

Q&A Economics 2023-2024



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**Disclaimer**

The questions are taken from all the previous exams and also from the discussion questions present at the end of each chapter slides discussed in class in this year.

This can server as reference for studying and as a summary overall, with the goal of possibly being simple (*for real* even).

Hope this can be useful – feel free to reach me to feedback over its content. Also to thank me, does not kill me that much.

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# Exam Questions

## 08/02/2022

1. What are the different ways to categorize innovation?
2. What are the pros and cons regarding collaboration?
3. What are the aspects correlated to the construction of a new product development team?
4. In the context of circular economy, what are the contributes that social house communities can bring?

## 16/01/2022

1. What are the differences between a radical innovation and an incremental innovation? What are their main features?
2. How can firms protect their innovations?
3. What are the main advantages and disadvantages of a parallel development process?

## 25/01/2023

1. Define dominant design. Which strategies could a firm use to create a dominant design?
2. Which factors should a firm consider when planning a protection strategy?
3. Which types of innovations exists? Describe them shortly.

## 08/02/2023

* 1. Definition of first-movers. What are the advantages of first-movers? What factors might make some industries harder to pioneer than others? Can you name a successful late-entrant?
  2. Define the different types of collaboration. What are the advantages of collaborating over solo development?
  3. Which types of innovations exists? Describe them shortly.

## 03/07/2023

1. Define Modularity.
   1. explain how it affects the market dynamics and competitors.
   2. internal analysis of modularity in the firm.
2. Write your review on different types of collaborations, after discussing the advantages and disadvantages of collaborating over "solo development".
3. What are the different types of innovations and describe each of them.

## 05/09/2023

1. Dominant design
2. Porter's five force model
3. Which types of innovations exists? Describe them shortly.

# Discussion Questions

## Chapter 1

1. Why is innovation so important for firms to compete in many industries?

Innovation serves as a cornerstone for competitive advantage in various industries. First and foremost, it allows firms to differentiate themselves from competitors, creating unique value propositions that attract customers. In dynamic markets, where consumer preferences evolve rapidly, innovation helps companies stay relevant by adapting to changing trends.

Moreover, constant innovation is often necessary for survival, as industries that fail to innovate risk becoming obsolete. This servers as an important driver to further sparkle competition and give advance to technology and all of its products, contributing to different challenges and outputs each time.

Beyond differentiation, innovation enables firms to protect their profit margins. The introduction of new and differentiated products allows companies to command premium prices, preventing commoditization and ensuring sustained profitability. Additionally, process innovations enhance efficiency, reducing costs and contributing to overall competitiveness.

Furthermore, as highlighted in the summary, technological innovation is a significant driver of competitive success. Industries increasingly rely on advancements in technology to streamline processes, reduce product lifecycles, and cater to diverse market segments. Therefore, firms that embrace innovation position themselves to lead in these technological advancements, gaining a competitive edge.

1. What are some of the advantages of technological innovation? Disadvantages?

*Advantages:*

* **Sales Growth:** Technological innovations often lead to the development of new products or services, contributing to increased sales and revenue.
* **Efficiency and Productivity:** Process innovations, especially in the realm of information technology, can significantly enhance efficiency, streamline operations, and boost overall productivity.
* **Market Leadership:** Being at the forefront of technological advancements allows a company to establish itself as a market leader, attracting both customers and top talent.
* **Global Reach:** Innovation enables the delivery of goods and services to a global audience, expanding market reach and opportunities.

*Disadvantages:*

* **High Initial Costs:** Research and development costs for innovative projects can be substantial, posing financial risks for firms, especially if the project doesn't yield the expected returns.
* **Uncertain Returns:** The outcome of innovation projects is not always predictable, and there is a risk of failure or lower-than-expected market acceptance.
* **Resistance to Change:** Employees and stakeholders may resist adopting new technologies or processes, hindering successful implementation.
* **Negative Externalities:** As mentioned in the summary, innovation can lead to negative externalities such as pollution, posing ethical and environmental challenges.

