere, documento

Descrizione generata automaticamente

Immagine che contiene testo, schermata, design

Descrizione generata automaticamente

Immagine che contiene testo, Carattere, schermata

Descrizione generata automaticamente

Immagine che contiene testo, biglietto da visita, vestiti, persona

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# Invited speakers: Mobisec

We have as guests Mobisec, which offer custom cyber security services, concentrating as the name suggests on mobile devices. The lesson starts with a QR code which redirects to a questionnaire, and it’s used as an example of malicious data encoded in a “easy” way; this is usual phishing, but in the case of leveraging QR codes, it’s called “quishing”. As we all know by this point being master students in CS, mobile devices are billions and billions.

Mobile devices today are an essential part of our lives, from communicating with loved ones to managing business on the go. However, there is the flipside of this technology: cyber-attacks, which can lead to potentially devastating consequences such as data breaches and financial losses (on average 10 million dollars of loss/in Italy 13 million euros). A malicious attack requires knowledge context and possess of personal information (might be users’ personal data and sensitive data, customer behaviors, profiling, know-how of corporates, compromises in economic transactions).

This can lead to potentially high costs for a company, especially for data breaches context. Most organisations are investing heavily in securing their network and infrastructure. However, a significant shift is underway. Over the past 5 years, organisations large and small have been moving from in-house / on-premises solutions to cloud-based alternatives.

Mobisec presents itself as a company founded in 2015 for mobile cybersecurity purposes, working with potentially high clients across all of Europe and Italy. The company intersects in all sectors, e.g. IOT/physical security/mobile security/endpoints safety/automotive/etc. The platform is structured with tracking agents (real-life devices), training AI/ML models to get services data and then reporting continuosly everything (Configuration Management – DevOps). So, the company potentially analyzed a lot of data in vulnerabilities and recent breaches, leading to financial losses and damages to brand reputation (also, being careful to avoid other kinds of attacks).

The company examines the development logic of the app as well as its security by testing it on actual devices in our laboratory. Mobisec DSA detects vulnerabilities by analyzing the actual functioning of devices, identifying weaknesses that would otherwise remain hidden if conducted statically. At a high level, this analysis is made of:

* Analyses native, hybrid and API gateway applications
* Performs static and dynamic analysis
* Vulnerability testing from design to provisioning
* Integrates with your organization's configuration management systems
* Apps are tested in a real-world usage context
* Checks every app data, function, transaction and component
* First full report in 5 days, for subsequent testing in just 2 days

The cybersec tests are commonly of two kinds:

* Vulnerability Assessment (VA) aims to identify known issues to prevent common industry mistakes
* Penetration Testing (PT), also known as Web Application Penetration Testing (WAPT), conducts a thorough examination of code, algorithms and logic to uncover potential vulnerabilities such as data leakage, account takeover and privilege escalation

These commonly follow the OWASP standards, keeping data updated continuously. The company also developed a product called Hiwave, to supervise and manage IoT devices, apps, users and data directly into enterprise systems and devices. This can be integrated into any device and can provide continuous supervision and direct control over, across all devices (Mobisec UEM - Unified Endpoint Management). There is also a tool proprietary to them, called Mobile App Scraping, which monitor the main market channels for Android applications.

For the group presentation that will be done by attending students, if one chooses Mobisec, it has to consider these things:

* Market Research Challenge
  + Objective
    - Conduct in-depth market research in mobile / IoT cybersec sector
  + Task
    - Analyze market trends, prospects behavior and competitive landscape
  + Data Collection
    - Gather data through surveys, interviews, and secondary research
  + Analysis
    - Interpret findings to identify opportunities, challenges, and potential market gaps.
  + Presentation
    - Prepare a report to present findings
* Communication Strategy Challenge
  + Objective
    - Develop a communication strategy for Mobisec
  + Task
    - Create a compelling narrative and messaging plan
  + Audience Analysis
    - Identify target audiences and their preferences
  + Channels
    - Choose appropriate communication channels (e.g. social media, traditional advertising…)
  + Budget
    - Allocate a hypothetical budget to maximize impact
  + Presentation
    - Prepare a report to present the strategy

# Group formation and work structure

The formed groups of 5/6 people of Economics must decide a challenge between two themes focusing only on Mobisec (for each, I briefly summarized the slides present on Moodle just to give some ideas, so, some keyword buzz):

* Market Research Challenge
  + This challenge focuses on firms
  + A strategy Is well-developed if it’s long-term, given a profound understanding of the environment and its resources; this represents the present vision and the future (R&D), analyzing competitors and predict how the market will change
  + A good strategy gives a competitive advantage over financial, physical and human resources above others, analyzing how the market will trade information and try to go across barriers of innovation and imitation, differentiating enough to give value to the market.
* Some useful material:
  + <https://www.wipo.int/edocs/mdocs/aspac/en/wipo_ip_bkk_17/wipo_ip_bkk_17_15.pdf>
  + <https://www.b2binternational.com/assets/ebooks/mr_guide/practical-guide-to-market-research_full.pdf>
  + <https://www.cmu.edu/swartz-center-forentrepreneurship/assets/Olympus%20pdfs/Competitive%20Analysis.pdf>
  + <https://sociology.fas.harvard.edu/files/sociology/files/interview_strategies.pdf>
  + <https://www.cii.co.uk/media/6158020/a-useful-guide-to-swot-analysis.pdf>
* Communication Strategy Challenge
  + This challenge focuses on customers
  + Here we focus on a Lean Marketing approach, which emphasizes efficiency, continuous improvement, and customer-centric strategies, based on Agile development, iteratively improving over experiments and give cross-functional collaboration
  + Focus on individuals and interactions over tools, giving a good abstraction between search and execution to understand how to validate customers and build an effective company plan
  + In this case, the slides are based on social media, but the core is: tell a story to give connections deeply within people, form groups and lead them towards your vision.
  + What are we trying to solve and try to lead? Study the customers’ profiles and create a funnel which interest and converts people into your vision, giving step by step a value ladder to give growth to the company
  + This is an Agile process so continuously test, seeing how it will be feasible, desirable and viable, prioritizing risks and balancing how will you spend and all the components, learning by evidence or visually from a few key points (learning cards)
  + Determine the traffic/setup the bridge/qualify customers/qualify buyers/identify hyperactive buyers/age and ascend relationships/change the selling environment, by creating multiple funnels, each specific to a context and create a editorial plan

