

Training Toolkit: Courses and Exercises. Unit 4: Innovation/ R&D, Marketing and Business Management

WP 2.1.

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1. Introduction

INNOLEA project aims to fill an apparent gap in the area of specialized services for the leather sector with the establishment of four leather centres in local Universities, two in Jordan and two in Egypt, utilizing the experience and expertise of EU partners in the area of services for the leather sector.

Through the creation of these centres and the further tasks that will be implemented in this project, the leather sectors in Jordan and Egypt will be offered access to business development services, such as quality testing, product certification, training, fashion trends, production organization, BtoB and funding opportunities, and subsequently the Jordanian and Egyptian leathers sector will have a valuable ally for its further development.

The project also aims to create and maintain a link between Universities and businesses of the leather sector that will foster innovation and the manufacturing of high value quality products, as well as further cooperation between EU and Jordan and Egypt Universities and leather businesses.

The project also aims to help encourage the Egyptian and Jordanian governments to favour the establishment of leather centres within universities and to promote research and projects between EU and Egypt and Jordan universities in the leather sector, by creating a research innovation and training network, which will continue to operate after the end of the current project.



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2. UNIT 4: Innovation/ R&D, Marketing and Business Management

2.1. Objectives

- To achieve the propensity to innovate and achieve quality and efficiency;
- To acquire key skills and competences;
- To acquire basic financial competences, which are necessary for running and sustaining a leather company
- To obtain tools and competences to organise fundraising and crowd funding campaigns and obtain financial support
- To acquire knowledge about IPR issues and be able to put in practice an effective IPR strategy
- To acquire awareness about the importance of R&D
- To implement proper R&D activities through the collaboration with HEIs and research centres
- To manage efficiently risks and implement appropriate mitigating measures.

2.2. Lesson 1: Research, development and innovation activities

Authors: Viorica DESELNICU and Luminita ALBU - INCDTP-ICPI

- Implement R&D activities
- Mange relationships with HEIs and research centres
- Modern production methods
- Reengineering techniques according to sustainability, CSR and Quality
- Innovation management

2.2.1. Definition of R&D activities and its components

Research and Development (R&D) refers to a wide range of business, governmental, and academic activities designed to gather new knowledge. Sometimes, the new knowledge leads to new products or processes, and sometimes it doesn't. The purpose of R&D is to expand the frontiers of human understanding and to improve our society as a whole [1]. The Frascati Manual of the Organization for Economic Cooperation and Development (OECD), first published in 1963, created an international standard for surveys of spending on R&D. This manual defines R&D as "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". [2].

The criteria for identifying R&D activities

The R&D activities must be [2]:

a) novel (To be aimed at new findings)

An R&D project must have as an objective new concepts or ideas that improve on existing knowledge. This excludes from R&D any routine change to products or processes and, therefore, a human input is inherent to creativity in R&D.

- b) creative (To be based on original, not obvious, concepts and hypotheses)
- An R&D project must have as an objective new concepts or ideas that improve on existing knowledge.
- c) uncertain (To be uncertain about the final outcome)



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R&D involves uncertainty, which has multiple dimensions. For R&D in general, there is uncertainty about the costs, or time, needed to achieve the expected results, as well as about whether its objectives can be achieved to any degree at all.

d) systematic (To be planned and budgeted)

&D is a formal activity that is performed systematically. In this context "systematic" means that the R&D is conducted in a planned way, with records kept of both the process followed and the outcome.

e) transferable and/or reproducible (To lead to results that could be possibly reproduced).

An R&D project should result in the potential for the transfer of the new knowledge, ensuring its use and allowing other researchers to reproduce the results as part of their own R&D activities. This includes R&D that has negative results, in the case that an initial hypothesis fails to be confirmed or a product cannot be developed as originally intended. As the purpose of R&D is to increase of the existing stock of knowledge, the results cannot remain tacit (i.e. remain solely in the minds of the researchers), as they, and the associated knowledge, would be at risk of being lost. All five criteria are to be met, at least in principle.

Types of R&D activities

R&D is generally thought to consist of three types of activities:

a) **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view. Basic research analyses properties, structures and relationships with a view to formulating and testing hypotheses, theories or laws.

b) **Applied research** is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

c) **Experimental development** is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed. R&D covers both formal R&D in R&D units and informal or occasional R&D in other units [2].

2.2.2. R&D European programme for SMEs and Funding opportunities

In January 2014, the EU launched its latest 7-year research programme - Horizon 2020 [3, 4]. Almost €80-bn of EU funding is available up to 2020 – in addition to the private and national public investment this money will attract. It combines all research and innovation funding in one integrated programme. Its goals are:

- to strengthen the EU's position in science (€24.4-bn of funding including €13-bn for the European Research Council)
- strengthen industrial innovation (€17-bn) including investment in key technologies, greater access to capital and support for small businesses
- address major social concerns, such as climate change, sustainable transport, renewable energy, food safety and security, ageing populations (€24.4-bn).

Horizon 2020 will seek to:

- ensure technological breakthroughs are developed into viable products with real commercial potential by building partnerships with industry and government
- step up international cooperation on research & innovation by inviting countries and organisations outside the EU to participate
- further develop the European Research Area [5, 6].



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COSME - Europe's programme for small and medium-sized enterprises

COSME is the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises running from 2014 - 2020 with a planned budget of EUR 2.3 billion [7]. SMEs are the backbone of Europe's economy, providing 85% of all new jobs. The European Commission aims to promote entrepreneurship and improve the business environment for SMEs to allow them to realise their full potential in today's global economy.

COSME aims to make it easier for small and medium-sized enterprises (SMEs) to access finance in all phases of their lifecycle – creation, expansion, or business transfer. Thanks to EU support, businesses have easier access to guarantees, loans and equity capital. EU 'financial instruments' are channelled through local financial institutions in EU countries.

Eurostars 2: support for high-tech SMEs

Eurostars [8] supports international innovative projects led by research and development- performing smalland medium-sized enterprises (R&D-performing SMEs). With its bottom-up approach, Eurostars supports the development of rapidly marketable innovative products, processes and services that help improve the daily lives of people around the world. Eurostars has been carefully developed to meet the specific needs of SMEs. It is an ideal first step in international cooperation, enabling small businesses to combine and share expertise and benefit from working beyond national borders.

Eurostars is a joint programme between EUREKA and the European Commission, co-funded from the national budgets of 36 Eurostars Participating States and Partner Countries and by the European Union through Horizon 2020. In the 2014-2020 period it has a total public budget of €1.14 billion.

Eurostars is committed to increasing the competitiveness and innovation capacity of businesses, particularly high growth potential SMEs. It has clear advantages in its bottom-up, close-to-market industry-led cooperation structures that facilitate cross-border innovation, international cooperation and contributes directly to the growth of national economies.

Manage relationships with HEIs and research centres

SMEs can increase their performance and economic competitiveness by using the existing expertise in universities and research institutes in order to assimilate, develop, improve and optimize modern technologies acquired, improve knowledge transfer between research institutions and industry across Europe [9, 10, 11].

Knowledge Transfer involves the processes for capturing, collecting and sharing explicit and tacit knowledge, including skills and competence. It includes both commercial and non-commercial activities such as research collaborations, consultancy, licensing, spin-off creation, researcher mobility, publication, etc. While the emphasis is on scientific and technological knowledge other forms such as technology-enabled business processes are also concerned.

Examination of successful research collaborations in Europe and the USA show that sustainable "win-win" arrangements can be obtained, which produce good science, publish results without unreasonable delay, contribute to the general education and training of new graduates, and generate valuable intellectual property



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that supports innovation by industrial partners. When managed in a professional and balanced way, knowledge transfer can be beneficial both for the research institutions concerned and society in general.

2.2.3. Leather Sector in European Union

The leather industry covers diverse products and industrial processes. Leather tanning covers the treatment of raw materials, i.e. the conversion of raw hide or skin into leather and finishing it so that it can be used in the manufacture of a wide range of consumer products. The most important outlets for EU tanners' production are (Figure 2.1):

footwear – 41%; furniture – 17%; the automotive industry – 13%; leather goods – 19%; clothes – 8%; other – 2%.



Figure 2.1. The current use of finished leather (source: <u>https://ec.europa.eu/growth/sectors/fashion/leather_en</u>

Leather - a by-product of agriculture

The leather tanning industry uses hides and skins (by-products from the meat and dairy industry) that would otherwise be disposed of by being sent to landfills or incinerated (Figure 2.2). Leather is the tanning sector's fundamental output. It is an intermediate industrial product, with applications in downstream sectors of the consumer goods industry.

The processing of hides and skins also generates other by-products, which find outlets in several industry sectors such as pet and animal food production, fine chemicals (including photography and cosmetics), and fertilisers.



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Figure 2.2. A simplified chart of leather processing (Source: J. Bulian, I Kral, The framework for sustainable leather manufacture, UNIDO, 2015; Charts by F. F. Schmel)

Leather manufacture is a series of operations from preservation to finishing with the aim of converting quickly degradable, highly putrescible raw hides and skins into leather, a stable initial material suitable for use in production of a very wide range of articles (Figure 2.3). To achieve this aim, it is necessary to apply rather complex mechanical and physical-chemical processes, the tanning step being decisive for giving the stability and character. While there are already certain synthetic materials which can match or even outperform in some specific areas/purposes (e.g. ski boots), leather characteristics such as feel, elasticity, permeability for air and perspiration, temperature and water resistance, stability, durability, and attractive appearance make it a highly desirable material with a touch of class and luxury.



Figure 2.3. A simplified chart of leather processing (source: https://www.unido.org/sites/default/files/2011-11/Introduction_to_treatment_of_tannery_effluents_0.pdf



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The efficiency of leather manufacture

When evaluating the efficiency of leather manufacture, one of the main criteria is the actual utilisation of collagen. About 50 % of the total collagen content of the raw hide end up in the finished leather. The rest is very often disposed of as part of solid waste, since for various reasons (lack of markets, commercial viability, inadequate technology etc.) recovery of valuable components such as collagen, fat or chrome is not practised (Figure 2.4). Regarding the efficiency of leather manufacturing in a conventional process only about 50% of corium collagen and less than 20% of the chemicals used are actually retained in the finished leather.



