

## Innovation Management Feb 9<sup>th</sup>, 2023 (20 points)<sup>(\*)</sup>(\*)

**Q1 - (Commentary - 6 pt):** "... many companies working on [Quantum computing] technology are in a race to prove that today's [...] systems can reach so-called quantum advantage — the point at which a quantum computer can perform a useful task more efficiently than a traditional, or "classical", machine, ushering in commercial use of the technology. Four years ago, John Preskill, a professor of theoretical physics at the California Institute of Technology, predicted that quantum systems would start to outperform and might have commercial uses once they reached 50-100 qubits in size. But that moment has come and gone without quantum systems showing any clear superiority. IBM unveiled a 127-qubit computer more than a year ago, and last month announced that a new 433-qubit processor would be available in the first quarter of 2023. These days, Preskill sounds more cautious. "I expect that for practical applications with significant business value we'll have to wait for error-corrected fault-tolerant quantum computers," he said, adding that this was likely to be "a ways off". But he added that today's systems already had scientific value.

One reason that hopes have retreated is that new ways have been found to program classical computers to handle tasks that were once thought to be beyond them. This has pushed back the quantum frontier, delaying the moment when people building quantum systems can claim an advantage, said Oskar Painter, head of quantum hardware in the cloud computing division at Amazon, one of the tech companies that is building its own quantum computer. "They never finally could say, 'This will be better'" he said.

After years of rising expectations, the lack of practical uses for the technology has led some experts to warn of a potential "quantum winter" — a period when disappointment about a new technology leads to a waning of interest for a number of years. The term is borrowed from the AI "winters" of the 1970s and 1980s, when a number of promising research avenues turned out to be dead ends, setting the field back for prolonged periods. "People are worried it will be really harsh," said Painter at Amazon Web Services. Like many in the field, though, he said that any short-term backlash was unlikely to hit long-term research funding. "I don't think it will go away."

Receding hopes for early benefits from quantum computing have already contributed to a sharp fall in the stocks of a handful of companies that rode the wave of enthusiasm over the sector to go public since the middle of 2021. Based on their peak share prices soon after they each went public, Arqit, IonQ, D-Wave and Rigetti reached a combined value of \$12.5bn. That has since fallen to \$1.4bn. Among the events to batter the quantum companies last year, IonQ was hit by a report from a short seller claiming its technology did not live up to its claims, while Rigetti founder Chad Rigetti was removed as chief executive before quitting the company late in the year.

Part of the problem facing the sector has been an excess of "hype" about the technology, said Constantin Gonciulea, chief technology officer of advanced technology at Wells Fargo. He compared the build-up of expectations around quantum to the crypto industry, as many non-experts have been drawn into the field and promises for the technology have far outgrown its potential in the near term.

Despite this, companies working on the first quantum machines and software still insist that practical uses of the technology are just around the corner — while continuing to carefully avoid giving too precise a prediction about exactly when that will be. For some quantum companies, [recent results arising in China are] a sign that the technology's big moment is drawing nearer. But for the doubters, the apparent impracticality of the research will serve as confirmation that quantum computing is still an impressive science experiment rather than a practical technology."

This article extract comes from a recent (Jan 10<sup>th</sup>) issue of the *Financial Times*, is an interesting case study in the context of innovation management. Specifically,

- This case exemplifies a few theoretical topics that have been covered in class. Which ones do you spot and why do you think they apply to the case?
- Suppose that a high-tech investment fund is considering whether or not to buy shares in the "quantum computing" firms that are mentioned in the article, taking advantage of the recent fall in their share price. They have arranged meetings with these firms, and hire you as a consultant. What are the 2-3 key questions you would ask the managers of these firms, with respect to their strategy, and what is the reason for the questions?

**Q2 - (Open question - 4pt):** In the context of strategic management of innovation, does it make sense for a firm to acquire another firm? If so, what are the main advantages, disadvantages and risks associated to this choice? If possible, make use of original examples (i.e. examples that have not been mentioned during lectures).