We are given paper material on how to develop a strategy and a few visual cards to develop a strategy effectively (also, we’re told not to share the paper material). Some of this paper material is also available on PDF. Specifically:

* Market Research Challenge
  + SWOT Strategy (Strengths – Weakness – Opportunities – Threats)
    - Specifically, double-edged on weaknesses and strengths, so SSWWOT (for a thorough analysis of your business)
  + Scenario canvas
* Communication Strategy Challenge
  + Delivery journey (for delivering the best value to your customers)
    - Describe relationships and channels from start to finish (before/during/after)
  + Proposition journey (for improving your value proposition)
    - Essentially, a vision that start from core and extends to be effective (before/during/after)
  + Affinity (for customer profiling and empathy mapping)
    - Describing personal and psycho-attitudinal features of customers
  + Scenario canvas

The scenario canvas is common because, given the specific company, we want to understand all the factors that contribute to the company vision. In class, we’re asked to use it for Mobisec and try to understand the key points.

To do the group project, we will produce a report based on our work on specific companies or on customers generally given the theme we chose, then base our slides out of that for January.

# Types and sources of innovation (Chapter 3)

We start this lecture by giving a good example of innovation from India: the Chokutool Project. In rural India, where 90% of families lacked electricity and refrigeration, Godrej and Boyce aimed to create an affordable refrigerator. Their original assumptions were challenged, leading to the development of a portable battery-operated refrigerator with customizable skins. This innovation appealed not only to the rural poor but also to urban affluent consumers. They introduced a unique distribution system by selling Chotukool at post offices. While not a sweeping success with the rural poor, it helped Godrej tap new markets, showcasing their innovation prowess and winning several awards.

In the field of innovation, understanding the types and sources of innovations is crucial for both producers and users. Innovations can be categorized based on several dimensions, and this categorization helps clarify the opportunities they offer and the challenges they pose to various stakeholders, including producers, users, and regulators. Additionally, the path that a technology follows over time, known as its *technology* *trajectory*, exhibits consistent patterns that aid in comprehending how technologies evolve, improve, and spread throughout society.

Let's delve into these concepts in more detail:

1. **Types of Innovations**:
   * **Product vs. Process Innovations**: Innovations can be categorized as either product or process innovations. Product innovations relate to improvements or new developments in the characteristics, features, or quality of a product or service.
     1. Product innovations are embodied in the outputs of an organization – its goods or services.
     2. Process innovations are innovations in the way an organization conducts its business, such as in techniques of producing or marketing goods or services. Product innovations can enable process innovations and vice versa.
        + What is a product innovation for one organization might be a process innovation for another one.
        + For example, UPS creates a new distribution service (product innovation) that enables its customers to distribute their goods more widely or more easily (process innovation).
   * **Incremental vs. Radical Innovations**: Innovations can also be classified as incremental or radical. Incremental innovations involve small, gradual improvements to existing products or processes, while radical innovations are groundbreaking and disruptive, often creating entirely new markets or industries.
     1. The radicalness of an innovation is the degree to which it is new and different from previously existing products and processes.
     2. Incremental innovations may involve only a minor change from (or adjustment to) existing practices.
     3. The radicalness of an innovation is relative; it may change over time or with respect to different observers.
        + For example, digital photography a more radical innovation for Kodak than for Sony.

We can compare radical and incremental innovation:

|  |  |
| --- | --- |
| **Incremental Innovation** | **Radical Innovation** |
|  | |
| Continuous (linear improvement of value acquired by the customer) | Discontinuous (with or without predecessor, essential, nonlinear improvement obtained by the customer) |
| Based on old technology | Based on new technologies |
| Dominant design unchanged | Leads to a new dominant design |
| Does not lead to a paradigm shift | Can lead to a paradigm shift |
| Implies a low level of uncertainty | Implies a high level of uncertainty |
| Improvement of existing characteristics | Introduce a whole new of performance features |
| Existing organization and qualification are sufficient | Requires education, new organization and skills |
| The result of a rational response or necessity | Result of a chance of a R&D policy, not necessity |
| Driven by market pull (important in the advanced state of technology) | Driven by technology (important in the early stage of technology) |

So, we can create some scheme like that:

Tech push

Market

Science

Market push

Creative disruption is a concept that plays a pivotal role in the realm of innovation and business. Coined by economist Joseph Schumpeter, it refers to the process by which new and innovative products, services, or technologies replace existing ones, often rendering the incumbent solutions obsolete. Examples of such can be the smartphones, ride-sharing services, online streaming and electric vehicles.

It underscores the importance of adaptability, innovation, and the ability to embrace change in today's business landscape. Incumbent companies often need to be proactive in embracing new technologies and business models to avoid being left behind by disruptive forces, highlighting the dynamic nature of the economy.