Figure 2.4. Efficiency of leather manufacture (source: D. Tegtmeier, Lanxess, Shanghai, 2012)

2.2.4. Technological Research in Leather Sector – Cleaner production

Leather industry falls into the category of industries of **medium polluting** the environment. Over time, there were identified four main problems whose resolution has a significant impact on the economic efficiency of the leather processing at industrial level and on the environment. These are (listed in order of increased difficulty in solving): (i) - *Industrial water consumption;* (ii) - *Cumulative energy consumption,* expressed in equivalent consumption of oil and / or coal; (iii) - *Pollution reduction;* (iv) - *The necessary active chemical compounds used in the process,* consisting of auxiliary chemical substances and their adjuvant.

In recent years, the entire philosophy of development of the leather processing and related sectors (especially the production of chemical auxiliaries) was centered on solving the third problem, namely the **reduction of pollution.** Given however that the problems mentioned are related in a complex way, any intervention to resolve one will have repercussions on other's impact on costs.

The depollution task associated to leather processing activities falls into the range of medium - high difficulty. The EU has a set of common rules for permitting and controlling industrial installations described in the Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control).

- Best Available Techniques (BAT) Reference Document (BREF) for the Tanning of Hides and Skins: Industrial Emissions Directive 2010/75/EU:(Integrated Pollution Prevention and Control), revised 2013. [12]



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Cleaner production is an efficient method of preventing or minimizing pollution caused by industrial activities. The primary task of all cleaner technologies is to reduce the amount pollution emissions; and where possible change the nature of pollution emissions to reduce the pressure and costs of end-of-pipe treatment. The expected results primarily include:

- Lower water consumption – better preservation of rapidly diminishing water resources.

- Lower total dissolved solids (TDS) content (including salinity) – lower risk of affecting the usability of the receiving water bodies for irrigation and livestock watering.

- Avoidance of use in processing and/or presence in leather of substances from the Restricted Substances Lists (RSL) promulgated by national or regional legislation, leading (multinational) brands and/or ecolabel due to their proven negative impact on human health and eco-systems.

- Proportionally higher volume of solid wastes suitable for processing into saleable by-products.

- Lower levels of BOD, COD and Nitrogen; their respective contents in conformity with local and widely prevailing legislative norms.

- Low level of chromium in (C)ETP sludge – the scope for land application and/or composting.

- Lower hazardous and/or unpleasant air emissions.

- Appropriate occupational health and safety (OSH) standards – better work conditions, fewer accidents.

Better chrome tanning

In the traditional process ultimately less than 50% of the chrome input is to be found in leather while the rest is disposed in solid/liquid waste streams. Also, normally only 60% of the chrome offer is utilised in tanning.

In practice, in addition to the optimisation of the key parameters of the conventional process there are three principal approaches to maximising chrome utilisation: high exhaustion based on the modification of the tanning process; direct recycling of tanning floats; and chrome recovery/reuse after its precipitation and redissolving.

Achieved environmental benefits [13]

Without introducing any new chemicals or techniques, tanners can significantly improve the chromium uptake (compared to about 60 % in normal operation):

- 70 80 % chromium uptake can be achieved by altering the physical parameters (temperature rise from 20 °C to 50 °C, pH from 3.5 to 4.5) of the tanning operation;
- up to 90 % chromium uptake by altering both physical and chemical parameters (float levels, chrome offers).

Pretanning wet white concept

The original driving force behind the wet white concept was minimisation of production of chrome containing solid waste. It introduces a pretanning step with the view of making an intermediate product (shrinkage temperature normally around 80°C) with a partly stabilized structure that should permit mechanical operations, transportation and storage.[14].

More recently the pretanning – wet white concept was largely driven by the growing demand in the automotive sector for chrome-free products to meet requirements of the EU Directive 2000/53/EC regulating disposal of waste from scrapped vehicles (End of Life Vehicles).

Many chemicals and their combinations have been proposed and used for pretanning: aluminium and titanium salts, silicon dioxide gel, polyacrylates, syntans, glutaraldehyde derivatives and other tanning agents. The bonding of aldehyde-based agents is mainly on amino groups if collagen. The minimum dosage is 1.25%



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aluminium oxide or 1.0 - 1.5% glutaraldehyde or 0.75% titanium oxide. One of the more recent systems is (pre)tanning with polycarbamoylsulfonate (PCMS) vigorously promoted under the proprietary brand name X-TAN.



Figure 2.5. Flow chart for pretanning and wet white tanning

Panel 1: Simplified schematic view of the basic cross-linking reaction of X-Tan with collagen. collagen-NH₂ · Na⁺·O₃S⁺H⁻-R⁻-H⁻SO₃·Na⁺ \downarrow - 2 NaHSO₃ \downarrow - 2 NaHSO₃ \downarrow n = 1, n1> 1 R = hydrocarbon residue with a divalent or a polyvalent functionality

Figure 2.6. Scheatic view of the PCMS bonding mechanism

Advantages	Limitations
Chrome-free trimmings, shavings	• The costs (additional operations,
Easier disposal of unusable splits	chemicals) might be higher
• Tanned is only part of the pelt that will	Splitting & shaving might be difficult and
end up as leather	less accurate (sponginess)
 Lower consumption of chemicals 	• The colour of the (final) wet blue can be
• Better chrome uptake in the main	different (greener)
tanning	 In comparison with wet blue slightly
Better grain tightness	higher carbon footprint (CT)
	Higher dosing of fungicide required
	Commercial acceptance of wet white
	still rather low

Figure 2.7. Advantages/ limitations

Source: J. Bulian, I Kral, The framework for sustainable leather manufacture, 2015



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2.2.5. Expected future trends for leather industry

Leather industry raw material

The trend of livestock production is increasing rapidly as a result of growth in population and incomes and changes in lifestyles and dietary habits [15]. This trend raises numerous issues for the leather industry:

- increasing the efficiency of farming in Africa in order to improve the off-take and collection of hides and skins;
- improve and manage the quality of raw material at all stages farming, slaughter, and tanning;
- Africa appears to be one place where land remains available; is the continent suitable for herd growth to make up for lack of land elsewhere?
- hides and skins from camels, kangaroo, deer, yak and other less mainstream animals are likely to expand their presence in the leather supply chain; the industry needs to learn how to manage both the technical issues and the potential environmental problems arising from the use of these materials;
- final product design for footwear, bags, automobile seats, etc. will need to accommodate hides and skins with surface damage which are otherwise of excellent quality.



Figure 2.8. Leather production

Population vs. livestock (bovine)



Figure 2.9. Comparison of annual growth rates: human population, livestock, raw hides and leather (bovine) 1985 -2015



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Tanning chemicals

• While chrome-free leather has made inroads in the automotive sector, chrome is still present in 80% to 85% of all manufactured leather. The advantages of most chrome-free leathers are the absence of heavy metals, diminished solid waste disposal issues, and improvements in dry-shrinking behaviour. However, they produce higher COD in the effluent, reduce the fixation of dyestuffs, are harder to be made waterproof, involve more complex production processes, and entail more mould issues when wet. They also require two or three times the weight of tanning chemicals per kilogram of raw hide. We can expect more work to be done to ensure that leather processing does not generate CrVI [16].

• We can expect new approaches to vegetable tanning that combine traditional methods with new technologies to produce effective outcomes with a reduced extract offer. It is anticipated that the industry will continue to look on new ways to cut down the environmental impact, and this is likely to involve looking for further replacement by bio-chemicals of materials such as lime and sulphides. Fungicides and mould treatments are also likely to see further use in order to minimize utilization of undesirable chemical agents.

Environmental issues for tanners

Most of the main issues of solid and liquid waste are now well understood, but the industry does have a number of evolving areas of concern [16]:

- common salt (NaCl) and some other water-soluble salts getting into water recipients rivers, lakes and/or ground water and making the water unsuitable for drinking and other uses;
- the lack of environmentally acceptable and cost-effective solutions for solid waste disposal; landfill for solid wastes in some European countries and the associated trend to increase the cost of landfill via tax or other methods;
- growing consumer pressure and associated regulations regarding an increasing number of chemicals now deemed harmful for various reasons;
- high levels of water consumption.



Figure 2.10. Ecological challenges in leather manufacturing

(Source: G. Wolf, R. Banu, A. Lin, Creating value by avoiding waste – A way forward in the leather market, Prime source forum, Hong Kong, March 2013)



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Job creation and key issues

The Manifesto of the Social Sectoral Partners at European level [16] expresses the needs of the leather sector in terms of public policy action points, highlighting those situations that present the greatest risk to a prosperous future for either side of the industry. The key issue for the leather industry has been identified:

- Continuing shift of production to "developing countries" but is the trend changing;
- Slow growth in beef/sheepmeat/goat meat means pressure on raw materials;
- Demand for vehicles and shoes implies strong future demand for leather;
- Pressure on tanners' margins push towards more value added;
- Need to differentiate leather from non-leather materials strict and uniform control of labelling/description of leather/products;
- Growing demand on meat and leather industry to demonstrate good governance.



Figure 2.11. Key issues for the leather industry (Source: European project, Leather is my job!, 2013-2017, Final report)

Conclusion

- It is important, at the global scale, to accelerate implementation of best technologies currently available combined with efficient waste handling and treatment of tannery effluent. The next table gives a condensed overview of cleaner leather technology methods.
- However, research and development centres, institutes, education and training centres and, in particular, public media in the leather sector should contribute to achieving this objective. A good example could be a better-balanced approach and more careful wording when it comes to chrome vs. chrome-free tanning; poor science should not prevail over facts.
- Transformation of raw hides and skins into leather applying the Best Available Technologies (BAT) and following the highest environmental standards should ensure the position of leather as the preferred, sustainable material.



