
Industries, Businesses and People

A company, in the broadest sense, is the world of work, of employment. It transforms societies and landscapes through technological revolutions. Its *modus operandi* is complex and influenced by the political system, the cultures of the countries that host it, and the ways in which it is financed.

In what follows, we give a very brief description of the “upscale” enterprise of a developed country like France, using previous publications. Talking about the impact of the digital revolution on business requires a succinct description of what the latter is: this is what we have tried to do.

Behind the term “industry” is “industrious”, the quality of people who have the idea of producing material goods or products from raw materials that are processed for sale. At its core, it is deploying capital to seek gain, profit, and activity.

One to two million years ago, our distant ancestors had already discovered materials, including flint, a very hard rock, to make tools – extensions of the hand – and weapons (arrowheads, axes). Our ancestors, like today, sought to survive: we must eat and defend ourselves.

Let’s skip forward a century or two! During the Industrial Revolution, discussed in Chapter 5 of the second volume, handicraft was replaced by industry, characterized by raising capital, the use of machines that made use of the new energy, that is, steam, and men mostly gathered in factories. A century earlier, Colbert (1619–1683) had created a number of factories during the reign of the Sun King (King Louis XIV of France); it was a question of making manufactured products which were equivalent to products made by hand, although sometimes made using machines (looms).

Mechanization, mining, and capitalism, the history of which Joyce Appleby described in a masterful book (Appleby 2010), emerged during the Industrial Revolution. She defines **capitalism** as:

a system based on individual investments in the production of marketable goods.

At the end of the 19th Century, the following were developed: railways (the East Coast of the United States joined the West Coast in 1869, in Promontory, Utah), maritime transport, inventions that succeeded each other at high speed in all areas and led to the birth to the modern enterprise. The main stages of this evolution can be found in (Dal Pont 2012); to simplify, we will say that the enterprise in which we are interested and which we will describe as modern descends from the manufacturing company of the end of the 19th Century.

The company is a source of wealth, synonymous with employment. Wealth is created in the workshop; this is the thesis defended by Adam Smith (1723–1790), British and founder of modern economics in his 1776 work, *The Wealth of Nations*.

In what follows, we will distinguish three main classes of companies.

1.1. Manufacturing, process, and service industries

1.1.1. Manufacturing industries

We define these as activities whose production is said to be discrete, because they offer identified objects. It is the field of the automotive and aeronautics industries, and household appliances.

They often call on the chemical industries: an automobile, for example, is riddled with chemicals (windshield, dashboard, seats, pipes, sheath of electric cables, etc.).

1.1.2. Process industries

These transform raw materials and/or energy by chemical, biochemical, or physical means. We can cite chemistry, pharmacy, cosmetics, metallurgy, etc. Their economic importance is considerable. Chemistry is the “mother of all sciences”, said Thomas Edison; we can say that it is also the mother of all industries.

Process industries can have discrete parts: the active ingredient of a drug can be manufactured in the form of a (discrete) tablet in boxes, boxes in crates, crates in pallets. Bag-filling machines, wrapping machines, and packaging machines are often the last link in the process industries. It's mechanics, not chemistry!

1.1.3. *Service industries*

These normally have fewer industrial assets. They serve as support for producers: maintenance, engineering, design office, transport, catering, mail, etc. SNCF (France's national railway company) is a service company that uses huge industrial tools.

We can see that the line is not exactly straight. The important thing is to identify the professions involved, the skills, and the customers. It is not so obvious when we delve into the question.

1.2. Founding fathers of the industrial enterprise

The industrial enterprise as we see it today took shape at the end of the 19th Century. Among all the inventors and entrepreneurs who shaped it, we have chosen four giants from the 19th and 20th Centuries. These men contributed to an unprecedented industrial boom and profoundly changed the society of the time. We could no doubt have chosen others, but, as we know, "to choose is to renounce".