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<sup>(\*)</sup>(\*) no answer (open questions) = 0 pt

no answer (closed questions) = -0,5 pt

wrong answer (closed questions) = -0,5 pt

**Q3 - (Closed question - 2pt): A technological gatekeeper is ... (select the correct answer)**

- ☐ The firm which is recognized as the technological leader in an industry, compared to its competitors
- ☐ The project manager in charge of a high-tech project that is carried out within an alliance involving more than one firm
- ☐ An organizational role that facilitates the flow of technological knowledge within the firm and coming from outside the firm
- ☐ The manager that is in charge of designing training programs for employees engaged in research and development

**Q4 – (Closed question - 2pt): From the perspective of economic geography, innovation tends to occur .... (select the correct answer)**

- ☐ Just about anywhere, since the world is now globalized and people can communicate effortlessly
- ☐ In well-functioning “local innovation systems”, in which one can observe economies of agglomeration, and a significant interplay among private, public and academic actors
- ☐ In well-functioning “local innovation systems”, in which one can observe economies of scale, scope and learning, and a significant interplay among private, public and academic actors
- ☐ In key financial centers, since innovation requires significant funding

**Q5 (Closed question - 2pt): A technological standard represents... (select the most correct answer)**

- ☐ The technology and/or product architecture that has become dominant in the industry
- ☐ A legally established set of prescriptions to be followed when designing a product
- ☐ A set of specifications that add economic value to the product simply because of its conformity to the standard
- ☐ The best-performing technical solution present in the market

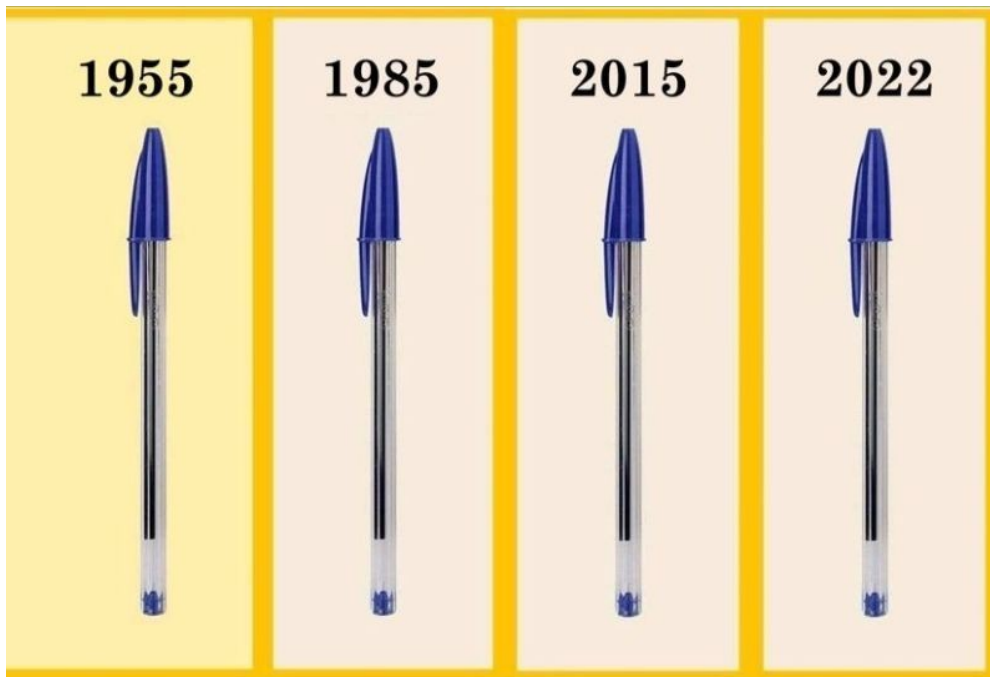
**Q6 - (Closed question - 2pt): When discussing barriers to innovation... (select the correct answer)**

- ☐ Both innovating and non-innovating firms encounter barriers to innovation, which tend to be quite different in the two cases
- ☐ Innovating and non-innovating firms encounter the same barriers when they pursue innovation
- ☐ Non-innovating firms encounter barriers that deter them from innovating, but firms that are already innovating do not experience any substantial problem any more
- ☐ It is misleading to discuss barriers to innovation in relation to firms, since they should be discussed at the level of the industry

**Q7 - (Closed question - 2pt): In a digital platform, the so-called “disjunction” between encoded data from user participation and reality is essentially related to ... (select the correct answer):**

- ☐ ...time. In fact, it takes at least a few minutes for this data to propagate to the data warehouse, before it can be analyzed.
- ☐ ...hardware. It occurs when traces from user participation come from unreliable sensors.
- ☐ ...software. It occurs when bugs are present at some point in the technology stack.
- ☐ ...the gap between actual user behavior and the behavior defined by the platform.

