2 TECHNOLOGICAL ANALYSIS AND DEFINITION

2.1 Environmental and competitive abilities analysis

Now we are going to evaluate the start-up from the technological point of view starting with an analysis of the situation of the technological environment. The aim is to identify the opportunities and threats and to analyze your ability to take advantage and manage them.

You have to take into account that nowadays the competitive environments are very dynamic due to the influence of external factors like:

- **The increase of the globalization tendencies**: Both for suppliers and customers the concept of local market disappeared.
- **The increase of the consumer’s power**: The customer’s power increases as the range of products and services gets wider.
- **Changeable regulation patterns**: other influence in the environment is the regulations or controls, which are subjected in many cases to a constant change, as the environmental regulation.
- **A main factor to** understand a changeable competitive environment is to **spread the technologies**, which are in constant development, moving and widening their borders.

This uncertainty, that in the first moment can seem a threat for your start-up, can turn into a good opportunity if you manage usefully the technological factor.

It is basic to detect as fast as possible the changes that can impact in the technologies and how can they affect your business, to:
- **Foresee the technological changes**: be aware of the changes or threats on your activity sector or in another different from the one of your future business.
- **Reduce risks after detecting technological threats**: for example, check if the competitors are copying you.
- **Make progresses after detecting technological gaps**: for example, identify the opportunities of investment and marketing.
- **Innovate after finding new ideas and technological solutions**: for example, decide the new products plan and their strategies, etc.
- **Cooperation with new technological partners**: for example you have to recognize better partners to develop projects together or to make easier the incorporation of new technologies to the products.

The technological study has to be focused on: the customers, the competitors and the technological evolution.

![Diagram](image)

Figure 2

### 2.1.1 Customers: pay attention to their demands

To develop a real competitive advantage it is basic to know, first of all, the market, and especially which are the most valuable needs of our potential customers. It will be also very useful to identify how these aspects turn into demands and innovations in the products and services. This information will make us ask to our selves which is the most suitable technological response.

A correct evaluation of the technological response will allow you to act faster and in a most efficient way to all the customers’ demands and even to foresee future needs.

To control your field you have to be able to solve these matters:
- Which are the existing technologies to satisfy the most important requests of our potential customers.
- Which are the technologies that can help us to satisfy the innovation demand of our products and services.

You also have to be able to identify:

- Which **opportunities**, using the technology, have to be empowered in the market to fulfil the customer’s needs.
- Which **threats** can affect the technologies available in the market
- Which of your **internal strengths** (resources, knowledge, relations…) are going to allow you to exploit the **opportunities** and/or to manage correctly the detected threats.
- Which **internal weaknesses** you find that can hinder the opportunities and/or the right management of the identified **threats**.

For further information you have a *Market analysis* that will let you, among other things, analyze the behaviour and needs of the customers in relation to the possibility of developing new products or adding improvements to the existing ones, well as to explore new markets.

**2.1.2 Competitors: know their behaviour**

Another part of the technological analysis is to study what the competitors are doing.

In this sense we need to know which technologies are they using and how these support their respective competitive advantages.

To control your field you have to be able to solve these matters:

- Which are the main technologies used by your competitors
- How are competitors using the technology to have a better position in the market.

You also have to be able to identify:

- Which **opportunities** can be ran in the market in relation to your main competitors and the use that they do of their technologies.
- Which **threats** do you identify that can harm the market due to the use that your main competitors make of their technologies.
- Which **internal strengths** (resources, knowledge, relations…) are going to allow you to exploit the **opportunities** and/or to manage correctly the detected **threats**.
- Which **internal weaknesses** you find that can hinder the **opportunities** and/or the right management of the identified **threats**.

In this sense we have as a main tool *Benchmarking*. It measures the processes and products of the start-up and compares them with your main and stronger competitor’s processes and products. The aim of Benchmarking is to improve your functionality and reach or exceed.

**2.1.3 Technology: follow its evolution**
You have to obtain as much information as possible of the available technologies that can be incorporated in the processes, end of the products or services that can support or promote your competitive advantages. This analysis can not be restricted to the technologies applied in a specific sector because many times the technology moves transversely and reaches different sectors.

To control your field you have to be able to solve these matters:

- Which are the available technologies at the moment.
- How can you use those technologies in your processes, products, and services to support and promote your advantages.

You also have to be able to identify:

- Which **opportunities** can be ran in the market in relation to the available Technologies.
- Which **threats** you identify that can affect the market due to the use or assimilation of the available technologies.
- Which **internal strengths** (resources, knowledge, relations...) are going to allow you to exploit the **opportunities** and/or to manage correctly the detected **threats**.
- Which **internal weaknesses** you find that can hinder the **opportunities** and/or the right management of the identified **threats**.

The main information sources of the technological fields are

- **Observations in situ** (industrial plants, system proofes, etc.): allows you to compile qualified information about the systems, components, etc. However it is very expensive and in some cases difficult to find.

- **Experts consulting** (professional contacts, consultants, informal meetings): allows you to find reliable information and, even at the beginning can be difficult to find, in long term if you establishes solid linkshas an advantage: the access to the required information.

- **Technical literature** (publications, meetings, associations, specialized organizations, etc.): Allows you to identify the technological novelties in an entrepreneurs sector. It also allows you to incorporate and assimilate them and to check their impact in the enterprises.
- **Contacts in an organizational level** (exhibitions, meetings, associations, specialized organizations, etc.): due to its low cost is a relatively accessible information source and is interesting to use it as a net.

The analysis and exploit of the obtained information can be made through the tool *Technological Prospective*. With it you can use Data bases, create Technological Maps, etc.