Detailed explanations on the contribution of these four great figures to the industry can be found in (Dal Pont 2012). To summarize:

- **Frederick W. Taylor**, father of *Taylorism*, analyzed the work of the workers at the workshop and evaluated each gesture in time and motion to increase productivity. A specific job was shared – divided – between several individuals. Humans are enslaved to the machine: who does not remember Charlie Chaplin's *Modern Times*? Taylor was *behind* workers with a stopwatch; he sometimes owed his salvation to running away;

- **Henri Fayol**, father of *Fayolism*, invented the functions of management, a model still widely in use today (see section 1.3);

- **Henry Ford**, father of *Fordism*, was a strong supporter of *Taylorism*. A farmer's son, he invented the assembly line and standardization, which made the automobile a cheap product, as well as the industrial integration. His Model T, "a motor car for the great multitude" in 1908, was full of inventions (transmission, suspension, etc.). It was the car of the century!

– **Thomas Edison**, the legendary inventor with 1,093 patents, created laboratories *to do business*: as soon as the luminescent lamp left Menlo Park in 1882, it illuminated Pearl Street in New York, thanks to the direct current generated by its first power plant. We can say that *Edisonism* is the way to create business by doing research, R&D, or research and innovation, as we would say today.

NOTE.– Why not Gustave Eiffel? Inventor and businessman, Gustave Eiffel is the archetype of the 19th Century engineer. He left works that are still admired by the masses. Should we not talk about the Eiffel Tower? However, he did not affect and transform the society like the “nominees” mentioned above did.

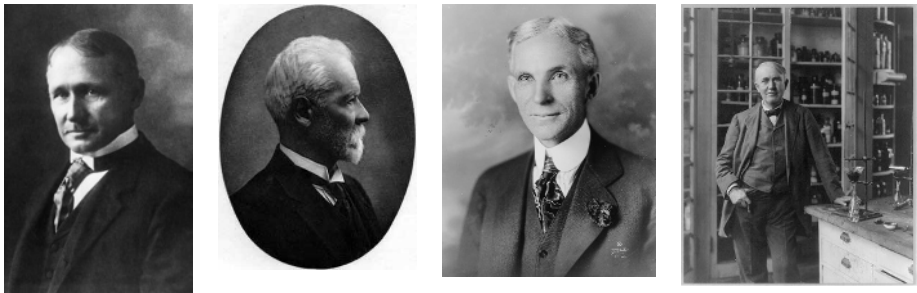


Figure 1.1. Portraits of the fathers of the modern enterprise (from left to right) *Frederick Winslow Taylor (1856–1915), Henri Fayol (1841–1925), Henry Ford (1863–1947), Thomas Edison (1847–1931)*

1.3. Anatomy of an industrial enterprise

What follows is not a lecture. Our goal is only to provide a few benchmarks to students and professionals to help them in their reflections on the world of business and perhaps guide them in their professional choices.

A business rests on four pillars:

- economic;
- financial;
- human;
- legal.

It is an organization that aims to offer goods and/or services. One or more people have raised capital and risked their money in the hope of earning it. **A business is a human adventure. Managing a business means managing risks.**

To exist, the enterprise must have a **legal status**, which therefore makes its president responsible before the law. There are many legal forms: public limited company, SARL (*société à responsabilité limitée*, a private limited liability company), non-profit association, as per the 1901 law, etc. Its foreign subsidiaries must comply with local laws.

In France, size differentiates **VSEs** (very small enterprises or businesses: less than 10 employees), **SMEs** (small or medium enterprises or businesses: less than 250 employees and a turnover of less than 50 million euros), and **medium-sized enterprise** (between 250 and 4,999 employees and a turnover not exceeding 1.5 billion euros). Beyond that, it is the domain of very large companies and multinationals.

A company's headquarters has certain functions: Fayolism is still relevant! These functions are often shown by a company's organizational structure. This generally includes some or all of the following entities:

– a headquarters that brings together the president, managing director, executive management, communication, human resources department (HRD), financial department (taxes, treasury), planning department (strategy), legal agreements, research department, industrial management, engineering management, sales management, marketing management, project director(s), safety and security management, branch managers, SBU¹ manager(s), purchasing department, administration (accounting, payroll, IT), country delegate(s)²;

- one or more production facilities (plants, workshops);
- distribution (logistics, warehouses, etc.);
- research means (laboratories, test means);
- technical services, after-sales service, application laboratories;
- commercial services (sales reps, etc.);
- subsidiaries (national, foreign);
- JVs (joint ventures).