Q1 - (6 pt) **Commentary**



*The BIC Cristal (stylised as BiC Cristal and also known as the Bic pen) is an inexpensive, disposable ballpoint pen mass-produced and sold by Société Bic of Clichy, Hauts-de-Seine, France. It was introduced in December 1950 (72 years ago) and is the best-selling pen in the world, with the 100 billionth sold in September 2006. It has become the archetypal ballpoint pen and is considered ubiquitous, to the extent that the Museum of Modern Art has made it a permanent part of its collection. Its hexagonal form and design mimics a standard pencil and it is sold in six types of point and 18 colours around the world. (source: Wikipedia)*

You've probably seen this picture of BIC pens remained unchanged over the years, that is often used as a case supporting statements such as:

- Don't change something as long as it's still working.
- Sometimes there is no need to innovate!
- The same lovely old pen has worked well for years!
- If it runs out of ink, just buy another one!

These are typical statements of managers concluding that *a wise leader does not touch what works well*.

These managers probably discount the fact that today's world is riding the digital wave filled with rapid changes in technology, markets, and many other factors that may influence long term competitive advantage.

Based on the theory of organizational learning and on the concept of the “innovator’s dilemma” discussed in class, write a short commentary that covers the following points:

- 1) What kind of manager thinks and acts like this?
- 2) What kind of companies typically face this problem?
- 3) What could be the risk?
- 4) What is the main trade-off that such companies face, and what are the mechanisms that could solve it?

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<sup>1</sup> no answer (open questions) = 0 pt

no answer (closed questions) = 0 pt

wrong answer (closed questions) = -0,5 pt

**Q2 - (4pt) Open question:** Diffusion of Innovation is a theory that seeks to explain how, why, and at what rate new ideas and technologies spread. It was Everett Rogers, a professor of communication studies, who popularized the theory in his book “Diffusion of Innovations”. Rogers argues that diffusion is the process by which an innovation is communicated over time among the participants in a social system. 5 segments are profiled, with regard to their attitude towards innovation: innovators (Lead users, enthusiasts), visionaries (early adopters), pragmatists (early majority) conservatives (late majority) and skeptical (laggards).

Explain why, in the case of a tech company in its startup stage, early adopters could represent a crucial segment to cover, and substantiate your answer with a real-life example.

**Q3 - (2pt) Closed question:** When using Porter’s five forces model, the introduction of innovations should be taken into account, since they have a strong influence on ... (select the correct answer)

- ☐ The threat of new entrants: when new competitors may enter easily, incumbent businesses risk losing market share because competition in the industry increases.
- ☐ The negotiating power of customers, as it lowers their “buyer power.”
- ☐ The negotiating power of suppliers, as it lowers switching costs and raises the threat of substitute products
- ☐ All the five forces, since all of them can be influenced by innovations.

**Q4 – (2pt) Closed question:** Stage-Gate processes in new product development are based on the principle that.... (select the correct answer)

- ☐ costs increase and uncertainty decreases with time
- ☐ costs decrease and uncertainty increases with time
- ☐ costs and uncertainty decrease with time
- ☐ costs and uncertainty increase with time

**Q5 (2pt) – Closed question:** Appropriability can be defined as a firm’s approach to protecting relevant internal knowledge against being copied, and to appropriating the returns from innovative activities. The definition of appropriation mechanisms is of utmost importance when ... (select the answer that is most coherent with the concept of appropriability)

- ☐ The company owns technologies in which standardization and compatibility are important and external development could put the integrity of the product at risk
- ☐ Protecting the technology gives the developing firm the architectural control over its evolution (i.e. the ability to determine its compatibility with other goods or services)
- ☐ Managers seek to capture rents from the organization’s knowledge assets when pursuing open innovation strategies.
- ☐ Both customers and complementary goods providers perceive the technology as the better solution in the market