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2.3. Lesson 2: Introduction in advanced design and production of leather shoes

Authors: Viorica DESELNICU and Luminita ALBU - INCDTP-ICPI

- Elements of advanced design of leather shoes
- Fashion trends in leather footwear
- Basic elements for the production of leather shoes

2.3.1. Definition

Innovation means new or significantly improved products on the market or finding better ways (through new or significantly improved processes and methods) of getting products to the market. R&D may or may not be part of the activity of innovation, but it is one among a number of innovation activities. These activities also include the acquisition of existing knowledge, machinery, equipment and other capital goods, training, marketing, design and software development. These innovation activities may be carried out in-house or procured from third parties [1].

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) to the firm. Innovation activities are all scientific, technological, organizational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. Innovation activities also include R&D that is not directly related to the development of a specific innovation. An innovative firm is one that has implemented an innovation during the period under review.

The Oslo Manual [2] distinguishes between innovation as an outcome (an innovation) and the activities by which innovations come about (innovation activities). This edition defines an innovation as "a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)". This general definition is given a more precise formulation for use with businesses, which represent the main focus of this manual.

2.3.2. Main types of innovation

Product innovation

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovations can utilize new knowledge or technologies, or can be based on new uses or combinations of existing knowledge or technologies.

Process innovation

A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products.

Marketing innovation

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are



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aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales.

Organizational innovation

An organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations. Organizational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labor productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies.

2.3.3. Types of activities of relevance to innovation

There were identified eight broad types of activities that firms can undertake in pursuit of innovation:

Research and experimental development (R&D) activities

By definition, applied research is directed towards a specific practical aim or objective, while experimental development seeks to produce new products or processes or to improve existing products or process. Hence, there is an intention for innovation. Although basic research to enlarge a firm's knowledge stock may not be used to pursue specific innovations during the observation period, for practical reasons, all types of R&D carried out or paid for by business enterprises are considered by definition as innovation activities of those firms.

Engineering, design and other creative work activities

Most design and other creative work are innovation activities, with the exception of minor design changes that do not meet the requirements for an innovation, such as producing an existing product in a new colour. Identifying the use of design thinking methodologies by firms can help to differentiate minor design changes from innovation activities. Many engineering activities are not innovation activities, such as day-to-day production and quality control procedures for existing processes. Engineering activities for reverse engineering, or to alter or introduce new production processes, services or delivery methods, may or may not be an innovation activity, depending on whether these activities are conducted for innovation or for other reasons.

Marketing and brand equity activities

Marketing activities for existing products are only innovation activities if the marketing practice is itself an innovation. For many companies only, a small fraction of marketing expenditures is likely to be linked to product innovations introduced within the observation period.

Relevant innovation activities include preliminary market research, market tests, launch advertising, and the development of pricing mechanisms and product placement methods for product innovations. In some cases, the advantages of a business process innovation could also be marketed, for instance if the business process innovation has environmental benefits or improves product quality.

IP-related activities

IP activities for ideas, inventions and new or improved products or business processes developed during the observation period are innovation activities. Examples include activities to apply for IP rights for an innovation



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or for an invention, licensing-in the right to use an invention or an innovation, or licensing-out IP for inventions and innovations. All IP activities for inventions made before the observation period and for products and business processes that existed before the observation period should be excluded.

Employee training activities

Employee training activities for the use of existing products or business processes, the upgrading of general skills, or language training are not innovation activities. Examples of training as an innovation activity include training personnel to use innovations, such as new software logistical systems or new equipment; and training relevant to the implementation of an innovation, such as instructing personnel or customers on the features of a product innovation. Employee training that is required to develop an innovation, such as training for R&D or for design, are respectively part of R&D activities or part of engineering, design and other creative work.

Software development and database activities

Software development is an innovation activity when used to develop new or improved business processes or products, such as computer games, logistical systems, or software to integrate business processes. Database activities are an innovation activity when used for innovation, such as analyses of data on the properties of materials or customer preferences.

Activities related to the acquisition or lease of tangible assets

The acquisition or lease of tangible assets can be innovation activities in their own right, such as when a firm purchases or leases equipment with significantly different characteristics than the existing equipment that it uses for its business processes. The acquisition of tangible capital goods is generally not an innovation activity if it is for replacement or capital-widening investments that are unchanged, or if it consists of only minor changes compared to the firm's existing stock of tangible capital.

Innovation management activities

Includes all systematic activities to plan, govern and control internal and external resources for innovation. This includes how resources for innovation are allocated, the organisation of responsibilities and decisionmaking among employees, the management of collaboration with external partners, the integration of external inputs into a firm's innovation activities, and activities to monitor the results of innovation and to support learning from experience. Innovation management includes activities for establishing policies, strategies, objectives, processes, structures, roles and responsibilities to deal with innovation in the firm, as well as mechanisms to assess and review them. Information on innovation management is relevant to research on the efficiency of expenditures on innovation activities to generate sales or other innovation outcomes 2.3.4. Innovation in EU

In a changing world, the EU's economy needs innovation to become smarter, more sustainable and more inclusive [3]. Smart growth: developing an economy based on knowledge and innovation.

Sustainable growth: promoting a more resource efficient, greener and more competitive economy.

Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

Along with its growth strategy EU 2020, the EU has launched the Innovation Union and Resource Efficient **Europe flagship initiatives** aimed to help all EU countries to provide their citizens with a more competitive economy, more and better jobs and a better quality of life.

Europe 2020 Flagship Initiative Innovation Union

The Innovation Union Initiative [4] addresses the challenges and opportunities of Europe in key areas where urgent need for sustained efforts to create an Innovation Union, contributing to the achievement of their objectives "An industrial policy for the Globalisation era" to improve the business environment, especially



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SMEs. It aims is to improve conditions and access to finance for research and innovation, to ensure that innovative ideas can be turned into products and services that create growth and jobs.

Resource Efficient Europe flagship initiative

Natural resources underpin the functioning of the European and global economy and our quality of life. These resources include raw materials such as fuels, minerals and metals but also food, soil, water, air, biomass and ecosystems. The pressures on resources are increasing. If current trends continue, by 2050, the global population is expected to have grown by 30% to around 9 billion and people in developing and emerging economies will legitimately aspire to the welfare and consumption levels of developed countries.

As we have seen in recent decades, intensive use of the world's resources puts pressure on our planet and threatens the security of supply. Continuing our current patterns of resource use is not an option.

A number of measures have already been identified in this flagship initiative [5]. These include:

- A strategy to make the EU a 'circular economy', based on a recycling society with the aim of reducing waste generation and using waste as a resource;

- to create a **low-carbon economy** in 2050, cutting greenhouse gas emissions by 80-95%, as part of global efforts to fight climate change, while improving energy security and promoting sustainable growth and jobs; **From a Liniar Economy to a Circular Economy**

In this policy context will take place a transition from a Liniar Economy - which means from raw materials – production- distribution- consumption-waste- to a Circular Economy in which waste can be used as raw material.



Figure 2.12. From a Liniar Economy to a Circular Economy

2.3.5. Circular Economy - Closing the loop

The European Commission adopted an ambitious **Circular Economy Package, which includes measures that will help** stimulate Europe's transition towards a circular economy, boost global competitiveness, foster sustainable economic growth and generate new jobs.

Objectives

- Synergies between environment and business agendas
 - Preserve resources while creating business opportunities

- Closer links to other key EU priorities (climate and energy, jobs and growth, investment, innovation, social, industrial competitiveness)



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 Propose concrete and ambitious action where EU intervention has high added value, e.g. long- term signals on waste management; internal market; barriers linked to existing EU legislation; enforcement issues

What is a circular economy?

In a circular economy, products and the materials they contain are valued highly, unlike in the traditional, linear economic model, based on a 'take-make-consume-throw away' pattern. In practice, a circular economy implies **reducing waste to a minimum** as well as re-using, repairing, refurbishing and recycling existing materials and products. What used to be considered as 'waste' can be turned into a valuable resource.

Moving towards a more circular economy could deliver **benefits**, among which reduced pressures on the environment, enhanced security of supply of raw materials, increased competitiveness, innovation, and growth and jobs. However, it would also face **challenges**, among which finance, key economic enablers, skills, consumer behaviour and business models, and multi-level governance.

Circular Economy Action Plan

-The Action Plan aims to stimulate Europe's transition towards a circular economy to boost global competitiveness, foster sustainable economic growth and generate new jobs. It gives a clear signal to economic operators that the EU is using all the tools available to transform its economy, opening the way to new business opportunities and boosting competitiveness.

-The proposed actions will contribute to "closing the loop" of product lifecycles through sustainable consumption and production and sound waste management, including greater recycling and re-use, also by creating a market for secondary raw materials. This will bring benefits for the environment, the economy and the society.

Diversity of actions and priority sectors

There are 5 main area of actions: Production, Consumption, Waste management, Secondary raw materials, Innovation & Investment

Priority sectors:

A number of sectors face specific challenges in the context of the circular economy, because of the specificities of their products or value-chains, their environmental footprint or dependency on material from outside Europe. The priority sectors are: Plastics, Food waste, Critical raw materials, Construction & Demolation, Biomass & Bio-based products.



5 Main Areas of Action

Figure 2.13. Main areas of action/ Priority sectors

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Production

A circular economy starts at the very beginning of a product's life. Both the design phase and production processes have an impact on sourcing, resource use and waste generation throughout a product's life.

 Product design - Better design can make products more durable or easier to repair, upgrade or remanufacture. It can help recyclers to disassemble products in order to recover valuable materials and components. Overall, it can help to save precious resources.

The Commission will promote the reparability, upgradability, durability, and recyclability of products by developing product requirements relevant to the circular economy in its future work under the Ecodesign Directive, as appropriate and considering the specificities of different product groups.

- Production processes

Even for products or materials designed in a smart way, inefficient use of resources in production processes can lead to lost business opportunities and significant waste generation.

The Commission will include guidance on best waste management and resource efficiency practices in industrial sectors in Best Available Techniques reference documents (BREFs) and will issue guidance and promote best practices on mining waste.

•Foster reparability, durability, and recyclability in Ecodesign (e.g. TV screens)

- Promotion of best practices for waste management and resource efficiency in industrial sectors.
- •Facilitate industrial symbiosis.