A small to medium-sized company that includes only one site (headquarters + plant) will have all these functions distributed between a few individuals donning multiple hats:

1 Strategic Business Unit. It is an activity; glues, paints, organic products, etc. It is often a company within a company, because it has its own resources.

2 In some countries, large multinationals have a representative who facilitates contacts, informs the parent company, etc.

- so-called corporate functions are called *on staff* (legal agreements, safety, etc.) when they support so-called *on line* functions such as manufacturing. We can note the importance that communication has taken over the years;

- in general, an executive committee (board) of a few people, including the president and the general management, takes the essential decisions, the directions that will be implemented by the lower levels;

- the HRD is often the first contact for anyone looking to join a company;

- as we will see below, the digital revolution is creating new roles; Data Officer, Data Scientist. These roles may report to the president, to a board member or to the industrial management. It all depends on the importance that the company gives this new function at a given time.

Start-ups (short for start-up companies) work on something new; an innovative object, a new drug that leaves hope for big profits when research comes to an end. They look for funding to survive. Another term has appeared recently, mainly in the digital field: that of a “unicorn”, a company whose market capitalization reaches one billion dollars. The famous Silicon Valley saw the prodigious birth of these mega-companies, launched in a garage or a student room.

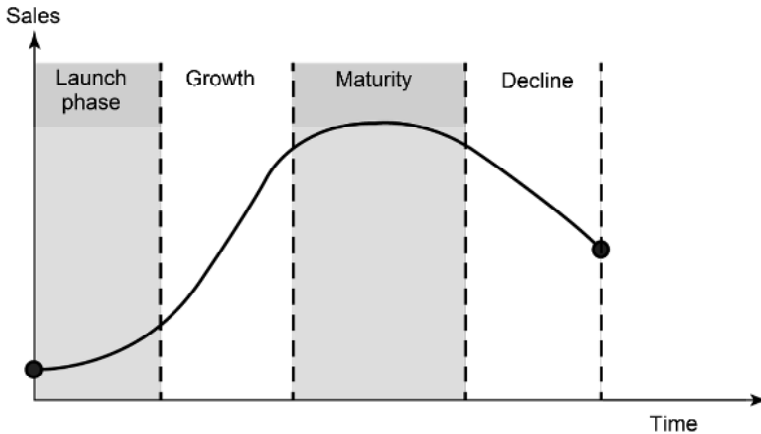
1.4. Industrial strategy: the business plan

Any business must have a long-term vision, to plan for the future. It must examine and review its strategy, which can simply be defined as an objective to be achieved, and determine the related means. In what follows, we will limit ourselves to the industrial strategy, which amounts to examining the **adequacy** between the products that the company has at a given time and the needs of the customers, which can be very variable from country to country.

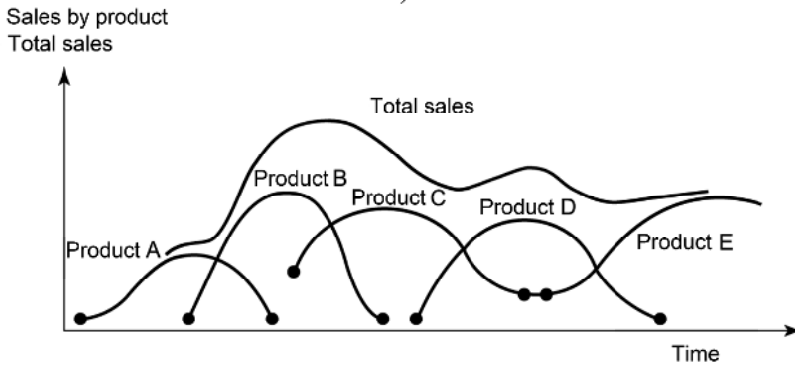
A product is born, lives, and dies, as shown in Figure 1.2a. The turnover of a company, and therefore its profit, is composed, at a given moment, of products that are at different stages of their existence, as shown in Figure 1.2b. New products in the process of being launched sometimes cost money instead of bringing in money, because the related commercial costs (product managers, advertising, canvassing) are not covered by their contribution margin, as these products are manufactured in too small a volume. For the same reasons, end-of-life products are no longer competitive: they have found replacements, either in the company that created them, or in the competition; their selling prices tend to fall.