**Q6 - (2pt) Closed question:** Digital innovation and value creation are shaped by the intrinsic attributes of digital artifacts. Contrasting with the fixed constitution of physical things, digital artifacts enable the modeling of knowledge about some domain. As digital goods, data have the following economic qualities... (select the correct answer)

- ☐ Data are non-rival, editable, portable, and instable goods
- ☐ Data are rival, editable, portable, and instable goods
- ☐ Data are non-rival, editable, instable but not portable goods: once data are encoded in digital objects they are not re-contextualizable
- ☐ Data are rival, editable, portable, and stable goods

**Q7 - (2pt) Closed question:** The degree to which a firm is successful in producing the desired results (i.e. its objectives) in terms of growth, market leadership and competitive advantage in the external environment is called... (select the correct answer):

- ☐ Efficiency
- ☐ Productivity
- ☐ Effectiveness
- ☐ Cost efficiency

## Innovation Management -Theory (20 points)

**Q1 - (6 pt) Commentary** *Tim Cook has long said Apple seeks to “own and control the primary technologies behind the products that we make”. Cook laid out the goal in 2009, two years before he became chief executive, and producing its own chips has been the most visible result of this strategy. That has contributed to longer battery life and better overall performance of the iPhone. Yet even if not the primary incentive, the financial effects are likely to be significant. To say that Apple “makes” anything is to stretch the meaning of the word: it designs the product and controls the process, but subcontracts the actual assembly or manufacturing to others. As a result, the recent surge in its sales — and profits — has come without the need to pour more capital into its operations. Its return on capital employed jumped nearly 20 percentage points in 2021, to 48 per cent. Last year it leapt again, to around 60 per cent. The impact of all of this on suppliers has also been profound. As Apple has claimed more of the design work, suppliers have been pushed towards lower-margin and more capital-intensive activities. That has led to a focus on scale and a concentration of the supply base.*

Based on the above extract of a recent Financial Times article:

- Discuss Apple’s strategic move and explain how ownership and control over product design produced the above-mentioned effects (an increase in technology performance and positive financial returns), while drastically absorbing margins from its supply chain partners;
- Find the elements related to closed and open innovation practices in this strategy, and discuss what could be, in your opinion, the potential risks (if any).

**Q2 - (4pt) Open question: Why can innovation be disruptive over entire industries (i.e. why do incumbent firms fail to tackle disruptive innovation?)** Briefly elaborate on the concept of disruptive innovation, and clarify the possible external (technology-market) and internal (managerial) determinants, making use of examples.

**Q3 - (2pt) Closed question Dominant designs tend to remain stable because ... (select the correct answer)**

- ☐ Network externalities, investments in complementary assets, economies of scale in production and organizational learning facilitate their establishment and may generate lock-in
- ☐ Business model innovation exerts lock-in effects
- ☐ Closed innovation and internal R&D, which are typical of the transition phase in the Abernathy-Utterback model, allow shorter learning curves
- ☐ New technologies are highly appropriable

**Q4 – (2pt) Closed question Balancing exploration and exploitation in large established organizations can be described as: .... (select the correct answer)**

- ☐ A trade-off in allocating resources between open and closed innovation strategies
- ☐ A trade-off between patenting and disclosing
- ☐ A trade-off in allocating resources between investing in the exploration of new knowledge, and the utilization of current knowledge and capabilities
- ☐ A problem of appropriation of competencies

**Q5 (2pt) – Closed question High technological novelty and modest organizational impact are the two characteristics of... (select the correct answer)**

- ☐ radical innovations
- ☐ incremental innovations
- ☐ modular innovations
- ☐ architectural innovations

**Q6 - (2pt) Closed question Within the data value chain, data-based value creation clearly emerges from... (select the correct answer)**

- ☐ the use of AI algorithms
- ☐ the use of data analytics techniques
- ☐ the creation of data objects
- ☐ the creation of user interfaces

**Q7 - (2pt) Closed question The scale-up process of two-sided and multi-sided digital platforms benefits from (select the correct answer):**