Consumption

-The choices made by millions of consumers can support or hamper the circular economy. These choices are shaped by the information to which consumers have access, the range and prices of existing products, and the regulatory framework. This phase is also crucial for preventing and reducing the generation of household waste.

-Once a product has been purchased, its lifetime can be extended through reuse and repair, hence avoiding wastage. The reuse and repairs sectors are labour-intensive and therefore contribute to the EU's jobs and social agenda.

-Other actions can be taken to reduce the amount of household waste.

-Innovative forms of consumption can also support the development of the circular economy, e.g. sharing products or infrastructure (collaborative economy), consuming services rather than products, or using IT or digital platforms.

- Develop rules to encourage reuse activities (e.g. waste proposal)
- •Work on Ecodesign to ensure availability of spare parts
- •Better enforce guarantees and action on false green claims
- •Emphasize Circular Economy criteria in Green Public Procurement.
- •Independent testing programme to assess possible planned obsolescence.
- •Better labelling: EU Eco-label, Environmental Footprint

Waste management

Waste management plays a central role in the circular economy: it determines how the EU waste hierarchy is put into practice. The waste hierarchy establishes a priority order from prevention, preparation for reuse, recycling and energy recovery through to disposal, such as landfilling. This principle aims to encourage the options that deliver the best overall environmental outcome.

•Revised legislative proposals on waste

- •Continued work with Member States to improve implementation including to avoid overcapacities in residual waste treatment (incineration and mechanical-biological treatment)
- •Ensure coherence between waste investments under EU Cohesion Policy and the waste hierarchy.



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Market for secondary raw materials

In a circular economy, materials that can be recycled are injected back into the economy as new raw materials thus increasing the security of supply. These "secondary raw materials" can be traded and shipped just like primary raw materials from traditional extractive resources.

- Recycled nutrients are a distinct and important category of secondary raw materials, for which the development of quality standards is necessary. They are present in organic waste material, for example, and can be returned to soils as fertilisers.

- The promotion of non-toxic material cycles and better tracking of chemicals of concern in products will facilitate recycling and improve the uptake of secondary raw materials.

-Water scarcity has worsened in some parts of the EU in recent decades, with damaging effects on our environment and economy. In addition to water-efficiency measures, the reuse of treated wastewater in safe and cost-effective conditions is a valuable but under-used means of increasing water supply and alleviating pressure on over-exploited water resources in the EU.

- Develop quality standards for secondary raw materials.
- Revised EU regulation on fertilizers.
- •Legislative proposal on minimum requirements for reused water
- •Analysis on the interface between chemicals, product, and waste legislation.
- •EU-wide electronic system for cross-border transfers of waste



Figure 2.15. Raw materials within the circular economy



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Innovation & Investment

The transition to a circular economy is a systemic change.

Innovation will play a key part in this systemic change. In order to rethink our ways of producing and consuming, and to transform waste into high value-added products, we will need new technologies, processes, services and business models which will shape the future of our economy and society. Hence, support of research and innovation will be a major factor in encouraging the transition; it will also contribute to the competitiveness and modernisation of EU industry.

TheHorizon 2020 programmes support innovative projects relevant to the circular economy, in fields such as waste prevention and management, food waste, remanufacturing, sustainable process industry, industrial symbiosis, and the bioeconomy.

- •€650 million Horizon 2020 initiative on 'Industry 2020 in the Circular Economy.
- •Pilot "innovation deals" to address potential regulatory obstacles for innovators.
- •Targeted outreach of EU funding, as Cohesion Policy Funds and for SMEs.
- •New platform for financing Circular Economy with European Investment Bank and national banks.

Towards a circular economy: A zero waste programme for Europe

Circular economy systems keep the added value in products for as long as possible and eliminate waste [6]. They keep resources within the economy when a product has reached the end of its life, so that they can be productively used again and again and hence create further value. Transition to a more circular economy requires changes throughout value chains, from product design to new business and market models, from new ways of turning waste into a resource to new models of consumer behaviour.

In order to boost the economic, social and environmental benefits gained from the better management of municipal waste, the Commission proposes **to ban the landfilling** of recyclable plastics, metals, glass, paper and cardboard, leather and biodegradable waste by 2025, while Member States should endeavour to virtually eliminate landfill by 2030. Industry already recognises the strong business case for improving resource productivity. It is estimated that resource efficiency improvements all along the value chains could reduce material inputs needs by 17%-24% by 2030 [7] and a better use of resources could represent an overall savings potential of €630 billion per year for European industry [8]. Business driven studies based on product-level modelling demonstrate significant material cost saving opportunities for EU industry from circular economy approaches and a potential to boost EU GDP by up to 3.9% [9] by creating new markets and new products and creating value for business. It is not surprising therefore that companies are continually working to improve resource management, but they are held back by a range of market barriers.

The <u>European Integrated Pollution Prevention and Control (IPPC) Bureau</u> produces reference documents on Best Available Techniques, the so-called BREFs, which are used by competent authorities in EU Member States when issuing operating permits. BREFs incorporate best practices with regard to the resource use, residues and by-product' reuse and recycling as well as waste generation and management, therefore contributing to the EU initiatives on Circular Economy.

2.3.6. Technological Innovation in Leather Sector

The EU has a set of common rules for permitting and controlling industrial installations described in the <u>Industrial Emissions Directive 2010/75/EU</u> (Integrated Pollution Prevention and Control).

- Best Available Techniques (BAT) Reference Document (BREF) for the Tanning of Hides and Skins: Industrial Emissions Directive 2010/75/EU:(Integrated Pollution Prevention and Control), revised 2013.



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Cleaner production is an efficient method of preventing or minimizing pollution caused by industrial activities. The primary task of all cleaner technologies is to reduce the amount pollution emissions; and where possible change the nature of pollution emissions to reduce the pressure and costs of end-of-pipe treatment. The expected results primarily include:

- Lower water consumption better preservation of rapidly diminishing water resources.
- Lower total dissolved solids (TDS) content (including salinity) lower risk of affecting the usability of the receiving water bodies for irrigation and livestock watering.
- Avoidance of use in processing and/or presence in leather of substances from the Restricted Substances Lists (RSL) promulgated by national or regional legislation, leading (multinational) brands and/or ecolabel due to their proven negative impact on human health and eco-systems.
- Proportionally higher volume of solid wastes suitable for processing into saleable by-products.
- Lower levels of BOD, COD and Nitrogen; their respective contents in conformity with local and widely prevailing legislative norms.
- Low level of chromium in (C)ETP sludge the scope for land application and/or composting.
- Lower hazardous and/or unpleasant air emissions.
- Appropriate occupational health and safety (OSH) standards better work conditions, fewer accidents.

2.3.7. Sustainable development

The term "sustainable development" first appeared in a document signed by 33 African countries in 1969, under the auspices of the International Union for Conservation of Nature (IUCN) [10].

In the same year, the Environmental Protection Agency was set up in the US; its guidelines have had a huge impact on developing theories and practice in global environmental policies. These two aspects are what characterized "the Brundtland Report", which was produced by a commission led by Dr. Gro Harlem Brundtland and published in 1987.

The Report defines sustainable development as meeting: "the needs of the present without compromising the ability of future generations to meet their own needs".

The Daly Rules approach

The Daly Rules approach is a closed thermodynamic system in which Economic systems sit inside of social systems, both of which are inside of our one environment; this means that sustainable development must involve the health of all three systems.



Figure 2.16. Closed thermodynamic system



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Criteria of sustainability

The Daly Rules approach (possibly founded on ecological/thermodynamic principles) suggests the following criteria of sustainability:

- Renewable resources (e.g., fish, soil, ground water) must be used no faster than the rate at which they regenerate.
- Non-renewable resources (e.g., minerals, fossil fuels) must be used no faster than renewable substitutes for them can be put into place.
- Pollution and wastes must be emitted no faster than natural systems can absorb them, recycle them, or render them harmless.



Figure 2.17. Criteria of sustainability

Leather and sustainability

Sustainability has been one of the key topics in social and industrial development and it has become one of the key growth factors for the world economy. No industry, including the leather industry and its value chain, can isolate itself from concepts of sustainability. In order to manage this in a fair and comparable way, sustainable development needs to be defined specifically for each industry. The criteria that are used must be measurable and be subject to monitoring to have an impact on industrial development.

Sustainable development should be viewed from three different angles:

- Economic activity
- Ecological factors
- Social responsibility.

The absence of sustainability in any one of these areas questions the overall processes and products. This factor is often restricted to the field of ecology, but development will not be viable unless it is also based on sound economic and social principles.

To achieve a sustainable footprint, it is essential to take a close look at the role of ecology in the leather value chain. Ecological assessments can be made on the basis of a wide variety of different parameters. There are four key elements in the production of leather that should be grouped together to provide a sustainable footprint concept: the carbon footprint, the resource footprint, the water footprint and the toxicological footprint.



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Figure 2.18. Elements of footprint [10]

The carbon footprint

The carbon footprint [11] is a topic that has gained significant public awareness in recent years. It is based on the analysis of CO2 (Carbon Dioxide) that is emitted into the environment in a production process. In terms of leather, it is important to avoid adding CO2 generated by cattle farming to the balance generated by the manufacturing of the leather itself. Efforts are currently being made by the leather industry on an international scale, to supply scientific data to correct those misconceptions. Nevertheless, the reduction in CO2 emission has to be a continuous target for the industry, as it goes hand in hand with the consumption of less energy and chemicals for the production of leather. Topics such as transportation and logistics also have to be addressed in the overall carbon footprint.



Figure 2.19. Carbon dioxid, CO2/m2 leather (Source: The Chart by F. Schnel derived from the presentation by J. Knoedler)

The water and carbon footprint

The water and carbon footprint [11] will continue to grow in importance in the coming years because the efficient use of water is one of the key challenges of this century. The water that is used as a solvent in the production of leather is a scarce resource, and it is becoming increasingly more expensive in terms of both



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consumption and effluent treatment. The water footprint gains even more importance looking at the significant number of tanneries located in arid regions of the world. The pressure is on innovation for new technologies and chemicals in order to provide more efficient processes for the production of leather.