This phenomenon is characterized by several key aspects:

1. **Innovation and Transformation**: Creative disruption is driven by innovative ideas or technologies that transform the status quo. These innovations introduce new ways of doing things, challenging established norms and practices.
2. **Market Dynamics**: Disruptive innovations often start by targeting underserved or niche markets. They may offer solutions that are initially less sophisticated or cheaper than existing alternatives but have the potential to improve and expand over time.
3. **Entry of New Players**: New, often smaller, and more agile entrants in the market tend to lead creative disruption. These newcomers leverage technological advancements or novel business models to gain a competitive edge. This also opens new challenges for existing players.
4. **Consumer Preferences**: Creative disruption is closely tied to evolving consumer preferences. As consumers seek better, more convenient, or cost-effective options, they are willing to adopt new technologies or products that address these desires.
5. **Iterative Improvement**: Disruptive innovations may start with limitations but continuously improve. Over time, they may surpass incumbent solutions in terms of quality, features, or cost-effectiveness, leading to widespread adoption.

The concepts of competence-enhancing and competence-destroying innovations are important in understanding how innovation impacts firms and industries. These terms describe how innovations relate to a firm's existing knowledge and competencies.

1. **Competence-Enhancing Innovations**:
   * Those build upon a firm's existing knowledge base and capabilities. They leverage and extend the skills, expertise, and technologies that a company already possesses.
   * These innovations allow a firm to improve its current products, services, or processes, making incremental advancements. They often result in a natural progression of the firm's existing business model.
   * An example is Intel's transition from Pentium III to Pentium 4 processors. The Pentium 4 leveraged the technology developed for the Pentium III, enhancing its performance and features without fundamentally changing Intel's core competencies.
   * Another example can be found in the 3D printing industry. Over time, improvements in materials and technology have made 3D printers more efficient and cost-effective, thus enhancing the capabilities of this technology without a radical shift in the underlying knowledge base.
2. **Competence-Destroying Innovations**:
   * Innovations that render a firm's existing competencies and knowledge obsolete. They introduce radical changes, often requiring a firm to adopt entirely new skill sets and technologies.
   * These innovations disrupt the status quo, potentially displacing established industry players and their core offerings. They can lead to significant industry shifts.
   * An example is the introduction of electronic calculators, which made the expertise in manufacturing slide rules, held by companies like Keuffel and Esser, obsolete. Electronic calculators represented a completely different technology and skill set.

The perspective of whether an innovation is competence-enhancing or competence-destroying can vary from firm to firm and is influenced by the specific context and resources of each company. What may be a competence-enhancing innovation for one firm could be competence-destroying for another, depending on their existing capabilities and strategic positioning.

It's important to note that competence-destroying innovations can be disruptive to incumbents but also offer opportunities for new entrants and agile companies to gain a competitive edge. Incumbent firms often face challenges in adapting to these disruptive changes, as they require a significant shift in resources, skills, and organizational structures.

A component innovation (or modular innovation) entails changes to one or more components of a product system without significantly affecting the overall design.

* These innovations are often incremental in nature, focusing on enhancing specific features or elements of the product while maintaining the existing architecture.
* Component innovations can be thought of as "building blocks" that can be incorporated into the existing system without requiring a major overhaul.
* An example of a component innovation is adding gel-filled material to a bicycle seat to improve comfort. This change affects a specific component (the seat) without fundamentally altering the overall bicycle design.

An architectural innovation entails changing the overall design of the system, or the way components interact.

* Architectural innovations often lead to a more significant shift in product functionality, user experience, or the system's core principles.
* These innovations can be disruptive and may require rethinking the entire system or product's architecture.
* An example of an architectural innovation is the transition from the high-wheel bicycle, with a large front wheel and a small rear wheel, to the safety bicycle, which had equal-sized wheels and a fundamentally different frame design. This change in the overall structure of the bicycle represented a major architectural innovation.

S-curves, also known as sigmoid curves or S-shaped curves, are graphical representations of the growth or adoption of a specific phenomenon over time. They are called "S-curves" due to their characteristic shape, which resembles the letter "S." S-curves are widely used to illustrate the lifecycle or progress of various processes, technologies, products, or innovations.

Immagine che contiene linea, diagramma, Diagramma, testo

Descrizione generata automaticamenteBoth the rate of a technology’s improvement, and its rate of diffusion to the market typically follow an s-shaped curve.

Technology improves slowly at first because it is poorly understood.

Then accelerates as understanding increases.

Then tapers off as approaches limits

Technologies do not always get to reach their limits. May be displaced by new, *discontinuous technology*.

* A technological discontinuity refers to a fundamental and often disruptive change in technology that fulfills a similar market need but is based on an entirely new knowledge base. In other words, it represents a shift from the existing technology paradigm to something radically different.
  + E.g. switching from carbon copying to photocopying, or vinyl records to compact discs.
* Technological discontinuity may initially have lower performance than incumbent technology.
  + E.g. first automobiles were much slower than horse-drawn carriages.
* Firms may be reluctant to adopt new technology because performance improvement is initially slow and costly, and they may have significant investment in incumbent technology

S-curves in technology diffusion are a fundamental concept that describes how a new technology or innovation is adopted and integrated into a market or society over time. In summary:

1. **Slow Adoption (Early Phase)**:
   * In the initial phase, adoption of a new technology is slow. This is because the technology is often unfamiliar to potential users, and they may lack knowledge about its benefits or how to use it effectively.
   * People and organizations tend to be cautious when dealing with novel technologies, which can result in a hesitant and gradual uptake.
2. **Accelerated Adoption (Growth Phase)**:
   * As people become more familiar with the technology and its benefits become clearer, adoption accelerates. During this phase, there is a rapid increase in the rate at which the technology is adopted, given overtime is more understood.
   * This phase is often marked by a tipping point, where the technology gains critical mass and becomes more widely accepted and integrated into daily life or business practices.
3. **Saturation (Maturity Phase)**:
   * Over time, the rate of new adoptions begins to slow down as the market becomes saturated. The technology reaches a point where most potential users have already adopted it, and growth plateaus.
   * The technology may continue to see steady adoption among new users or in new markets, but the overall growth rate is not as high as during the accelerated adoption phase.