- ☐ Scale economies
- ☐ Direct network effects
- ☐ Localization economies
- ☐ Direct and indirect network effects

## Innovation Management -Theory (20 points)

**Q1 - (6 pt) Commentary** *In late August, Moderna filed patent infringement lawsuits against Pfizer and BioNTech for infringing patents central to its mRNA technology platform. "Moderna believes that Pfizer and BioNTech's COVID-19 vaccine Comirnaty infringes patents Moderna filed between 2010 and 2016 covering Moderna's foundational mRNA technology. This groundbreaking technology was critical to the development of Moderna's own mRNA COVID-19 vaccine, Spikevax. Pfizer and BioNTech copied this technology, without Moderna's permission, to make Comirnaty". Moderna said in a press release that it is not aiming to remove Pfizer's vaccine from the market or prevent future sales of its vaccine and also is not seeking damages of its sale in specific circumstances. What Moderna really wants is a cut of its competitor's profits, said Christopher Morten, an expert on intellectual property law at Columbia University.*

Based on the above example:

- define **patents** in the context of **IP protection mechanisms** and discuss their strategic role in the pharmaceutical industry.
- suggest possible explanations for Moderna's lawsuit, beyond the opportunistic objective of extracting profits from its competitors.

**Q2 - (4pt) Open question:** What are the advantages and disadvantages in innovation for large and small, entrepreneurial companies? Briefly elaborate on how different types of advantages and disadvantages are connected to the main differences between the two types of firms, making use of examples.

**Q3 - (2pt) Closed question** Inbound and outbound open innovation refer to ... (select the correct answer)

- ☐ the direction of knowledge flows with respect to the boundaries of the organization
- ☐ the direction of the revenue streams from new products and services
- ☐ exploration and exploitation strategies
- ☐ collaboration with different types of partners

**Q4 - (2pt) Closed question** Aside from the key objective of developing new competencies and technologies, internal R&D investments are crucial in order to:

- ☐ make profits out of innovations
- ☐ innovate the business model
- ☐ build internal absorptive capacity
- ☐ pursue coupled open innovation processes

**Q5 (2pt) – Closed question** Knowledge embedded in organizations... (select the correct answer)

- ☐ is a rhetorical statement, since it is the members of the organization who possess knowledge, whereas the organization does not.
- ☐ is a key determinant of the way the organization operates and innovates, to the point that it transcends the knowledge possessed by its members, making the latter irrelevant.
- ☐ is equivalent to the data stored in corporate IT systems and algorithms processing it.
- ☐ is a key determinant of the way the organization operates and innovates; it derives from the usage of the knowledge contributed by its resources within routines and processes

**Q6 - (2pt) Closed question** A technological trajectory describes... (select the correct answer)

- ☐ a "technology push" type of technological progress
- ☐ a "demand pull" type of technological progress
- ☐ the evolution of a technology along with market needs, eventually leading to the establishment of a technological paradigm
- ☐ the bell-shaped curve that is sometimes called "hype cycle".

**Q7 - (2pt) Closed question** Corporate venturing is...

- ☐ an approach undertaken by an incumbent in order to diversify its financial investments away from its core business
- ☐ an approach undertaken by an incumbent in order to "connect" to innovative solutions being developed by promising startups, without acquiring them outright
- ☐ the same thing as the acquisition of a startup by an incumbent, but carried out through a separate legal entity (i.e., the "corporate venturing firm") controlled by the incumbent
- ☐ the startup phase of a new joint venture set up by the firm together with some other partner

## **Innovation Management -Theory**

### **Solutions**

**Q1 - (6 pt):** *In late August, Moderna filed patent infringement lawsuits against Pfizer and BioNTech for infringing patents central to its mRNA technology platform. "Moderna believes that Pfizer and BioNTech's COVID-19 vaccine Comirnaty infringes patents Moderna filed between 2010 and 2016 covering Moderna's foundational mRNA technology. This groundbreaking technology was critical to the development of Moderna's own mRNA COVID-19 vaccine, Spikevax. Pfizer and BioNTech copied this technology, without Moderna's permission, to make Comirnaty". Moderna said in a press release that it is not aiming to remove Pfizer's vaccine from the market or prevent future sales of its vaccine and also is not seeking damages of its sale in specific circumstances. What Moderna really wants is a cut of its competitor's profits, said Christopher Morten, an expert on intellectual property law at Columbia University.*

Based on the above example:

- define **patents** in the context of **IP protection mechanisms** and discuss their strategic role in the pharmaceutical industry.
- suggest possible explanations for Moderna's lawsuit, beyond the opportunistic objective of extracting profits from its competitors.