1. Why do you think so many innovation projects fail to generate an economic return?

The failure of innovation projects to generate economic returns can be attributed to various factors:

* **Lack of Market Understanding:** Some projects fail because they do not adequately address a market need or solve a real problem. Understanding customer demands and market dynamics is crucial for successful innovation.
* **Inadequate Planning:** Poor project planning, including insufficient resource allocation, unrealistic timelines, and ineffective risk management, can lead to project failure.
* **Technological Challenges:** Technical complexities and unforeseen technological hurdles may arise, leading to delays, increased costs, or project abandonment.
* **Competitive Landscape:** Rapid changes in the competitive landscape or emergence of superior alternatives can diminish the economic viability of an innovation project.
* **Resistance to Change:** Internal factors, such as organizational resistance to change or a lack of employee buy-in, can impede the successful implementation and adoption of innovative solutions.
* **Insufficient Funding:** Innovation projects often require sustained financial support. Inadequate funding can hinder progress or force premature project termination.

## Chapter 2

1. What are some of the advantages and disadvantages of a) individuals as innovators, b) firms as innovators, c) universities as innovators, d) government institutions as innovators, e) nonprofit organizations as innovators?

**Advantages and Disadvantages of Innovators:** a) **Individuals:**

* *Advantages:* High flexibility, diverse perspectives, ability to take risks.
* *Disadvantages:* Limited resources, potential isolation, financial constraints.

b) **Firms:**

* *Advantages:* Access to resources, structured processes, financial backing.
* *Disadvantages:* Bureaucracy, resistance to change, potential for innovation to be stifled.

c) **Universities:**

* *Advantages:* Academic freedom, research focus, knowledge generation.
* *Disadvantages:* Limited commercialization expertise, slower implementation.

d) **Government Institutions:**

* *Advantages:* Significant funding, long-term vision, infrastructure support.
* *Disadvantages:* Bureaucracy, potential lack of market understanding.

e) **Nonprofit Organizations:**

* *Advantages:* Mission-driven, potential for collaboration, societal impact.
* *Disadvantages:* Limited funding, dependence on donations.

1. What traits appear to make individuals most creative? Are these the same traits that lead to successful inventions?

Traits that make individuals most creative include intellectual abilities, knowledge, confidence (personality), intrinsic motivation, and a supportive environment. While these traits contribute to creativity, successful inventions often require a combination of inventive thinking, curiosity, and entrepreneurial traits. A willingness to question assumptions and engage in continuous ideation and experimentation is crucial for successful inventions.

1. Could firms identify people with greater capacity for creativity or inventiveness in their hiring procedures?

Firms can certainly enhance their ability to identify creative individuals in their hiring procedures. Look for candidates who demonstrate intellectual abilities, a diverse knowledge base, confidence in their capabilities, and intrinsic motivation. Behavioral interview questions that assess problem-solving skills, innovative thinking, and adaptability can help identify candidates with a greater capacity for creativity.

1. To what degree do you think the creativity of the firm is a function of the creativity of individuals, versus the structure, routines, incentives, and culture of the firm? Can you give an example of a firm that does a particularly good job at nurturing and leveraging the creativity of its individuals?

The creativity of a firm is a complex interplay between the creativity of individuals and the organizational structure, routines, incentives, and culture – this can become a best practice to follow inside said company, via for example organizational creativity.

A notable example is Google, which fosters creativity through initiatives like the 20% Time policy, encouraging employees to spend a portion of their working hours on personal projects. Google's culture promotes exploration, risk-taking, and collaboration, contributing to the overall creativity of the company.

1. Several studies indicate that the use of collaborative research agreements is increasing around the world. What are some reasons collaborative research might be becoming more prevalent?

Collaborative research is becoming more prevalent for several reasons:

* **Complexity of Problems:** Many contemporary challenges require interdisciplinary solutions, necessitating collaboration.
* **Resource Pooling:** Collaborative efforts allow organizations to pool resources, share costs, and access diverse expertise.
* **Globalization:** Collaborative research enables tapping into a global pool of knowledge and expertise.
* **Rapid Technological Advances:** Keeping pace with rapidly evolving technologies is more feasible through shared efforts.
* **Funding Opportunities**: Collaborative research may attract more funding opportunities, especially in areas that require substantial investment.

## Chapter 3

1. What are some of the reasons that established firms might resist the adoption of a new technology?

* **Investment in Incumbent Technology:** Established firms often have significant investments in existing technologies, making it challenging to justify the costs of adopting new ones.
* **Risk Aversion:** Established companies may be risk-averse, fearing the uncertainties associated with new technologies, potential disruptions, and the need for retraining.
* **Organizational Inertia:** Large organizations can suffer from inertia, where existing processes, hierarchies, and cultures resist change, hindering the adoption of innovative technologies.