Several factors contribute to the distinct shape of these S-curves in technology diffusion:

* **Unfamiliarity**: As mentioned, the technology's initial unfamiliarity and the need for users to acquire knowledge about it can result in a slow start.
* **Understanding and Complexity**: As people gain a better understanding of the technology, its advantages, and how to use it effectively, adoption accelerates. It may require acquiring complex knowledge or experience
* **Market Saturation**: Eventually, the technology reaches a point of market saturation where most of its potential user base has adopted it.
* **Complementary Resources**: Some technologies require complementary resources or infrastructure to be fully valuable. For example, digital cameras are not valuable without digital storage and processing capabilities.

# Defining the Organization's Strategic Direction (Chapter 6)

A *coherent technological innovation* strategy is a critical component of a firm's success, as it not only builds on the firm's existing strengths but also guides its future development. This strategy is essential for staying competitive and relevant in a rapidly evolving business landscape. To formulate a successful technological innovation strategy, several key steps are involved:

**1. Appraising the Firm's Environment:**

* **Market Analysis**: Understand the market dynamics, customer needs, and trends. This involves monitoring the competitive landscape, customer preferences, and emerging technologies that could disrupt the market.
* **Regulatory and Legal Environment**: Be aware of the legal and regulatory constraints and opportunities that may affect the firm's innovation initiatives. These could include industry-specific regulations, intellectual property laws, or environmental regulations.

**2. Appraising the Firm's Strengths, Weaknesses, Competitive Advantages, and Core Competencies:**

* **Strengths and Weaknesses**: Conduct a thorough internal analysis to identify the firm's strengths and weaknesses. This might involve assessing the quality of existing products, the effectiveness of internal processes, and the talent within the organization.
* **Competitive Advantages**: Determine the unique selling points or competitive advantages that the firm possesses. This could include a strong brand, proprietary technology, a loyal customer base, or cost advantages.
* **Core Competencies**: Identify the competencies that set the firm apart. Core competencies are the capabilities and resources that the firm excels at, and they play a crucial role in driving innovation.

**3. Articulating an Ambitious Strategic Intent:**

* **Vision and Mission**: Develop a clear and inspiring vision and mission for the firm. This should provide a sense of purpose and direction for innovation efforts. It answers the fundamental questions of what the firm aspires to achieve and why it exists.
* **Strategic Goals**: Set ambitious, yet achievable, strategic goals. These goals should align with the firm's vision and mission and provide a roadmap for technological innovation.
* **Resource Allocation**: Allocate resources effectively to support the strategic intent. This includes financial resources, talent, and time. Investments in research and development, technology acquisition, and talent development are common in this phase.
* **Risk Assessment**: Identify potential risks and uncertainties associated with the chosen strategy. Evaluate how the firm will mitigate or adapt to these risks.

*External analysis* is a crucial step in formulating a technological innovation strategy and assessing the firm’s current position. It involves assessing the external factors and forces that can impact a firm's innovation initiatives and its competitive position.

Two common methods for external analysis are Porter's Five-Force Model and Stakeholder Analysis. Let’s analyze the points on the first one (a video on the topic can be found [here](https://youtu.be/W0hySWGHKj4)):

1. **Degree of Existing Rivalry (Competition)**:
   * This aspect assesses the intensity of competition within the industry. Factors to consider include:
     + **Number of Firms**: A higher number of competitors can intensify rivalry.
     + **Relative Size**: Differences in firm size can impact competition.
     + **Degree of Differentiation**: Products and services that are similar can lead to more intense rivalry.
     + **Demand Conditions**: High demand can lead to increased competition.
     + **Exit Barriers**: High exit barriers, such as substantial investment, can keep firms in the industry, contributing to rivalry.
2. **Threat of Potential Entrants into the Industry**:
   * This factor evaluates the likelihood of new entrants to the market. Key considerations include:
     + **Attractiveness of Industry**: Highly profitable industries are more likely to attract new players.
     + **Entry Barriers**: These barriers can include startup costs, brand loyalty, government regulations, and more. High entry barriers deter new entrants.
3. **Bargaining Power of Suppliers**:
   * This aspect focuses on the power that suppliers hold over a firm. It is determined by various factors, such as:
     + **Number of Suppliers**: Few suppliers can give them more control.
     + **Degree of Differentiation**: Unique or specialized suppliers have more power.
     + **Portion of Inputs Obtained**: If a significant part of a firm's inputs comes from one supplier, that supplier gains power.
     + **Portion of a Supplier's Sales**: If a supplier relies heavily on one firm's purchases, it has an incentive to maintain the relationship.
     + **Switching Costs**: Excessive costs associated with switching suppliers can increase their power.
     + **Potential for Vertical Integration**: If suppliers can easily enter the firm's market, they have more bargaining power.
4. **Bargaining Power of Buyers**:
   * This dimension examines the influence buyers have over a firm. Key factors to consider are:
     + **Number of Buyers**: A larger number of buyers can potentially increase their collective bargaining power.
     + **Firm's Degree of Differentiation**: If a firm's products or services are unique, it may have more leverage.
     + **Portion of a Firm's Inputs Sold to a Particular Buyer**: If a huge portion of a firm's production goes to a particular buyer, that buyer may have more negotiation power.
     + **Portion of a Buyer's Purchases Bought from a Particular Firm**: If a buyer relies heavily on a specific supplier, they may have more control.
     + **Switching Costs**: Prohibitive costs associated with switching to another supplier can increase a buyer's bargaining power.
     + **Potential for Vertical Integration**: If buyers can easily enter the firm's market, they have more bargaining power.
5. **Threat of Substitutes**:
   * This aspect evaluates the potential for alternative products or services to meet similar needs. Factors include:
     + **Number of Potential Substitutes**: More substitutes increase the threat.
     + **Closeness in Function**: If substitutes perform a similar function, they pose a higher threat.
     + **Relative Price**: If substitutes are cheaper or offer better value, they become more appealing.
6. **Complements**:
   * Complements are products or services that enhance the value of another product. Porter (the creator of this model) has recognized the importance of complements and their role in the industry. It's essential to:
     + **Consider Complement Importance**: Assess how critical complements are to the industry. Some industries rely heavily on complementary products.
     + **Differential Availability of Complements**: Determine whether complements are more readily available for certain rivals' products, affecting the attractiveness of those goods.
     + **Value Capture by Complements**: Identify who captures the value offered by complements. This can influence the profitability of different firms within the industry.