### **SOLUTION**

- Patents are a formal IP protection mechanism that gives the holder of the patent the right to exclude others from making, using, selling, and importing an invention for a limited period of time, usually 20 years from the date of filing. In exchange for disclosing the details of their invention to the public, the inventor is granted a limited-time monopoly on the use and exploitation of the invention. Companies can use patents to prevent competitors from using their proprietary technologies or making copies of their products. In the pharmaceutical industry, patents are an important strategic tool that can be used to protect the significant investments made in research and development (R&D) and to recoup those costs through the sale of patented products in different geographical markets, acting through the mechanism of patent extension. The importance of patents in the pharmaceutical industry is particularly high, due to the ease with which a drug could be imitated (i.e., reverse engineering is relatively easy) and to the low marginal cost of producing the drug, compared to the high fixed cost of R&D.
- There are a number of possible explanations for Moderna's lawsuit beyond the objective of obtaining a share of profits from its competitors

The most interesting element in the press release is that the lawsuit is not only about COVID vaccines, since Moderna is claiming that Pfizer and BioNTech have infringed the IP associated to its broader mRNA technology platform, which is at the core of the firm, and in which it has most likely placed significant R&D investments.

By suing Pfizer and BioNTech for patent infringement in the case of COVID vaccines, Moderna may be trying to prevent them from using its patented technology without compensation also in other applications.

Moderna may be trying to negotiate a licensing agreement with Pfizer and BioNTech. By suing for patent infringement, Moderna may be trying to force Pfizer and BioNTech to negotiate for compensation and reach a licensing agreement for the use of its patented technology.

Moderna may be seeking to establish itself as the leader in the mRNA drug market and use the lawsuit as a barrier to entry, preventing competitors from using this technology and catching up. By suing Pfizer and BioNTech, Moderna may be sending a signal to deter other companies from developing drugs that might come close to infringing its patented technology.

Moderna may be trying to resolve a dispute over the ownership of the patented technology. If Moderna believes that Pfizer and BioNTech are using technology that it believes is rightfully its own, it may be suing to clarify ownership and establish its exclusive IP rights to the technology.

**Q2 - (4pt): What are the advantages and disadvantages in innovation for large and small, entrepreneurial companies?** Briefly elaborate on how different types of advantages and disadvantages are connected to the main differences between the two types of firms, making use of examples.

### SOLUTION

Large established companies dispose of a wider set of material and immaterial resources (e.g. financial resources, human resources, IP, customer base ... ) than small, entrepreneurial companies, which can be an advantage when it comes to innovation. They may have larger R&D budgets, more specialized employees, qualified managers and more established external networks. For example, a large firm may have the resources to conduct expensive R&D activities, such as complex clinical trials for a new drug, and may have the assets required to internally build a prototype of a new technology. Moreover, since the cost of R&D activities typically is a fixed cost, having a large customer base allow a large company to gain economies of scale, by spreading this costs over a larger production volume.

On the other hand, small, entrepreneurial companies are more agile and able to pivot in response to technological and market turbulence than large firms, that, especially when successful, may be characterized by innovation and organizational inertia. Entrepreneurial firms are often also more open than large established companies to taking risks and trying out new ideas. This can be an advantage in innovation, as it allows them to move more quickly, explore new technological and market solutions, and innovate the business model.

One disadvantage that large firms may face when it comes to innovation is that they may be too focused on the exploitation of current capabilities, leading to high short-term profits, but making them less willing to invest in long-term “exploration” projects that would require significant change in their organization, assets, market, or business model. Especially for firms operating in mature industries, innovation inertia exposes them to the risk of being disrupted. In contrast, small, entrepreneurial companies may be more willing to take risks and think long-term, as they may have less pressure to generate immediate returns for shareholders. In small entrepreneurial firms, the R&D objectives and management objectives are very well aligned and strategy evolves accordingly.