In general, a company has flagship products from which it hopes to “benefit” for a long time. Pharmaceutical companies dream of blockbusters whose turnover

exceeds one billion dollars. The vitality of a company, the **efficiency of its research**, can be measured by the percentage of profit brought by products that are a few years old, and are therefore young products. Often, financial analysts try to assess the products that the company has in the “pipeline”.



a)



b)

Figure 1.2. a) Product life cycle; b) company turnover versus products

1.4.1. Industrial strategy of the company

- The analysis of the company's industrial strategy is based on two elements:
- business analysis of the product/market couple as described in Chapter 2;
 - evaluation of the industrial facility.

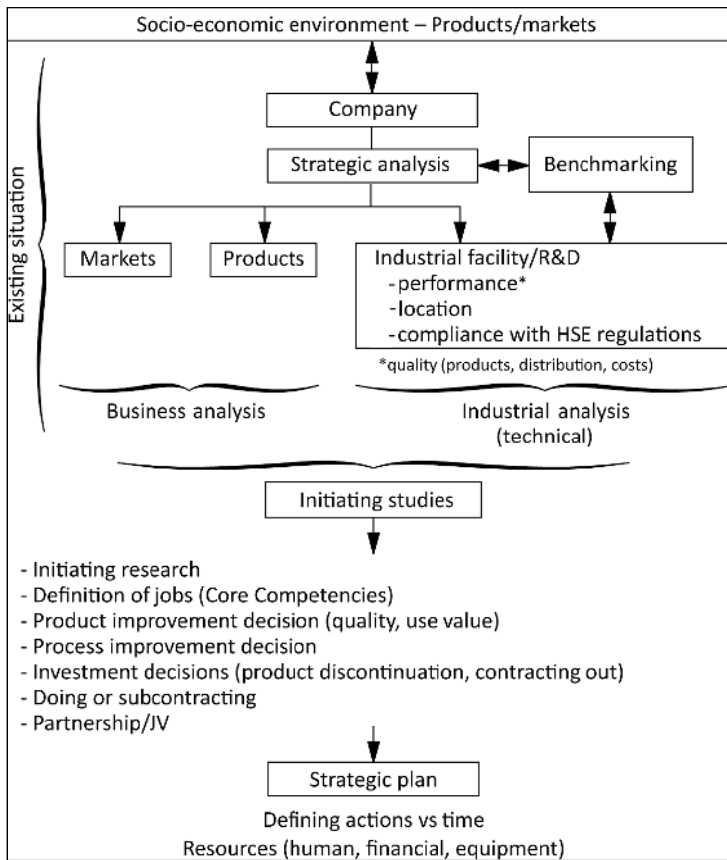


Figure 1.3. Principle of strategic analysis of a company (technical aspects). Establishing the strategic plan

1.4.1.1. Business analysis

Business is king! France's *Trente Glorieuses* (The Glorious Thirty, 1945–1975), when simply producing was enough, seems a long time ago; products were sure to sell, since there was a scarcity at the time. It was a period of a production economy. Today, consumers find everything they want. Competition has full hold: this is the market economy.

The commercial aspects of a product can be evaluated for each sector in all the countries where it is sold. A biopolymer like xanthan gum fits into several businesses: food, cosmetics, paints, or even drilling fluid, where it is used for its texture, thickening and gelling properties.

Business issues are numerous:

- market aspects:
 - is the product in the markets in sufficient quantities (penetration rate), does it cover the demand, are there other markets?
 - should it be taken to other countries?
- technical aspects:
 - does the product have the expected functionalities?
 - is it pure enough or too pure?
 - is it well formulated, well-conditioned, well packaged? What about its logistics?
 - does its cost price bring acceptable margins or can it not be sold because it is too expensive when it comes out of the factory?