Water- and Carbon Footprint contribution for Leather of a tannery operation is insignificant



Figure 2.20. Water and Carbon Footprint contribution for Leather of a tannery operation [12]

The resource footprint

The resource footprint [11] covers many aspects as it touches on different resources employed in leather production. However, it needs to be recognised that the raw stock is the single most important and valuable resource in the production of leather. Every attempt to increase the added value by upgrading low-quality leather, eliminating waste in the cutting of patterns, reducing waste products, or lowering the costs of tanneries results in an immediate benefit. The resource footprint also covers the efficient use of chemicals based on regenerative raw materials and optimised production processes in tanneries, including, for example, lower energy consumption. This is another example of the cradle-to-cradle approach, because leather needs to be capable of being recycled or completely biodegraded in order to ensure that it can be disposed of in a sustainable way.





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The toxicological footprint

The toxicological footprint [11] is another aspect of leather production that is frequently discussed. One example is the on-going discussion concerning Cr(VI) or NMP (NMethylpyrrolidone) in the value chain and final product. The toxicological footprint addresses the use of harmful substances in the production of leather, the restricted substance list, the management and handling of harmful substances, legal requirements, the demands of specific industries/ brands, as well as product and process safety. The aim of the toxicological footprint must be to minimise the levels of harmful substances used in the production of leather and ideally to eliminate them. Current discussions include the ZDHC (Zero Discharge of Hazardous Chemicals) campaign initiated by major brands and the new VOC (Volatile Organic Compounds) regulations that apply to automotive leather in China.

2.3.8. Corporate social responsibility (CSR)

Corporate social responsibility (CSR) is how companies manage their business processes to produce an overall positive impact on society. It covers sustainability, social impact and ethics [13]. Corporate social responsibility (CSR, also called corporate conscience, corporate citizenship or responsible business) [14] is a form of <u>corporate self-regulation</u> integrated into a <u>business model</u>. CSR policy functions as a self-regulatory mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards and national or international <u>norms</u> [15].



Figure 2.22. Corporate social responsibility

Conclusions

- Technological innovation lead to the implementation of technologically new or improved products and processes.
- Sustainability calls for renewable raw materials, recycling and waste reduction.
- The sustainability footprint concept provides the tools with which all stakeholders involved in the value chain can create added value sustainably.
- Corporate social responsibility (CSR) is a form of corporate self-regulation integrated into a business model.
- Pollution prevention, persistent promotion of cleaner leather processing, ultimately leading to lower treatment costs, obviously remains of paramount importance.



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2.4. Lesson 3: Financing programs

Author: Desiree SCALIA - CIAPE

- Relationship with the banks
- Economic and financial sustainability (principles)
- Public funds (EU, national, local grants grants of chambers of commerce)
- Private funds (foundations and banks)
- Fundraising
- Crowd funding

2.4.1. Relationship with the banks

When you begin to put your idea into practice, one fundamental element is the financial management of the business: everything related to money obtainment, its management, utilisation, etc.

It is important that you are familiar with the fundamental aspects of this field given that it can affect the business as much in the start-up phase as later on in product development. This applies even if you plan to use external help to manage the accounts. Remember, this is an area of the business that requires continuous and rigorous control.

To select the right banking institution is a key component for your business's financial health. And, as with any relationship, building on a strong foundation will lead to long-term success.

It will happen if you pay attention to the following 5 simple rules:

- 1) DO NOT BE A STRANGER. When it comes to building a better relationship with your bank, first remember the adage "don't be a stranger". Especially with very large banking institutions, small and mid-size business owners can all too often become just an account number. While most banking can be conducted online these days, it's important to physically visit your bank and establish relationships with bank managers, loan officers, and staff. These people can become your company's champions, and they are much more likely to do so if they can put a face to a name. For this reason alone, smaller banks can often be a better fit for SMBs.
- 2) CLEARLY DEFINE YOUR BUSINESS PLAN. Along the same lines, the better the bank knows you and your business, the better off everyone will be. Make sure that your bank understands your business plan, as well as the special concerns and requirements of your industry. As you go along, it's also very important to keep the team apprised of any changes in your plans. They can then effectively guide you in making the best decisions to ensure your company's ongoing financial health.
- **3) SET AND SHARE YOUR GOALS**. As a business owner, you're planning for growth, and your banking team can help position your company so that these goals can be met. For example, if you decide to move from accepting cash only to accepting credit and debit cards, your bank can assist you in determining the best merchant services provider for your company. Even better, some banks can provide these services themselves, consolidating accounting and expediting the time it takes for payments to be deposited into your business accounts.
- **4) BE HONEST AND PROACTIVE**. Inform your banking team immediately of any issues that may arise, and be clear and comprehensive when articulating the circumstances.



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5) WORK TO BUILD A SOLID FINANCIAL HISTORY. Your relationship with the bank is a two-way street. Small and mid-size businesses depend on the support and backing of their banking institutions, and banking institutions depend on their customers to make deposits and timely loan payments, as well as consider new and upgraded products. Demonstrating your financial fitness over time will go a long way toward ensuring that your relationship with your bank is fruitful now and in the future.

2.4.2. Economic and financial sustainability

Before launching a business, there are various aspects of the accounts that should be evaluated in order to know whether we are going to generate profits or losses (at least in principal). Let your students answer the following questions:

- What is the initial investment in your business?
- How much do you expect to earn or sell each month?
- How much money will you need to pay out each month?
- How much will be left each month after paying all costs?
- How much is needed to maintain operation of the business?
- How much and at what point will you need to borrow?
- How much additional investment funds will be required in the coming years?
- How long will it take to recuperate the money invested (amortisation)?

All these elements have different terms associated with them: capital, investments, provision of funds, amortisations, loans, debt expiry, subsidies, credits, etc. You can find the meaning of some of these terms in the Glossary.

Accounting is the practice that establishes the rules and processes for registering, quantifying, analysing and interpreting the financial facts that affect the business.

The accounts provide you with useful, reliable, timely and accurate information to control the evolution of the business and assist us when we need to make decisions.

In order to begin understanding accounting, the first thing you need to know is the principal formula that forms the basis of accounting operations:

Assets = Liabilities + Capital

Assets: all the resources that the business own. Some examples of the assests of a business would be:

- Money deposited with the bank.
- Furniture in the office.
- The selection of products available for sale.
- The equipment or machinery used in day-to-day activities.
- Office equipment such as computers, printers, telephones, etc.
- Rights, patents, shares, bonds, etc.



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Liabilities: represent all the debts the business has, with suppliers, banks, etc. Some examples:

- Debts with material suppliers.
- Loan debt with Banks.
- Employee's salaries pending for payment.
- Taxes pending for payment.

Capital: consists of the economic contribution made by the company owners (shareholders) and the profits that remain in the company from previous periods after all the debts have been serviced (retained profits). The basic accounting formula applies throughout the life of the business thanks to an accounting principle known as **double entry**. The principal dictates that every completed transaction affects at least two sub-accounts within the accounts. The three sub-account categories are: Assets, Liabilities and Capital.

You can explain this **example** to your students:

Imagine that you want to set up a business operating from home and for this purpose you have set aside €1,000. By contributing those €1,000 you would be affecting the Asset account titled Cash and at the same time and account called Capital. The equation would be as follows:

Assets		Liabilities		Capital
€1,000	Ш	€0	+	€1,000

Imagine you now take out a loan for the business of €1,500. By adding this to the business you would be affecting the Cash account which belongs to Assets as we have already seen. Also affected is a Liabilities account that we can call Loans Outstanding. The equation would be as follows:

Assets		Liabilities		Capital
€2,500	Ш	€1,500	+	€1,000

Another of the tools employed to complete the accounts is the **Profit and Loss account**. This summarises all the income and costs of the business over a specific period and is designed to indicate definitively if you have made or lost money.

- When the Profit and Loss account is positive, a profit has been made.
- When the Profit and Loss account is negative, a loss has been made.

Furthermore, modern accountancy is organized in a so-called double-circuit, or more precisely, on two levels, namely:

- **Financial accountancy** requires monitoring, control and fair presentation of assets, both structured and as a whole, in order to provide the information needed for undertaking economic decisions. It has a unitary character for all economic agents, and it is carried out under the rules drawn up by the authorities.
- Internal management accountancy (also called analytical or managerial) aims to follow in detail the internal management of the unit, by calculating production, transfer and acquisition costs, sales rate;



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by determining the profitability of products, works, services, and by preparing budgets for various types of activities, providing useful information for decision making.

Depending on the complexity of the business that you run, it may be necessary to employ an accounting professional to manage compliance with the relevant accounting obligations in the Code of Conduct for each type of business activity.

2.4.3. Public funds

In the current context characterized by lack of resources and difficult credit access, an interesting opportunity comes from **public funds** at national, regional and local level (including loans granted by chambers of commerce) and also at European level.

EU financing programmes are generally not provided as direct funding. Aid is channelled through local, regional, or national authorities, or through financial intermediaries such as banks and venture capital organisations that provide funding through financial instruments.

The EU programme for the **Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME)** is improving access to finance for SMEs through two financial instruments that have been available since August 2014:

- Loan Guaratee Facility (LGF)
- Equity Facility for Growth (EFG)

LOAN GUARANTEE FACILITY

It funds **guarantees** and **counter-guarantees** for financial intermediaries (e.g., guarantee organisations, banks, leasing companies) to help them provide more loan and lease finance to SMEs. This facility will also include the securitisation of SME debt-finance portfolios.

By sharing the risk, the COSME guarantees will allow financial intermediaries to expand the range of SMEs and types of financial transactions they can support.

EQUITY FACILITY FOR GROWTH

It is dedicated to investments in risk-capital funds that provide venture capital and mezzanine finance to expansion and growth-stage SMEs, in particular those operating across borders.

Fund managers working on a commercial basis will ensure that investments are focused on SMEs with the greatest growth potential.