One disadvantage that small, entrepreneurial companies may face when it comes to innovation is that they have limited resources, which can make technology exploitation to bring new products to market more difficult and risky for them. They may also have limited reputation and access to established networks and markets, which can make it harder for them to find trustworthy collaborators and customers. As small entrepreneurial firms are often one-project-one-technology companies, collaborating in innovation exposes them to the risk of losing relevant knowledge or not appropriating the results.

Overall, the advantages and disadvantages of collaborating in innovation for large and small, entrepreneurial companies depend on the specific context (for example, the industry, the geographical location, the degree of technological or market turbulence) and the resources of each firm (for example, R&D investments, availability of complementary assets).

**Q3 - (2pt): Inbound and outbound open innovation refer to ... (select the correct answer)**

- ☒ the direction of knowledge flows (from outside to inside and vice-versa) with respect to the boundaries of the organization
- ☐ the direction of the revenue streams from new products and services (from outside to inside and vice-versa)
- ☐ respectively exploration and exploitation strategies
- ☐ collaboration with different types of partners

*Open innovation essentially has to do with flows of knowledge, which lead from research to the launch of new products, and which occur across corporate boundaries. The first answer is therefore the correct one “by definition”. The second answer could also apply if we refer to open business models. Revenue streams emerge as a consequence of these knowledge flows, but are not integral to the definition of inbound and outbound open innovation processes. The other two answers are nonsensical.*

**Q4 - (2pt): Aside from the key objective of developing new competencies and technologies, internal R&D investments are crucial in order to: (select the correct answer)**

- ☐ ensure the firm is able to make profits out of innovations
- ☐ innovate the firm’s business model
- ☒ build internal absorptive capacity
- ☐ pursue coupled open innovation processes

*Aside from being one of the well-known reasons for carrying out R&D, the third answer is the only one that makes any sense. The first answer is wrong, since R&D may enable innovations, but cannot ensure their profitability. The second answer is wrong, since R&D is not generally aimed at innovating a business model (on the opposite, business models may be innovated after R&D has been carried out, in order to create value out of its results). The fourth answer is nonsensical.*



**Q5 - (2pt): Knowledge embedded in organizations... (select the correct answer)**

- ☐ is a rhetorical statement, since it is the members of the organization who possess knowledge, whereas the organization does not.
- ☐ is a key determinant of the way the organization operates and innovates, to the point that it transcends the knowledge possessed by its members, making the latter irrelevant.
- ☐ is equivalent to the data stored in corporate IT systems and algorithms processing it.
- ☒ is a key determinant of the way the organization operates and innovates; it derives from the usage of the knowledge contributed by its resources within routines and processes

*Both the Evolutionary Theory of the Firm and the Resource-Based View in strategic management are based on the definition found in the fourth answer. The other three answers contradict this basic definition.*

**Q6 - (2pt): A technological trajectory describes... (select the correct answer)**

- ☐ a “technology push” type of technological progress
- ☐ a “demand pull” type of technological progress
- ☒ the evolution of a technology along with market needs, eventually leading to the establishment of a technological paradigm
- ☐ the bell-shaped curve that is sometimes called “hype cycle”.

*The correct answer is obviously the third. A technological trajectory may be subject – at different times along the s-curve – to both technology push and demand pull, and there is no reason why it should be associated to only one of these determinants. The fourth answer is nonsensical.*

**Q7 - (2pt): Corporate venturing is... (select the correct answer)**

- ☐ an approach undertaken by an incumbent in order to diversify its financial investments away from its core business
- ☒ an approach undertaken by an incumbent in order to “connect” to innovative solutions being developed by promising startups, without acquiring them outright
- ☐ the same thing as the acquisition of a startup by an incumbent, but carried out through a separate legal entity (i.e., the “corporate venturing firm”) controlled by the incumbent
- ☐ the startup phase of a new joint venture set up by the firm together with some other partner

*The very definition of corporate venturing is in the second answer. All the other answers point to other types of business initiatives that would fall under other names, which are suggested in the same answers (i.e., respectively financial diversification, acquisition, establishment of a joint venture).*