1.4.1.2. *Analysis of the industrial facility*

The industry and manufacturing are at the service of the business; that is their *raison d'être*. In the chapters that follow, we will lay the groundwork for evaluating the processes and the plants that implement them. At this point, we will limit ourselves to substantive questions:

- is the plant a good one? In other words, how does it compare to the competition in terms of efficiency, profitability, and management (safety, stability, branding, and compliance with regulations)? Do we have any idea of its **durability**? All of these issues fall within what is called **benchmarking**;
- is it in the country where we want it to be? Does it have the right capacity?

Obviously, the cost price of a product is the primary element of interest to the salesperson in charge of its sale. To this essential notion must be added the consistency of quality and reliability of production.

A **strategic plan** consisting of a number of potential actions will result from the confrontation between business and industrial analysis (see the bottom of Figure 1.3). These actions are:

- executive management: investments (internal growth), divestments, JV (joint ventures), divestment of activities, search for new activities, doing or making others do (subcontracting), partnerships, corporate purchases (external growth), etc.;
- marketing: search for new products, modification of old ones in terms of formulation (see, in Chapter 3, the case of aspirin, a century-old product that has

been rejuvenated by adding additional functions, such as effervescence), innovation (innovation is sometimes making the old new again!);

- research: new synthesis processes, new products, new applications;
- manufacturing: improved operations, construction of new plants, closure of unprofitable plants.

The definition of **core competencies** is a difficult exercise that we will deal with through KM (knowledge management).

Development abroad, which has gained considerable importance through globalization, has its own unique characteristics, which we will see later.

1.4.1.3. *Definition and implementation of a strategic plan*

All of the above thoughts and ideas need to be structured and defined in terms of human and financial resources over time. The mobilization of the company's executives and hiring consultants and engineering companies to do feasibility studies costs money. Is it necessary to remember that the resources of any organization are limited?

The following keywords can help prioritize actions, that is, set their launch date. The term "**prioritization**" is increasingly used, although it grates on the ears of many.

1.4.1.4. *Pareto analysis revisited*

In order to compare various scenarios, the following keywords can be used: expected return, chances of success, ease of implementation, risks, necessary means, time factor, prioritization. Each keyword is assigned an "importance", a "weight" ranging from 1 (low) to 5 (high). Common sense, professionalism and the use of the *collective intelligence* of the company generally make it possible to eliminate irrelevant projects. Priority will be given to a project that has a good chance of succeeding quickly with limited resources, as opposed to projects that appear fabulous but require a lot of resources and time.

Actions on which the survival of the company may depend are called **strategic**; these are, for example, very large investments and major acquisitions.

1.4.2. *Business plan*

This name generally refers to the dossier for requesting financing from a bank in the context of setting up a business. It contains commercial and financial aspects; it defines the structure and organization of the new company.

1.4.3. Reengineering the corporation

Reengineering the Corporation (Hammer and Champy 1993) and *Liberation Management* (Peters 1992) are the provocative titles of two American books published in the 1990s. The idea was to shake up corporate America that had rested on its post-war laurels.

The following quotes, taken from these two books, give an idea of this “crusade”:

- “forget what you know about how business should work. Most of it is wrong!”;
- “American companies function according to principles that are two centuries old and mainly according to the principle of the division of labor put forward by Adam Smith in 1776”;
- “we live in a world governed by the three Cs: customers, competition, change”;
- “reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvement such as cost, quality, service and speed”;
- “*reengineering ≠ restructuring ≠ downsizing ≠ reorganizing ≠ flattering an organization ≠ automating*”;
- “Why do we do what we do? Why do we do it the way we do?”;
- “People, jobs, managers & values are linked together. Processes, not organizations, are the object of reengineering.”

When we look at what has happened to the American automotive industry in the face of Japanese competition, it is not certain that the message was heard!

The term reengineering can be considered as the awareness of a company that is asking fundamental questions about its existence. It therefore calls on high-level consultants to help it review its strategy and its way of working from top to bottom. One can imagine the state of mind of the employees who are experiencing reengineering and who wonder if the remedy will not kill the patient.