Finally, to make the technological analysis as much effective as possible, take into account:

- **The importance is not to accumulate information, it is to obtain good results from it.** To structure the available information, to define the indicators that are going to be measured, etc., to detect the impact that it would have in your Business Plan so it will help you in your decisions.

- **During the search of the information do not limit yourself to the patent’s novelties or to the publications**, you have to set the novelties in their context, detect their market value and the opportunities that can be provided for you. You also have to foresee the threats from the competitors.

- You have to be focused in the selection of critical factors and indicators that you want to analyze (costs, time, and strategic aims) with the purpose of helping yourself in your decision.

- **You have to be systematic** to follow the evolution of the selected indicators. **You have to be structured** so your information will be correctly spread and you can promote its exploit.

As we have seen before, the environment analysis that you have done, would help you to detect till which level the technological incorporation can contribute to your Start-up and which is going to be your strategy.

With the information compiled and related to the three environments mentioned before, we encourage you to gather the reflections and threats about the market opportunities and which are their main strengths and weaknesses to face them (*SWOT Analysis*) so you can formulate your own technological strategy correctly.

### 2.2 Technological strategy definition

Your next step is the formulation of a technological strategy. You have to identify the **strategic aims** in short and long term and the **strategic action lines** to guarantee its fulfillment.

The formulated strategic aims correspond to the necessary results that you **have to reach** to support and also to promote the competitive advantages of your Business Plan. The aims will allow you exploit the opportunities and manage correctly the threats in that the technological environment can impact your strengths and weaknesses.

The action lines are going to be the **main actions that you have to undertake** to ensure your strategic aims.

The aims and action lines have to be formulated taking these elements as a basis.
1. Global strategy of your start-up and the Competitive advantages to reach

The technological strategy of the start-up has to be totally integrated in the general strategy of the start-up. The first one has to support and promote the competitive advantages that the second one expects to reach.

We give you a guideline to ensure the coherence between the technological plan and the global business strategy of the Business Plan.

- If the global strategy to follow is Costs leading the technologies that have to be used are, in general, technologies that guarantee lower unit prices and a strict control of their evolution, since that is the competitive advantage of this business project.

  The implications of this strategy are:
  
  - To obtain a competitive advantage based on offering unusual lower prices thanks to reducing costs in all the activities of the value chain. You have to follow a strict cost control in your organization and management.
  - The technological skills and the innovation processes have to be focused on business processes instead of on the products or services you offer.
  - The design of the products or services would be done to optimize the manufacture process. The selection of the technology has to motivate the savings: the technologies should allow rich and scale economies (technologies of massive production and wide markets of customers that demand standardized products and services). They should encourage the learning effects, etc.

- If the strategy is the differentiation the technology should obtain and promote the competitive advantage of differentiation, for example, the highest performance of a product. We can not forget that these differentiation characteristics are the reason of the expensiveness of a product.

  The implications of this strategy are:
  
  - The technological alternatives have to be reviewed by focusing our actions on those that are the main source of differentiation activities.
  - The technological innovation would emphasize the products in comparison with the innovation in the business processes, that is a ground of the costs leading strategy.
  - It depends on the specific matter, but usually, at the beginning research and development activities, like, creating and designing the products and services have more investments.

2. Analysis of the environment and the technological abilities:

The goals and strategic action lines have to be formulated keeping the exploit of technological opportunities in mind that we have identified, the correct management of the threats taking as basis the competitive advantages that you want to reach, and also of your own capacities; strengths and weaknesses.
To benefit your Business Plan your abilities are the ones that are going to show which are the exploitable opportunities and which are the threats that you have to manage.

In other words, not all the opportunities and technological threats are going to be considered “business strategies”, just the competitive advantages that you pursue and the opportunities and threats that can be exploited or have to be managed, taking into account your own strengths and weaknesses.

The technology is not what provide the best conditions to an enterprise. The best conditions are achieved by managing the technology to benefit the business and in harmony with the capabilities and the strategic orientation of the business. Technology is not an end, is a mean.

In this sense the entrepreneur should identify some strategic aims and action lines that guarantee that they:

- Are going to be used known technologies taking into account their own capacities and that these support or though encourage the competitive advantages pursued in the Business Plan.
- Are going to be developed technologic competencies (abilities and knowledge) that allow exploiting new technologies that reinforce the Business Plan in its attainment, and that can promote the competitive advantages pursued by the Business Plan.

If this integration between the technological strategy and the technology do not occurred, the expected results would not be effective and with it the contribution of the applied technologies will not be usefully exploited.

The technological strategy that you are going to formulate can guide you to:

- Lead the technology advances through the constant introduction of new products/services. If this is your situation, is important that you try to correctly protect the innovations (Industrial Property), that you develop agile distribution channels that allow you to obtain fast incomes, and that you carefully manage the costs (usually high) related to the technological changes that can generate a soon obsolescence.
- Follow the competitor that leads the technological advance closely introducing technological innovations to face a market that is not covered in its whole (Defensive innovative strategy). If this is your case, you have to be capable to reach a very broad number of customers. You also need technological abilities to innovate in short time, and you have to correctly protect the inventions (Industrial Property).
- Imitate without adding the major technological advances: if this is your case, it is important to take into account a restricted market (for example, in terms of geographic situation, regulation etc.) or failing that, an access to cheaper production factors (raw material, labor, etc.) or a high effective managing to ensure the future permanence in the market.
- Exploit the opportunities looking for the weak points of the competitors to focus your activities on them your. If this is your case, try to select properly the sector or group of customers you are going to channel into using the technologies that you control to grow in that sector once you are consolidated in the market.
- Do not use the technology as an innovation source of products and services: If this is your case is important to have a restricted market or
failing that, the value that your customers receive lies in the craft skills in order to ensure a future permanence in the market.