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Descrizione generata automaticamenteComplements, in the context of the Five-Force Model, refer to products or services that enhance the value or utility of another product. They are closely related items that, when used together, create a better overall experience for the consumer.

In essence, complements are like "partners" to a product or service, and their presence or absence can impact the attractiveness of the core product, the competitive strategies of firms, and the allocation of value within an industry.

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Descrizione generata automaticamente

Another method is the stakeholder analysis, which are individuals, groups, or entities that have an interest in or are affected by the organization's activities, performance, or outcomes.

Each stakeholder has interests and different needs, each in their own field and wanting an improvement in the value of their offerings, whatever they may be.

Each one contributes resources, through goods, services expertise, work and awareness giving competition, pricing, transparency and good management

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Descrizione generata automaticamenteAnother tool Porter gave to identify the firm’s strengths and weaknesses, is helpful to consider each element of the value chain, with an efficient use of resources and process:

In the SWOT analysis process, an important thing is the competitive advantage is a fundamental concept in business strategy. It encompasses the unique attributes, resources, and capabilities that enable an organization to outperform its competitors in a specific market or industry.

**Attributes of Competitive Advantage:**

1. **Unique Attributes**: These are characteristics or features that distinguish a company's products, services, or brand from its competitors. These attributes can include design, quality, performance, and other factors that make a company's offerings stand out.
2. **Resources**: Competitive advantage can stem from having access to valuable resources that competitors do not possess. These resources can include exclusive patents, proprietary technology, access to rare materials, or a highly skilled workforce.
3. **Capabilities**: A company's unique capabilities, such as its ability to innovate, manufacture efficiently, or deliver exceptional customer service, can provide a competitive edge.

**Manifestations of Competitive Advantage:**

1. **Cost Leadership**: A company with a cost advantage can offer products or services at lower prices while maintaining profitability. This attracts price-sensitive customers and can lead to market dominance.
2. **Product Differentiation**: Companies can excel through offering products or services with unique features, quality, or brand reputation. This attracts customers looking for value and quality.
3. **Innovation**: Being at the forefront of innovation and continuously developing new and improved products or services can be a source of competitive advantage. This keeps customers interested and engaged.
4. **Market Niche**: Focusing on a specific market niche where competitors are less active can lead to a competitive advantage. This allows a company to meet the unique needs of a specific customer group effectively.
5. **Brand Equity**: Building a strong brand that is associated with trust, quality, and reliability can provide a competitive advantage in various industries.
6. **Global Presence**: Expanding into international markets and establishing a global presence can give companies access to broader customer bases and economies of scale.

In the last decade, massive advancements in digitalization have led to the creation of huge datasets: big data. Effective utilization of such data, however, requires good data analysis strategies and practices. Data science can be much valuable for organizations: data must be seen as assets and managers must take the building and composition of the data science team very seriously, differentiating opportunities and challenges for the firm, while also posing the right questions, accurate each of them.

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Descrizione generata automaticamenteIn the context of assessing which strengths have the potential to be a sustainable competitive advantage, we can evaluate some criteria:

1. **Rare (Rarity)**: A resource is considered *rare* when competitors do not commonly possess it. In the context of competitive advantage, rarity is a crucial factor. If a resource is rare, it means that not everyone in the industry has access to it. Rare resources are more likely to contribute to a competitive advantage because they provide something unique.
2. **Valuable (Value)**: A resource is *valuable* if it enables a company to exploit opportunities or mitigate threats in the market. It must contribute to the company's ability to create value for customers or lower costs. A valuable resource allows the company to outperform its competitors.
3. **Durable (Duration)**: This criterion affects how a resource doesn't quickly depreciate or become obsolete. It remains relevant and valuable in the industry, allowing the company to continue exploiting opportunities and mitigating threats. It signifies that the resource can provide a sustainable and lasting competitive advantage.

At its core, everything about this makes competitive advantage leverage the inimitability from others.

In addition to this, some specific conditions can make resources difficult (or impossible) to imitate. These conditions include:

* **Tacit Knowledge**: Knowledge that is difficult to codify or transfer. It is often embedded in the experience and skills of employees. This kind of knowledge is challenging for competitors to replicate quickly.
* **Path Dependence**: Path-dependent resources are those that have developed over time and are closely tied to a company's history and unique path. They are often shaped by historical decisions and events, making them difficult for other companies to recreate.
* **Social Complexity**: Resources that rely on complex social interactions within the organization can be challenging to imitate. Social networks, relationships, and collaborative culture are examples of socially complex resources.
* **Causal Ambiguity**: This refers to situations where the link between resources and performance outcomes is unclear or not easily understood. If a company's competitors cannot clearly understand why a resource leads to success, they are less likely to replicate it effectively.

In the context of identifying core competencies and capabilities, *serendipity* plays a noteworthy role. Serendipity is the concept of making fortunate and unexpected discoveries or connections while searching for something entirely different. When it comes to identifying core competencies and capabilities, serendipity can lead to uncovering valuable strengths that a company may not have actively sought but stumbled upon during its operations or exploration, which can become significant sources of success.