1. Are well-established firms or new entrants more likely to a) develop and/or b) adopt new technologies? What are some reasons for your choice?

a) **Developing Technologies:** New entrants, unencumbered by legacy systems, often have the flexibility to pioneer and invest in cutting-edge technologies.

b) **Adopting Technologies:** Established firms, with their resources and market presence, might be more capable of adopting proven technologies, leveraging their existing customer base and infrastructure.

They are likely to continuously adopt one between the two, then switch: it all depends on the firm factor, mentality and environment, which can be considered valuable only when new technologies are developed and employed, hence adopted and proven new each time.

1. Think of an example of an innovation you have studied at work or school. How would you characterize it on the dimensions described at the beginning of the chapter?
2. What are some of the reasons that both technology improvement and technology diffusion exhibit s-shaped curves?

* **Technology Improvement:** The S-curve in improvement reflects initial difficulty and cost, followed by accelerated learning, and finally diminishing returns as inherent limits are reached.
* **Technology Diffusion:** Similarly, the diffusion curve starts slow due to uncertainty, accelerates as understanding increases, and then slows at market saturation or with the emergence of newer technologies.

1. Why do technologies often improve faster than customer requirements? What are the advantages and disadvantages to a firm of developing a technology beyond the current state of market needs.

**Reasons for Faster Technological Improvement:**

* **Competitive Edge:** Companies strive to outperform competitors by pushing technological boundaries, staying ahead in the market.
* **Innovation Leadership:** Being a technological leader enhances a company's reputation and attracts customers and partners.
* **Future-Proofing:** Anticipating future needs ensures relevance and adaptability in a dynamic market.

**Advantages of Developing Technology Beyond Market Needs:**

* **Market Leadership:** Establishing leadership by offering features before competitors attracts early adopters and builds brand loyalty.
* **Innovation Perception:** Customers often associate innovation with the ability to foresee future needs, enhancing a firm's image.
* **Diversification:** Overdeveloped technologies can find applications in unforeseen markets, providing additional revenue streams.

**Disadvantages:**

* **High Costs:** Developing technologies beyond current needs may lead to excessive R&D costs with uncertain returns.
* **Limited Adoption:** Customers may not immediately appreciate or adopt advanced features, resulting in underutilized investments.
* **Risk of Obsolescence:** Rapid technological advancements may make overdeveloped features obsolete before they gain widespread acceptance.

1. In what industries would you expect to see particularly short or long technology cycles? What factors might influence the length of technology cycles in an industry?

**Expectations for Technology Cycle Length:**

* **Short Technology Cycles:**
  + **Information Technology (IT):** Rapid advancements in software and hardware.
  + **Consumer Electronics:** Frequent introductions of new models and features.
  + **Biotechnology:** Constant discoveries and improvements.
* **Long Technology Cycles:**
  + **Infrastructure Development:** Construction and civil engineering technologies.
  + **Traditional Manufacturing:** Industries with stable processes and equipment.
  + **Pharmaceuticals:** Long development and approval timelines.

**Factors Influencing Technology Cycle Length:**

* **Research Complexity:** Industries with complex research and development processes may experience longer cycles.
* **Regulatory Environment:** Stringent regulations can extend development and approval times.
* **Market Demand Volatility:** Rapidly changing customer demands can shorten cycles as companies strive to meet evolving needs.
* **Competition Dynamics:** Intense competition can accelerate cycles as firms race to introduce new innovations.
* **Investment Availability:** Industries with high R&D investments may experience shorter cycles due to increased funding for advancements.

## Chapter 4

1. What are some of the sources of increasing returns to adoption?

Increasing returns to adoption arise from various factors. **Learning effects** play a pivotal role, as the more a technology is used, the more producers and users become adept at optimizing its efficiency and effectiveness. This learning curve is depicted graphically, showcasing the iterative refinement that occurs with increased usage. Additionally, **network externalities** contribute significantly; as the user base expands, the value of the technology grows exponentially. This creates a self-reinforcing cycle where more users attract more developers of complementary goods, further enhancing the technology's overall value.

1. What are some examples of industries not mentioned in the chapter that demonstrate increasing returns to adoption?

Industries beyond the scope of the chapter that exemplify increasing returns to adoption include **social media platforms**. The larger the user base, the more attractive the platform becomes to potential users, fostering a network effect. In the realm of **electric vehicles**, the proliferation of charging infrastructure enhances the appeal and convenience of electric cars, creating a positive feedback loop of increased adoption.