1.5. Systemic vision of the enterprise: the enterprise and flows

Figure 1.4 gives a systemic vision of an enterprise that has invested in an industrial facility. The term “CAPEX” (Capital Expenditure) is now used for capital investment. The expenses relating to the operation costs of this tool are abbreviated “OPEX” for Operating Expenditure.

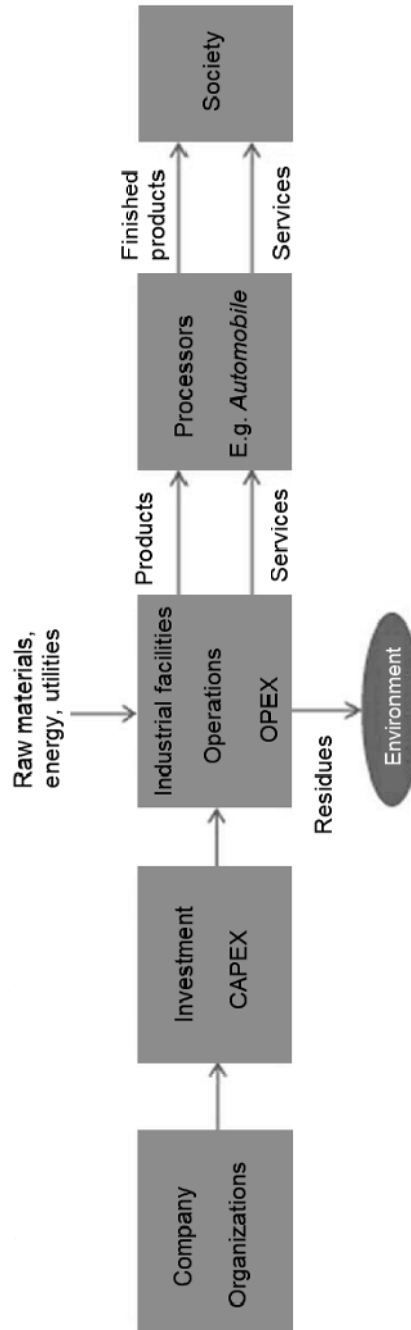


Figure 1.4. Systemic vision of the enterprise

Figure 1.5 complements Figure 1.4.

The enterprise is seen as its material, information, and financial flows. We have added the flow of people, in order to demonstrate the importance of employee turnover, beyond the normal erosion caused by retirements. A high turnover is often synonymous with social problems, dissatisfaction; it is a source of instability. **Managing a business means, among other things, mastering all of these flows.**

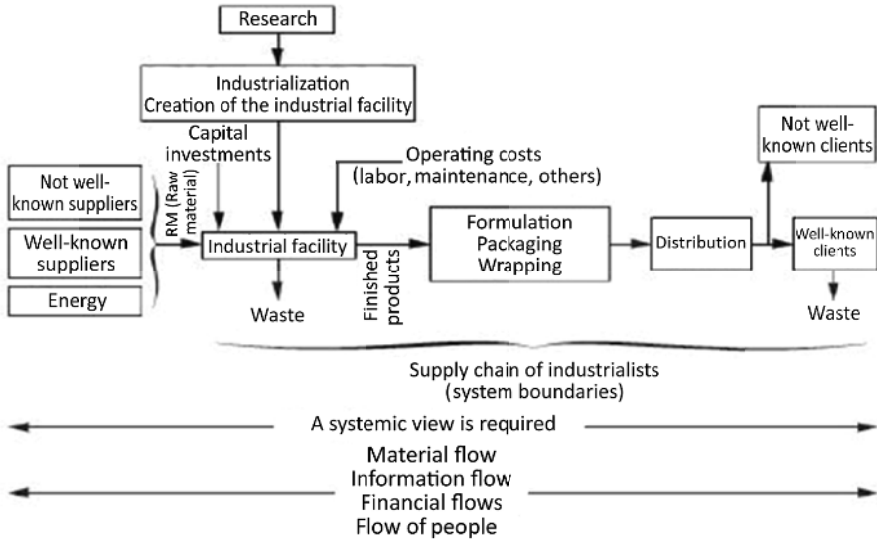


Figure 1.5. *The enterprise and its flows*

1.6. The two operating modes of the enterprise: operational and entrepreneurial

The enterprise lives at the rate of two different modes by their nature, their time constant, and the people involved.