It is expected that some 500 firms will receive equity financing through the programme, with overall investment reaching up to EUR 4 billion. It is also anticipated that further finance will be attracted through co-investments from other public and private sources.

The **Competitiveness and Innovation Framework Programme (CIP)** was designed to provide small and medium-sized enterprises (SMEs) with better access to finance, as well as support for innovation, and regional business support through 2 different financial instruments:

- Growth and Innovative SME Facility (GIF)
- SME Guarantee Facility (SMEG)



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GROWTH AND INNOVATIVE SME FACILITY

This instrument has provided risk capital to:

- innovative SMEs in their early-stages;
- SMEs with high growth potential in their expansion phase.

SMEs wishing to apply for equity investment under CIP need to contact the financial intermediaries that have signed an agreement with the European Investment Fund (EIF).

SME GUARANTEE FACILITY

This provides loan guarantees that encourage banks to make more debt finance (including microcredit and mezzanine finance) available to SMEs by reducing the banks' exposure to risk. SMEG has provided direct, counter- and co-guarantees to financial intermediaries providing SMEs with loans, mezzanine finance, and equity.

If you are an **SME or an Entrepreneur** looking for debt or equity finance and would like to see which financial intermediaries are working with COSME, please visit the <u>Access to Finance portal</u>.

2.4.4. Private funds

Business angel and **venture capitalists** are private investors who want to invest in the project; they share the business risk with the entrepreneur and acquire part of the company's shares. Two are the most used instruments:

- Private Equity
- Venture Capital

PRIVATE EQUITY

Operations carried out by institutional investors in companies that already have a consolidated history behind them and need financial partners to implement a restructuring, change ownership or implement development plans (for example, internationally).

VENTURE CAPITAL

Transactions carried out by institutional investors (funds of various kinds) that enter the capital of a company in the start-up phase or which is going through a period of expansion.

THE DIFFERENT TYPES OF OPERATIONS

- By out. Investments in companies that lead to change of ownership;

- **Expansion.** Investments made in existing companies that need more capital to consolidate and accelerate the growth underway;

- **Early stage.** Set of financing (seed financing and start up financing) to support companies in the early stages of life;

- **Replacement.** Investments which have the objective of replacing part of the shareholding no longer involved in the business activity;

- Turnaround. Investments in companies in crisis that need restructuring.



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In most cases, a potential entrepreneur manages to obtain financing from **private banks**. In Italy, for example, many banks offer funding opportunities for new businesses; some of these are specifically targeted at startups led by a woman and / or young people (under 35 years). Please, take into account that these loans are subject to **interest rate**; furthermore, the delivery takes place after evaluation of a successful business plan and / or an extremely innovative project only.

2.4.5. Crowdfunding

Another possibility for business start-ups is offered by **crowdfunding**, a new form of fundraising characterized by raising small amounts of money from a very large target ("crowd") typically via the Internet.

The Crowdfunding Centre's May 2014 report identified two primary types of crowdfunding:

- **Rewards crowdfunding**: entrepreneurs presell a product or service to launch a business concept without incurring debt or sacrificing equity/shares.
- **Equity crowdfunding**: the backer receives shares of a company, usually in its early stages, in exchange for the money pledged.

2.4.6. Exercises

Exercise 1

- Work in groups of 2-5 members. Your task is to find programme, fund, grant for setting up an enterprise or starting a new product line in your country. Look for information on the Internet, use information booklets or contact relevant grant-information desks for grant-related queries.
- Note for a trainer: Assign participants randomly to groups. Participants line-up and have them or you count-off down the line, 1,2,3,4 to create 4 teams. Alternatively, participants can draw numbers from the pool, or you can use any other method. Do not let students choose their own teams, for they may team up with friends or form cliques that can get off topic.
- Basic task accomplishment: identification of a grant/programme
- Advanced task accomplishment: provide programme, fund, grant conditions, identify requirements, eligibility criteria, and stages in funding and other important steps in application process.
- **Public presentation:** groups write their ideas on blackboard and shortly present how to receive a grant under specific programme. If several groups identify the same grant, only one group makes a presentation and the others provide their comments, give suggestions and corrections.
- **Note for a trainer:** the activity may be assigned as homework. Written form is recommendable both for in-class activity and homework.

Exercise 2

 You need to create an investor panel consisting from 3-5 members who want to put their money into social enterprise. The rest of the group needs to prepare 5-minute presentations of project/business plan to gain investors' interest. Each investor will rank the presentations on the scale from 1 to 10, where 10 means "I definitely want to invest in your business". Mind that each investor can rank only one project a 10. Investors will also assess each performance according to the following criteria:



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- evaluation of business idea – 1 to 10 – where 10 means "I understand your business idea and strongly believe in its success"

- evaluation of performance – on a scale from 1 to 10 – where 10 means excellent communication skills, attractive and engaging performance

- At the end of the exercise, a trainer sums up each performance and provides individual feedback especially on the presentation techniques. Due to short preparation period, business ideas should not be strictly evaluated. Trainer should pay more attention to auto presentation, body language and communication skills. Before the activity starts, trainer can ask groups to find information on presentation structure or introduce the following presentation model:
- An elevator pitch is a brief, persuasive speech that you can use to spark interest in what your organization does. You can also use one to create interest in a project, idea, or product.
- It needs to be succinct, while conveying important information.
- To craft a great pitch, follow these steps.

Identify your goal.

Explain what you do.

Communicate your unique selling proposition.

Engage with a question.

Put it all together.

Practice.



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2.5. Lesson 4: Marketing of leather products

Author: Desiree SCALIA - CIAPE

- Market analysis techniques
- Characteristics of the leather markets
- Business to business and Business to consumer marketing
- Product, price, promotion and distribution of leather products

2.5.1. Introduction

What is Marketing?

According to the definition of Bruhn, 2001:

"Marketing is an entrepreneurial mindset. It manifests itself in the analysis, planning, organization, execution and control of all internal and external business activities, which aim at achieving sales market-oriented business objectives by focusing company performance on the benefit of the customer in the sense of consistent customer orientation".

This means:

- Marketing as a "generic business concept" is the basis of entrepreneurship
- Marketing includes market-oriented business management and thus consistent customer orientation
- Marketing is a concept to increase sales by consistent market and customer orientation.





Sales concept

Product orientation

The product itself, features, quality, uniqueness generates the intended demand. At the time, demand was there, but not sufficient offers on market. Main business activities were focused on:

- Procuring
- Producing



Marketing concept

Customer orientation

The markets are already saturated by many comparable products. So, the satisfaction of individual customer needs by product and related services provided is the main business focus:

- Customer needs
- Align competences

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Selling

Customer benefits.

Product orientationThe product itself, its features, quality, uniqueness generates the intended demand. At the time the demand was there, but not sufficient offers on the market. Thus, main business activities were focused on:

- Procuring
- Producing
- Selling

Marketing concept

Customer orientation

The markets are already saturated by many comparable products. So the satisfaction of individual customer

needs by product and related services provided is the main business focus:

- Customer needs
- Align competences
- Customer benefits

Marketing

- Aims at the strategic orientation of the organisation to improve its performance
- Focuses on customer needs including the market changes (needs of even more reference groups may be included, e.g. employees, shareholders etc)
- Refers to business decisions on a wide range: product policy, price policy, communication policy

2.5.2. Marketing analyses techniques

The process of assembling information about a target market or a target audience is rightly termed as "Market Research". The primary role of undertaking market research analysis is to gather or get an in-depth knowledge about the potential as well as existing respondents to give with better and satisfactory services.

Market research is undertaken by a business to not only compete with various other competitors in the industry but also to get analytical information on the competition, market size, and varied other market needs. Market research analysis technique comprises of both analytical as well as statistical research methods adapted to harness and interpret information in a systematic way.

Market research analysis techniques adopted by an organization is broadly classified into the following types:

• Primary Market Research:

Any research undertaken by an organization on its own from the grass root level to gather information to improve its product, services or function is primary market research.

Secondary Market Research:

In this market research analysis technique, an organization does not collect information on its own but relies on the information that is already available from different sources collected by various people over the time.



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Qualitative Market Research:

In this type of market research analysis technique, an organization tries to get insight into the opinions and feelings of the consumer with respect to the products and services of the company. This is undertaken through the conduct of face-to-face interview or by forming a focus group.

• Quantitative Research:

In this form of market research analysis technique, an organization places more importance on the facts and statistics for the data and not to the feelings and opinion of the consumer.

Whatever may be the type of market research analysis technique adopted by an organization, the end goal is the same that is to improve and give satisfactory services to consumers.

How to Collect your Own Market Data

Here are some major ways in which you can collect data for your business:

1. Observation

This includes observing people in marketplace conditions to ascertain consumer behavior. However, in the digital realm, observation takes a whole new meaning as you are now able to judge visitors' website behaviors using analytics.

2. Surveys

This can further be broken down into:

- Interviews and individual surveys
- Telephone surveys
- Social media surveys
- <u>3. Focus Groups and Product Testing</u>
- The company can call in a select bunch of people to ask questions pertaining to a particular product or service. In addition, you can launch product in a limited scale to gauge customer response, and then extrapolate those results for a nationwide or global launch.
- You should note that all forms of data collection have their own limitations. That is why for nearaccurate analysis, you should use a combination of primary and secondary sources of information.

Tools PEST ANALYSIS

PEST ANALYSIS

The PEST Analysis focusses macro-environmental factors relevant for strategy building

It helps to condsider the overall market situation and supports decision making according to the business goals.

PEST refers to

Political factors

Econonmic factors Socio-cultural factors Technological factors

Politics

As governments intervene in the economy, businesses are bound to be affected. Indeed, employment policies, tax laws, trade restrictions can impact your business directly and indirectly, along with political stability and how foreign markets operate.



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Economic

This is easy to understand. Macro and micro-economical economic factors such as interest rates, exchanges rates, inflation, and disposable incomes influence how you will manage your business at present and in the long run.

Social

This has to do with the beliefs and culture of the society you are operating in. Population trends, dietary considerations, ethics and media, and spend habits are some of the factors that come under social considerations that you need to observe in your business activity.