We defined core competencies is a set of integrated and harmonized abilities that distinguish a firm in the marketplace (the way we deploy the resources). Competencies usually involve a combination of skills, knowledge, technologies, and processes. Some key points to make here:

* Immagine che contiene diagramma, schermata, schizzo, cerchio

  Descrizione generata automaticamente**Business Unit Relevance**: Several core competencies may underlie a business unit. This means that different units within a company may rely on the same set of core competencies.
* **Key Characteristics**: Core competencies should possess certain key characteristics:
  + **Significant Competitive Differentiation**: They should provide a substantial advantage over competitors in the market.
  + **Cross-Business Applicability**: They should be applicable to a range of businesses within the organization.
  + **Difficulty of Imitation**: Competitors should find it challenging to replicate these competencies.

When firms excel at a particular activity or set of competencies, they can become overcommitted and inflexible (so-called *risk of core rigidities*). This can lead to a situation where the firm is overly reliant on its current strengths, making it challenging to adapt to changing market conditions.

However, *dynamic capabilities* provide a solution to this problem. They are a distinct category of competencies that enable a firm to respond quickly and effectively to change.

These capabilities allow the firm to adapt, innovate, and seize new opportunities. Some examples:

* *Rapid Product Development Teams*: A firm may develop the dynamic capability to quickly assemble and deploy new product development teams when an unexpected opportunity arises. This means that when a new market needs or innovation is identified, the firm can swiftly mobilize the necessary human resources and expertise to capture that opportunity.
* *Working with Alliance Partners*: Dynamic capabilities can also involve the ability to collaborate effectively with alliance partners to gain needed resources or expertise rapidly. This allows a firm to leverage external resources and capabilities to respond to changes in the business environment, such as entering new markets or pursuing innovation.

Strategic intent is a vital concept in long-term planning and strategic management. It represents a long-term goal that is not only ambitious but also designed to stretch and leverage a firm's core competencies, drawing from all levels of the organization. A few key points here:

1. **Ambitious Long-Term Goal for all Organization**: Strategic intent sets a bold and ambitious long-term objective for the organization. It goes beyond incremental improvements and envisions a significantly higher level of achievement. It is a unifying goal that aligns the efforts of all employees toward a common vision.
2. **Leveraging Core Competencies**: It builds upon the firm's core competencies, which are its unique strengths and capabilities. By leveraging these core competencies, strategic intent ensures that the organization uses what it's already good at to achieve its long-term goal.
3. **Long-Term Horizon and Clear Milestones**: Typically, strategic intent looks 10 to 20 years into the future. It provides a clear, long-term direction for the organization, helping it navigate through changing market dynamics and technological advancements. Along with the long-term vision, strategic intent sets clear milestones and objectives along the way.
4. **Resource Identification**: To bridge the gap between the current position and the strategic intent, the organization needs to identify the resources and capabilities required. This may include financial resources, human capital, technology, and partnerships.

Strategic intent serves as a guiding star for the organization. It inspires employees, shapes strategic decisions, and helps the company adapt to a changing business environment. It encourages innovation, fosters a sense of purpose, and keeps the organization on a path toward achieving its long-term vision.

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Descrizione generata automaticamente

At the end of this lesson, we analyze an extract in paper from the book about Tesla. I will briefly summarize the whole content (which you can find on the PDF version of the course book in 6th chapter from 136 to 144 pages).

In 2021, Tesla achieved remarkable success, evolving from a luxury electric car startup to a global powerhouse in the automotive and energy sectors. A few selected key points:

* Founded in 2003 by Martin Eberhard and later joined by Elon Musk, who provided funding.
* Tesla's first product was the Roadster, an all-electric sports car based on the Lotus Elise, known for its impressive performance and range.
* The Model S, introduced in 2012, marked Tesla's transition to a major automaker. It was a high-performance all-electric sedan with a range of up to 300 miles.
* Model X, unveiled in 2015, was an all-electric SUV with distinctive features, including gull-wing doors and impressive acceleration.
* Model 3, announced in 2016, aimed to make electric cars more accessible, with a base price of $35,000 and a substantial range. It garnered huge reservations.
* Tesla faced challenges in scaling production, leading to criticism and financial stress, but eventually achieved its production targets.
* Beyond cars, Tesla invested in charging infrastructure and acquired SolarCity to expand into solar energy and roof products.
* Gigafactories in the US, China, and Europe were established to mass-produce batteries and vehicles.
* Tesla's rapid expansion and diverse projects raised questions about the company's ability to manage its ambitious goals.

There are also some question discussions, which we’re told they will be object of the subsequent lesson. I tried to answer to each:

1. What were Musk’s and Eberhard’s goals in founding Tesla?

Eberhard’s goal was to find a new project to create a high-performance sports car that was environmentally friendly, having concerns about global warming and dependence on oil of USA. Believing there was no correspondence on the market for an expensive sports car like the Toyota hybrid vehicles combined with a environmentally friendly car. To do this, he studied many options, eventually crafting an idea powered by lithium-ion batteries, which could provide the efficiency and performance he sought.

Musk’s goal was using vehicles to achieve energy independence from fossil fuels. Given its successful past in the industry he believed that electric cars could play a crucial role in transforming the transportation industry and contributing to a more sustainable future. This way, Tesla could potentially become accessible to a broader market with funding it, becoming a significant player.

1. How would you characterize competition in the auto industry?

To answer this question, we need to look briefly on many Tesla models and try to give a collective answer.

The early days of launching the Roadster model, the competition was relatively limited in the electric vehicle market. Traditional automakers were not heavily invested in electric cars at this point, and Tesla faced minimal direct competition inside the sector.