1. What are some of the ways a firm can try to increase the overall value of its technology, and its likelihood of becoming the dominant design?

Firms aspiring to establish their technology as the dominant design employ multifaceted strategies. **Strategic alliances** play a pivotal role, as partnerships can enhance network externalities and ensure a robust ecosystem of complementary goods. Continuous investment in **research and development (R&D)** is crucial for enhancing standalone value. Moreover, effective **marketing and branding** efforts shape perceptions, influencing how users perceive the technology's value and ensuring a competitive edge.

1. What determines whether an industry is likely to have one or a few dominant designs?

The convergence on a single or a few dominant designs within an industry is influenced by a combination of **market forces** and the **regulatory environment**. Industries characterized by strong **network externalities** and increasing returns are more likely to gravitate towards a dominant design. Simultaneously, the regulatory landscape can play a pivotal role, as seen in cases where government intervention imposes standards, fostering a unified design approach across the industry.

1. Are dominant designs good for consumers? Competitors? Complementors? Suppliers?

The implications of dominant designs vary for different stakeholders. **Consumers** can benefit from the compatibility, easier adoption, and potentially lower costs associated with a dominant design. However, for **competitors**, entering the market with a different design might pose challenges. **Complementors** can thrive in a well-established ecosystem but may face challenges if excluded. **Suppliers** may benefit from supplying components for the dominant design but face risks if the design undergoes significant changes.

1. In what kinds of industries will platform ecosystems be more valuable than pure modularity or integrated hierarchies?

**Technology-driven industries**, where diverse components or applications can be seamlessly combined for added value, are particularly conducive to platform ecosystems. **Consumer electronics** is a notable example, where products often feature expandable and customizable features. Similarly, in the realm of **gaming consoles**, platforms that encourage third-party game developers contribute to a dynamic ecosystem that balances modularity and integration, fostering innovation and variety.

## Chapter 6

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.

## Chapter 8

1. What are some of the advantages and disadvantages of collaborating on a development project?
2. How does the mode of collaborating (for example, strategic alliance, joint venture, licensing, outsourcing, collective research organization) influence the success of a collaboration?
3. Identify an example of collaboration between two or more organizations. What were the advantages and disadvantages of collaboration versus solo development? What collaboration mode did the partners choose? What were the advantages and disadvantages of the collaboration mode?
4. If a firm decides it is in its best interest to collaborate on a development project, how would you recommend the firm go about choosing a partner, a collaboration mode, and governance structure for the relationship?

## Chapter 9

1. What are the differences between patents, copyrights, and trademarks?
2. Consider a firm that is considering marketing its innovation in multiple countries. What factors should this firm consider in formulating its protection strategy?
3. When will trade secrets be more useful than patents, copyrights or trademarks?
4. Can you identify a situation in which none of the legal protection mechanisms discussed (patents, copyrights, trademarks, trade secrets) will prove useful?
5. Describe a technological innovation not discussed in the chapter and identify where you think it lies on the control continuum between wholly proprietary and wholly open.
6. What factors do you believe influenced the choice of protection strategy used for the innovation identified above? Do you think the strategy was a good choice?

## Chapter 11

1. What are some of the advantages and disadvantages of a parallel development process? What obstacles might a firm face in attempting to adopt a parallel process?
2. Consider a group project you have worked on at work or school. Did your group use mostly sequential or parallel processes?
3. Are there some industries in which a parallel process would not be possible or effective?
4. What kinds of people make good project champions? How can a firm ensure that it gets the benefits of championing while minimizing the risks?
5. Is the Stage-Gate process consistent with suggestions that firms adopt parallel processes? What impact do you think using Stage-Gate processes would have on development cycle time and development costs?
6. What are the benefits and costs of involving customers and suppliers in the development process?

## Chapter 12

1. Why are the tradeoffs in choosing a team's size and level of diversity?
2. What are some of the ways that managers can ensure that a team reaps the advantages of diversity while not being thwarted by some of the challenges team diversity raises?
3. Can you identify an example of a development project, and what type of team you believed they used? Do you think this was the appropriate type of team given the nature of the project?
4. What are some of the advantages and disadvantages of co-location? Are there some types of projects for which “virtual teams” are inappropriate?