Technological

Finally, businesses also have to deal with production, distribution, and communication changes imposed by new technology in order to stay afloat in a competitive economic landscape.

Note that a variation of PEST analysis called **PESTLE** also takes into account **LEGAL** and **ENVIRONMENTAL** factors.

• Legal

If you don't want to find yourself dealing with the courts it's best to update contracts. You want to ensure you're following copyright agreements too. It's best if a lawyer looks over these things and gives you the OK.

• Environmental

See if there are ways you can reduce your carbon footprint. Many people are worried about the environment these days. Businesses whodo what they can to use less electricity, power and water are favoured among communities. If your business is involved in eco-friendless it would be better have these basics covered.

SWOT Analysis

SWOT analysis (or SWOT matrix) is an analysis of **strengths**, **weaknesses**, **opportunities** and **threats**. It is a structured planning method that evaluates those four elements of an organization, project or business venture.

It involves specifying the objectives of the business or project and identifying the internal and external factors that are favorable and unfavorable to achieve that objective.

<u>Strengths:</u> characteristics of the business or project that give it an advantage over others	Weaknesses: characteristics of the business that place the business or project at a disadvantage relative to others
<u>Opportunities</u> : elements in the environment that the business or project could exploit to its advantage	<u>Threats:</u> elements in the environment that could cause trouble for the business or project

Figure 2.24. SWOT analysis



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Figure 2.25. Determination of the relevant influencing factors of market and company

Information analyzed using market research analysis techniques

Varied information about the consumer and the market using the market research analysis technique could be easily ascertained. Listed below are few of them:



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- Prevailing trends in the Market.
- Market Segmentation.
- Market information on product prices.
- Analysis about the business strength, weakness, opportunities as well as threat.
- Market research analysis on products, consumer accounts, and competitor.

Benefits for an organization using market research analysis technique

- Effective tapping of the prevailing market opportunities by identifying and using them to the best.
- In encouraging a healthy communication with consumers by knowing their preferences, likes, and dislikes.
- In taking immediate and timely actions in certain areas of the business and thus help to decrease the business risk.
- To study the market trends and set up newer trends in the market according to consumer preferences and needs.
- Identify the existing problems, work on them taking into consideration the opinion voiced by the consumers especially on products that are in the different stages of development.

2.5.3. Characteristics of the leather market

As we enter a new digital age, dominated by social influencers and political narratives, every customer focused industry has to make changes to their marketing strategy to accommodate trends. The leather/fashion industry is no different. Having always been an indirect expression of cultural trends at play, now more than ever we can see the way in which digital campaigns have been both affected and in many ways improved by recent digital developments.

The leather industry in EU

The leather tanning industry uses hides and skins (by-products from the meat and dairy industry) that would otherwise be disposed of by being sent to landfills or incinerated. Leather is the tanning sector's fundamental output. It is an intermediate industrial product, with applications in downstream sectors of the consumer goods industry.

The most important outlets for EU tanners' production are:

- footwear 41%;
- furniture 17%;
- the automotive industry 13%;
- leather goods 19%;
- clothes 8%;
- other 2%.



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The processing of hides and skins also generates other by-products, which find outlets in several industry sectors such as pet and animal food production, fine chemicals (including photography and cosmetics), and fertilisers.

The leather and related goods sector comprises about 36,000 enterprises and generates a turnover of EUR 48 billion. These enterprises employ around 435,000 people.

The EU is the source of some of the highest value calfskins in terms of leather and raw material. Tanneries in the European Union are typically family-owned, small and medium-sized enterprises. Regional concentration is strong, and the industry often plays a key role in the local economy, being the predominant creator of wealth and employment.

Although there is no specific EU legislation for the leather industry, this sector is affected by different measures concerning the environment, the use of chemicals, the marketing and use of certain dangerous substances as well as the use of animal by-products.

More at: https://ec.europa.eu/growth/sectors/fashion/leather/legislation_en

The *Study on the feasibility of a leather labelling system at European level* analyses a range of labelling harmonization possibilities for leather such as social labelling, environmental labelling, animal species and leather authenticity. It gives an overview of the potential impact of different policies and recommends further assessment in the area of leather authenticity. It also enables an evaluation of whether a further cost-benefit analysis of the various potential labels is necessary.

2.5.4. B2B and B2C Marketing

- **Business-to-Business** marketing (or B2B marketing, as it is commonly known) involves the sale of one company's product or service to another company.
- **Business-to-Consumer** (B2C) marketers develop campaigns that connect with the consumer mindset. Through advertising, direct and Internet marketing, storefronts, and discount offers, the B2C marketer works to convert shoppers to buyers as efficiently as possible.

B2B marketing strategies

B2B marketing success doesn't come from broadcasting a product over radio or television. B2B marketing success comes from embedding your company in the industry, and making your product seem like a staple. Get in front of niche buyers by:

- Hosting informational webinars
- Setting up booths at popular industry tradeshows
- Sending out email newsletters positioning your company as an industry expert
- Maintaining an active, interactive social media presence
- Attending industry networking events and building buyer relationships

What kind of customers are effectively marketed to with B2B Marketing?

B2B marketers generally focus on four large categories:

- Companies that use their products, like construction companies who buy sheets of steel to use in buildings.
- Government agencies, the single largest target and consumer of B2B marketing.
- Institutions like hospitals and schools.
- Companies that turn around and resell the goods to consumers, like brokers and wholesalers.



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How is a B2B marketing plan developed and employed?

A B2B marketing plan must be focused in delivery and broad in application. This means that while consumer marketing can advertise very specifically (one mass-consumed product advertised through print, television commercials and the Internet) to a wide audience, B2B marketing cannot. Instead, it needs to brand itself very broadly (through email, corporate image and technical specifications) to a very specific customer.

Business marketers can develop and decide how to employ their B2B plan by identifying and understanding the importance of the following topics:

- The product or service: When marketing to consumers, there is an emotional component involved. Individuals are drawn to products because of how they make them feel. With B2B customers, the buyers are trained professionals who care about the quality of products, their cost-saving and/or revenue-producing benefits, and the service provided by the host company.
- **The target market:** Many B2B marketers are able to focus on very niche industries which reflect specialized needs. While this can make marketing a bit more straightforward, it also requires a high level of knowledge outside of marketing specialists.
- **Pricing:** Businesses are usually more concerned with cost, value, and revenue potential than consumers. However, they can also be more readily convinced to pay top dollar as long as B2B marketers do an excellent job of convincing them that the product, quality and customer service will be worthwhile.
- **Promotion:** B2B marketers need to be experts not only of marketing and advertising, but experts within their fields. Once this happens, they will learn the best ways to market to this field, whether it is through blogs, journals, tradeshows or word of mouth. B2B marketing very rarely employs traditional media like TV and radio commercials.

B2C Marketing considerations

- Short sales cycles—days or even minutes, for those impulse buys
- Brand is built through advertising and referrals
- Customer service is core to sales
- Social media gives greater access to customers, opening up huge opportunities for advertising, customer service, and building of customer loyalty

How is an effective B2C marketing campaign developed?

B2C marketing campaigns begin with comprehensive market research. Companies must know who their customers are, what they want, and the messages they respond to. Market research enable companies to craft effective messages and select campaign elements that engage specific audiences.

Crucial elements of B2C Marketing

- Know your audience
- Own your brand
- Take advantage of user-generated content online
- Take action to respond to negative feedback
- Build brand loyalty



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2.5.5. Marketing mix

The **marketing mix** (also known as the **4 Ps**) has been defined as the "*set of marketing tools that the firm uses to pursue its marketing objectives in the target*". Thus, the marketing mix refers to four broad levels of marketing decision, namely: **product, price, promotion**, and **place**.



Figure 2.26. Marketing Mix

Table 2.1. Product

CATEGORY	DEFINITION/EXPLANATION	TYPICAL MARKETING DECISIONS
		 Product design – features, quality Product assortment – product range, product mix, product lines
PRODUCT	A product refers to an item that satisfies the consumer's needs or wants.	BrandingPackaging and labeling
PRODUCI	Products may be tangible (goods) or intangible (services, ideas or experiences).	 Services (complementary service, after-sales service, service level)
		Guarantees and warranties
		• Returns
		Managing products through the life-cycle



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Table 2.2. Price

CATEGORY	DEFINITION/EXPLANATION	TYPICAL MARKETING DECISIONS
	Price refers to the amount a customer pays for a product.	Price strategy
	Price may also refer to the sacrifice consumers are prepared to make	Price tactics
	to acquire a product. (e.g. time or effort) Price is the only variable that has implications for revenue. Price also includes considerations of customer perceived value.	Price-setting
PRICE		 Allowances – e.g. rebates for distributors
		Discounts – for customers
		 Payment terms – credit, payment methods

Table 2.3. Placement

CATEGORY	DEFINITION/EXPLANATION	TYPICAL MARKETING DECISIONS
PLACE	Refers to providing customer access Considers providing convenience for consumer.	 Strategies such as intensive distribution, selective distribution, exclusive distribution Franchising Market coverage Channel member selection and channel member relationships Assortment Location decisions Inventory Transport, warehousing and logistics

Table 2.4. Promotion

CATEGORY	DEFINITION/EXPLANATION	TYPICAL MARKETING DECISIONS
PROMOTION	Promotion refers to marketing communications. May comprise elements such as: <u>advertising, PR,</u> <u>direct marketing and sales promotion.</u>	 Promotional mix - appropriate balance of advertising, PR, direct marketing and sales promotion Message strategy - what is to be communicated



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 Channel/ media strategy - how to reach the target audience
 Message Frequency - how often to communicate

2.5.6. Exercises

GROUP EXERCISE

Build your own B2C Marketing Plan

You need to set up a plan for the marketing tasks and offer guidance for the implementation. Set up a realistic plan, distribute the tasks and accompany their implementation.

- Decide which kind of products/services your team would like to sell and through which channel.
- Create a Value Proposition like customer satisfaction, customer loyalty, product & process innovation, revenue increase, cost savings etc.