When launching the Model S, the price was competing with other BMW cars at the time, trying to bring a product made by USA in-house. Competing luxury automakers, such as BMW and Mercedes-Benz, While building technologies for other companies, Tesla expanded their plan on the market and further developed others plans for new vehicles, like the Model 3, which aimed to penetrate the mass market, directly competing with more affordable gasoline-powered cars.

Traditional automakers, including GM, Ford, Nissan, and others, increased their efforts to produce electric vehicles that could rival the Model 3, intensifying responses from other players. Tesla's global expansion and its Gigafactories in multiple countries posed a challenge to local automakers in those regions, while other automakers over the world overtime felt the pressure of competition from Tesla and pushed to accelerate their electric vehicle production and technology development.

Continuing with expansion in markets like solar energy, Tesla tried overtime to diversify and enter new markets under the name of sustainability, having solar energy companies and energy storage providers as potential competitors.

1. What do you think are Tesla’s core competencies? Does it have any sources of sustainable competitive advantage?

Tesla has some core competencies which help it differentiate from the rest of the market, first the battery technology in its unique way of manufacturing, thanks especially to the Gigafactories production, which gave Tesla a significant advantage in terms of cost efficiency and supply chain control. In doing this, Tesla has pioneered new innovations like powertrains and superchargers.

In doing autonomous driving, Tesla has potential to amass data of this kind of driving and habits, offering advantages in terms of charging. This way, Tesla has established itself a big player, given it was the first of its kind to create a following for the electric vehicles market, gathering mass production of batteries in terms of cost and supply chain.

1. What is your assessment of Tesla’s moves into (a) mass-market cars, (b) batteries (car batteries and Powerwall), (c) solar panels? Please consider both the motivation for the moves, and the opportunities and challenges for Tesla to compete in these businesses.

The motivation of Tesla in bringing itself into the mass-market car segment was to accelerate transition towards sustainable transportation with ease and no fossil fuel dependent term. In this, there is intense competition and cost pressures, giving the scale of the economy is not yet ready, even with years of new crafting vehicles and solutions, to try to differentiate enough from other vehicles, while also trying to keep demand and being relevant in technology.

In batteries, Tesla desired to tackle a new market challenge, while also offering a solution which could be green, sustainable and innovative while entering the mass-market needs. This way, entering this market, new batteries and new energy-efficient solutions came n the form of supply-chain production, while facing new regulatory hurdles in adoption of these new technologies.

To be coherent with them all, the solar market represented another new way of innovation, with creating a comprehensive energy ecosystem, covering generation, storage, and consumption.

1. Do you think Tesla will be profitable in all of these businesses? Why or why not?

Tesla, like many other companies, wasn’t profitable yet it started to capitalize enough to become one of the biggest companies of the planet, creating a brand reputation and offer new opportunities, coming more and more investments to keep covering costs and finance their projects. Its core it’s being dynamic enough to face new competition, while also raising awareness of new chances and possibilities.

So, it is now profitable, thanks to have sticked with a core identity for years which was costly and not profitable enough to be successful enough to see sales and profits go upwards. Tesla's commitment to electric vehicles raised awareness about the benefits of sustainable transportation. As more people learned about the advantages of EVs, demand grew.

Recognizing the synergy between electric cars, energy storage, and renewable energy generation, it created a holistic approach created cross-selling opportunities and diversified revenue streams. This is definitely successful with securing investments and funding new things continuously.

1. What do you think Tesla’s (or Elon Musk’s) strategic intent is?

Musk’s strategic intent is to promote this ecosystem growth to a point where, like Amazon, it will become so big practically any project will be possible. More concretely, Tesla's primary strategic intent is to promote sustainability by developing and providing sustainable energy solutions. Innovation succeeded from bringing so many new solutions which seemed impossible years ago, thanks to being at the right place at the right time and the aim of helping both individuals and companies helped a lot in the long run, given Tesla's commitment to research and development and pushing the boundaries of technology in the EV, energy storage, and solar energy sectors.

Tesla aims to be a holistic leader, merging growth from everywhere and creating new knowledge and products with the blink of an eye, keeping content both customers and companies.

# Standards Battles, Modularity, and Platform competition (Chapter 4)

Let’s introduce this chapter talking about streaming services and how each one contributes to the overall discussion providing individual value, different recommendation systems and content, representing each a unique value to the platform (e.g. a streaming platform which has content others don’t have, etc.).

The overall user experience is enhanced by care of multiple companies and features offered by the single platform (in price, preferences, etc.). This can also happen in the rise of exclusive content, which can consolidate and make a competitive advantage for companies to win in this market, targeting customers and niches.

Many industries face significant pressure to select a single or a few dominant designs. This is because having a dominant design can lead to a more efficient and coherent marketplace, making it easier for consumers to adopt and interact with products or technologies.

* The process of selecting a dominant design is influenced by multiple dimensions. These dimensions can be complex and include technological, economic, and strategic factors.
* Firm strategies play a vital role in shaping which technologies rise to dominance. Companies can actively influence several of these dimensions, increasing the likelihood of their own technologies becoming dominant.

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Descrizione generata automaticamenteHence, dominant designs are selected for a few reasons:

1. **Increasing Returns to Adoption:**
   * Technologies become more valuable as they are adopted.
   * Two primary sources are learning effects and network externalities.
   * The learning curve improves efficiency and effectiveness over time.
2. **Prior Learning and Absorptive Capacity:**
   * A firm's prior experience influences its ability to recognize and utilize new information.
   * Using a specific technology builds a knowledge base, helping firms use and improve it.
   * The knowledge base helps firms use and improve the technology
   * Technologies adopted earlier tend to become better developed, making it challenging for other technologies to catch up.
3. **Network Externalities:**
   * Benefit from using a good increases with the number of other users of the same good.
   * Common in physically networked industries (e.g., railroads, telecommunications).
   * Also occurs when compatibility or complementary goods are important.
     1. E.g. Windows and its big compatibility applications’ ecosystem
4. **Immagine che contiene testo, diagramma, Carattere, design

   Descrizione generata automaticamenteSelf-Reinforcing Cycle:**
   * A technology with a large installed base attracts developers of complementary goods.
   * A technology with a wide range of complementary goods attracts users, increasing the installed base.