The operational mode amounts to managing the daily, the existing, managing the workshops and plants as they are at a given time, in accordance with the values of the company and its governance (see section 1.7). This role is primarily assigned to plant directors, production managers, and to the manufacturing function in general.

The entrepreneurial mode consists of managing the **portfolio of projects** generated by the strategic plan as defined above. This is the privileged field of research, design offices, engineering, and project managers. People belonging to these entities must ensure changes that result from a strategic plan.

A major investment or reengineering can shake up a plant or system beyond reason. It is up to the executives to ensure the necessary balance. Many asset managers forget everyday life because they are attracted by the “brilliance” and novelty of investment projects.

1.7. Governance

Governance is not governing, which consists of making people do what one wants them to do and which falls within the scope of management; **governance is a set of values**. Management can be defined as running a *household*. The components of management are: planning, organizing, activating, controlling (Dal Pont 2012, p. 54). The concept of corporate governance is relatively recent and is derived from taking into account the concept of **sustainable development** in its operation.

Governance can be defined as a set of **good practices**, of procedures that will make it possible to manage a company in accordance with **ethics**, with a set of core **values**. The main governance tools relate to:

- **quality**, i.e. customer satisfaction;
- **health, safety, and environment (HSE)**.

The ISO 26000 standard deals with this notion, which obliges large companies to be more transparent, in particular, in their annual report (see Figure 1.6).

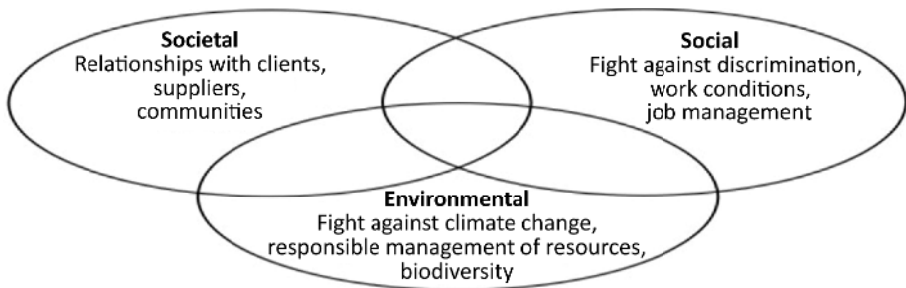


Figure 1.6. Schema of the ISO 26000 standard

NOTE.— Corporate social responsibility, or CSR, is described by the ISO 26000 standard. CSR is defined as the voluntary contribution of companies to the challenges of sustainable development, both in their activities and in their interactions with their stakeholders.

It concerns three areas: environmental, social, and societal. This last domain concerns the relations of the company with its partners, in particular commercial, seen from the angle of sustainable development.

1.8. Operations abroad

Trade has existed for millennia: the Phoenicians crossed the Mediterranean; the Silk Road is still something to aspire to. European and American companies have invested outside their borders for more than two centuries, creating imposing infrastructures (the Panama Canal).

Globalization supported by the Internet, containerization of transport, oil and coal flows, to name a few, and the rise of China, which is on the way to becoming the world's leading economic power in a few decades, have been game-changing. Surprisingly enough, little is said about India, soon to be the most populous country in the world.

Large companies have had to invest massively in production facilities abroad, taking advantage of their technological advance in certain fields, supporting the economic development of their local partners with whom they now compete. Recently, China has been investing abroad, not only in French vineyards, but also in technological companies: should this be seen as a fair return?

These changes, in the context of our work, give rise to reflections concerning the establishment of a company abroad, its mode of technology transfer, and the expatriation of its employees. We will return to this in Chapter 4 of the second volume.

1.9. References

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