A good example might be the following:

* In 1980, Microsoft was not a major player in the PC operating system market. However, when IBM decided to create a personal computer, they turned to Microsoft for an operating system. Microsoft produced MS-DOS, a clone of the dominant CP/M system, which rapidly spread with the success of IBM's PCs.
* This led to a proliferation of software for MS-DOS. Later, Microsoft's Windows replaced MS-DOS as the primary operating system.
* The story highlights the critical impact of strategic decisions and partnerships in the tech industry. If history had taken a different turn, the software industry might look very different today.

Continuing with points on why dominant designs are selected:

1. **Government Regulation:**
   * In some cases, government organizations may intervene in industries where a single dominant design is beneficial for consumer welfare.

* Examples include the NTSC color standard in U.S. television broadcasting and the GSM standard for mobile communications in the European Union.
* The goal is to ensure compatibility and a smooth user experience.
* This intervention can lead to "winner-take-all" markets, where a single standard prevails, creating a natural monopoly where others may be locked out.

1. **Path Dependency and Technological Inquiry**

* Increasing returns to adoption create *path dependency* in technology trajectories.
* The events leading up to the outcome significantly impact the final result.
* Dominant designs have a *profound influence* on future technological developments in the same area.
* Winner-take-all markets have unique competitive dynamics where *technologically superior* products do not always win.
* Firms must adopt different strategies for success in these markets compared to those with less pressure for a single dominant design.

In increasing returns industries, a technology's value is influenced by its standalone value and network externality value (assessing *multiple dimensions of value*). Standalone value includes factors like the functions enabled, aesthetic qualities, and ease of use.

Immagine che contiene testo, schermata, Carattere, numero

Descrizione generata automaticamenteKim and Mauborgne developed a "Buyer Utility Map" to identify elements of a technology's standalone value, considering aspects like purchase, delivery, use, supplements, maintenance, and disposal. The following is an example:

Network externality value is determined by the size of a technology's installed base and the availability of complementary goods. A technologically advanced technology may offer less value if it lacks a sizable installed base or complementary goods. Example: NeXT Computers vs. Windows-based PCs.

Immagine che contiene testo, schermata, diagramma, Parallelo

Descrizione generata automaticamenteTo compete with an existing dominant technology, new technology must offer dramatic improvement or compatibility with the existing installed base and complements.

*Immagine che contiene testo, schermata, diagramma, Piano

Descrizione generata automaticamenteSubjective information*, including perceptions and expectations, can be as crucial as objective data. The value attributed to each dimension may not always align with actual numbers.

Immagine che contiene testo, diagramma, linea, Diagramma

Descrizione generata automaticamenteWe can graph the value a technology offers in both standalone value and network externality value:

We can compare the graphs of two competing technologies and identify cumulative market share levels (*installed base*) that determine which technology yields more value.

Immagine che contiene diagramma, linea, testo, Diagramma

Descrizione generata automaticamenteImmagine che contiene diagramma, linea, schizzo, Diagramma

Descrizione generata automaticamente

So, are winner-take-all markets good for consumers?

* Economics typically promotes competition for the benefits it offers to consumers.
* However, in cases where network externalities come into play, consumers may find more value when one technology dominates.

Immagine che contiene diagramma, linea, testo, schizzo

Descrizione generata automaticamenteAnother question: Should the government intervene when network externalities result in a natural monopoly?

* Network externality benefits to consumers increase as the cumulative market share of a technology grows.
* There's also a rising potential for monopoly costs to customers, such as price gouging and restricted product variety thanks to cumulative market share.
* Network externality benefits tend to grow logistically, while potential monopoly costs grow exponentially.
* When monopoly costs outweigh network externality benefits, government intervention may be justified. The optimal market share occurs where these lines intersect.

In some markets, modularity is used to create a platform ecosystem where multiple firms contribute to a product system. *Modular systems* are those that can be separated and recombined to alter their configuration, scale, or functions.

* Standardized interfaces ensure compatibility
* In some product systems modularity enables components from different producers to be recombined (for example, smartphones with different apps); in others only components from a single firm are recombined (for example, Ikea shelving systems)

Modularity is more valuable when there are:

* diverse technological options that can be recombined
* when customers have varying preferences

In platform competition for modularity (in the slide, examples for videogame consoles/mobile phones):

* Traditional integrated product bundles involve a provider attempting to meet buyers' needs internally, without customization or external compatibility.
* Compatibility with third-party expand options for the user
* Complementary resources in the ecosystem allow even more configuration options

In a *platform ecosystem*, a core product (e.g., a video game console) mediates the relationship between various components or complements (e.g., video games, peripherals) and end-users.

* The boundaries of a platform can be well-defined with stable members or flexible and ever-changing.
* The success of all ecosystem members depends partly on the success of others.
* Members often invest in co-specialization or exclusivity agreements within the ecosystem.

Platform ecosystems aim to balance pure modularity and pure integration:

* *Pure modularity* involves combinations happening in the market, offering choice and reconfigurability, fostering competition, but with uncertain quality and compatibility.
* Immagine che contiene testo, schermata, Carattere

  Descrizione generata automaticamente*Pure integration* means the combination is predetermined by a firm, there's no reconfiguration, no competition, but high co-specialization for optimized components.

# Collaboration Strategies (Chapter 8)