Having these questions answered please follow next steps:

Situation analysis - Where are we now?

- Which channel are being used by our customers?
- How are our competitors meeting the needs of our target customers?
- Which marketing tactics are they using?
- How can we stand out from our competitors?

Objectives mean - Where do we want to be?

- How do we ensure alignment with our business' goals?
- What are the top-level goals 5S (Sell grow sales, Serve add value, Speak get closer to customers though dialogue and participation, Save save costs, and Sizzle extending your brand online)?

Strategy means - How do we get there?

- How do we position ourselves in order to gain a competitive advantage?
- How will marketing plan targets be achieved?
- What messaging, technologies and channels will we use?

<u>Tactics</u> e.g., Content marketing, Social media marketing, E-mail marketing, Online PR, SEO, Pay-Per-Click marketing, Native advertising,



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2.6. Lesson 5: Service management

Author: Gheorghe MILITARU – UPB

- Types of services in the leather sector
- Characteristics of services in the leather sector
- Methods for improvement in the leather services

2.6.1. Service definition

Service definition – services are deeds, processes, and performances. A service is a time-perishable, intangible experience performed for a customer acting in the role of co-producer (James Fitzsimmons, 2008). Services are economic activities offered by one party to another, most commonly employing time- based performances to bring about desired results in recipients themselves or in objects or other assets for which purchasers have responsibility. A service is an activity or services of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems.

2.6.2. Role of services in an economy

Role of services in an economy. Infrastructure services, such as transportation and communications, are the essential links among all sectors of the economy, including the final consumer. Both infrastructure and distribution services function as intermediaries and as the channel of distribution to the final consumer.



Figure 2.27. Role of services in an economy

Source: Bruce R. Guile and James Brian Quinn eds. Technology in Services: Polices for Growth, Trade, and Employment. Washington D.C.: National Academy Press, 1988, 214



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The importance of a banking industry to transfer funds and a transportation industry to move food products to areas that cannot produce them.

The profitability of manufacturers depends on exploiting value-added services.

2.6.3. Distinctive characteristics of service operations

A distinctive must be made between inputs and resources. For services, inputs the customer, service is an experience occurring in the front office of the service facility, and the quality of service is enhanced if the service facility is designed from the customer's perspective. Attention to interior decorating, furnishings, layout, noise, and even colour can influence the customer's perception of the service. The customer can play an active part in the process. Customers are willing to assume an active role in the retailing process.

Simultaneity. The fact that services are created and consumed simultaneously and, thus, cannot be stored is a critical feature in the management of services. Services operate as open systems with the full impact of demand variations being transmitted to the system. The decoupling the stages in a service process are achieved through customer waiting. The problems of selecting service capacity, facility utilization, and use of idle time all are balanced against customer waiting time. The simultaneous production and consumption in services eliminates many opportunities for quality control intervention.

Perishability. A service is a perishable commodity. Because a service cannot be stored, it is lost forever when not used. The full utilization of service capacity becomes a management challenge, because customer demand exhibits considerable variation and building inventory to absorb these fluctuations is not an option. Variable time and a time-perishable capacity to provide the service.

Smooth demand by

are the customers themselves, and resources are the facilitating goods, employee labor, and capital at the command of the service manager. The service system must interact with the customers as participants in the service process.

Customer participation in the service process. The presence of the customer as a participant in the service process requires an attention to facility design that is not found in traditional manufacturing operations. For

Using reservations or appointments Using price incentives Demarking peak times Adjust service capacity by: Using part-time help during peak hours Scheduling work shifts to vary workforce needs according to demand Increasing the customer self-service content of the service Allow customers to wait *Intangibility*. Services are ideas and concepts; products are things. Therefore, it follows that service innovations are not patentable. The intangible nature of service also presents a problem for customers. When buying a product, the customer is able to see it, feel it, and test its performance before purchase. For a service,

however, the customer must rely on the reputation of the service firm. In many service areas, the government has intervened to guarantee acceptable service performances. *Heterogeneity.* The combination of the intangible nature of services and the customer as a participant in the service delivery system results in variation of service from customer. The interaction between customer and employee in services, however, creates the possibility of a more satisfying human work experience. In services,

work activity generally is oriented toward people rather than toward things.



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2.6.4. Service quality

Quality begins with the design of the service delivery system. Service quality includes five dimensions: reliability, responsiveness, assurance, empathy, and tangible. The concept of a quality is based on the gap. This gap is based on the difference between a customer's expectations of a service and the perceptions of the service that is delivered. For services, the assessment of quality is made during the service delivery process. Each customer contact is referred to as a moment of truth, an opportunity to satisfy or dissatisfy the customer. Customer satisfaction with a service can be defined by comparing perceptions of service received with expectations of service desired. When expectations are exceeded, service is perceived to be of exceptional quality – and also to be a pleasant surprise. When expectations are not met, however, service quality is deemed unacceptable. When expectations are confirmed by perceived service, quality satisfactory.

Dimensions of service quality:

Reliability. The ability to perform the promised service both dependably and accurately. Reliable service performance is a customer expectation and means that the service is accomplished on time, in the manner, and without errors every time. Reliability also extends into the back office, where accuracy in billing and record keeping is expected.

Responsiveness. The willingness to help customers and to provide prompt service. Keeping customers waiting, particularly for no apparent reason, creates unnecessary negative perceptions of quality. If a service failure occurs, the ability to recover quickly and with professionalism can create very positive perceptions of quality.

Assurance. The knowledge and courtesy of employees as well as their ability to convey trust and confidence. The assurance dimension includes the following features: competence to perform the service, politeness and respect for the customer, effective communication with the customer, and the general attitude that the server has the customer's best interests at heart.

Empathy. The provision of caring, individualized attention to customers. Empathy includes the following features: sensitivity, approachability, and effort to understand the customer's needs.

Tangibles. The appearance of physical facilities, equipment, personnel, and communication materials. The condition of the physical surroundings is tangible evidence of the care and attention to detail is exhibited by the service provider.



Figure 2.28. Dimensions of service quality



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Figure 2.29. Gaps in service quality

GAP 1 arises from management's lack of full understanding about how customers formulate their expectations on the basis of a number of sources – advertising, past experience, personal needs, and communications.

GAP 2 may result from a lack of management commitment to service quality or a perception of the unfeasibility of meeting customers' expectations. It results from management's inability to formulate target levels of service quality to meet perceptions of customer expectations and translate these into workable specifications.

GAP 3 can arise for lack of teamwork, poor employee selection, inadequate training, and inappropriate job design. The actual delivery of the service does not meet the specifications set by management.

GAP 4 is the discrepancy between service delivery and external communications in the form of exaggerated promises and lack of information provided to contact personnel. Customer expectations of the service are formed by media advertising and other communications from the firm.



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GAP 5 is the difference between the customer expectations and perception services. Customer satisfaction is dependent on minimizing gaps 1 through 4 that are associated with delivery of the service.

2.6.5. Exercises

Quality Function Deployment

To provide customer at the design stage, a process called quality function deployment (QFD). The process results in a matrix, referred to as a "house of quality" for a particular product that relates customer attributes to engineering characteristics. The idea of QFD is the belief that products should be designed to reflect the customers' desires and tastes; thus, the functions of marketing, design engineering, and manufacturing must be coordinated. Practical, the "house of quality" provides a framework for translating customer satisfaction into identifiable and measurable conformance specifications for product or service design. Example – quality function deployment for auto service.

R(*	<i>elationsl</i> Stron	h <i>ips</i> g						
• Ø Relative importance	Med Weak	ium x *	ø	ø *	•		Customer • Auto • Auto refei	perceptions: service service ence
Customer expectations	\searrow	Training	Attitude	Capacity	Infor.	Equip.	1 2	3 4 5
Reliability	9	8			5	5		
Responsiveness	7	3		9	3	2		17-1
Assurance	6	5	9		6			\sim
Empathy	4		7					
Tangibles	2	2				3		
Comparison with auto service	+				\frown			
Weighted score		127	82	63	102	65		
Improvement difficulty rank		4	5	1	3	2		

The steps in conducting the QFD project and constructing a "house of quality" follow:

- Establish the aim of the project
- Determine customer expectations identify the customer expectations. We can use the five dimensions of service quality to describe customer expectations.
- Describe the elements of the service the columns of the house of quality matrix contain the service elements that management can manipulate to satisfy customer expectations.
- Note the strength of relationship between the service elements the roof of the house of quality provides an opportunity to note the strength of correlation between pairs of service elements.
- Note the association between customer expectations and service elements the body of the matrix contains numbers between 0 and 9.
- Weighting the service elements the importance of a customer's assessment of the service element. The relative importance will be multiplied by the strength of the link number in the body of the matrix under each service element to arrive at a weighted score for that element.



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- Service element improvement difficulty rank the basement of the house is a ranking for the difficulty of improving each service element, with a rank of 1 being the most difficult. Capacity and equipment have a high rank because of their capital requirement.
- Assessment of competition a relative comparison of the level of each service element is plotted at the bottom of the matrix
- Strategic assessment and goal setting we can see some strengths and weaknesses in its strategic position relative to the reference unit.

Reservation system and overbooking

Reservations benefit consumers by reducing waiting and guaranteeing service availability. Problems do arise when customers fail to honor their reservations. By accepting reservations for more the available seats, airlines hedge against significant numbers. A good overbooking strategy should minimize the expected opportunity cost of idle service capacity as well as the expected cost of turning away reservations. Example – a review of front-desk records during the current peak period, when the hotel was fully booked. A room that remains vacant because of a no-show results in an opportunity loss of the 40 lei room contribution. The expected number of no-shows is calculated:

No-shows	Probability		Reservations overbooked								
		0	1	2	3	4	5	6	7	8	9
0	0.07	0	100	200	300	400	500	600	700	800	900
1	0.19	40	0	100	200	300	400	500	600	700	800
2	0.22	80	40	0	100	200	300	400	500	600	700
3	0.16	120	80	40	0	100	200	300	400	500	600
4	0.12	160	120	80	40	0	100	200	300	400	500
5	0.10	200	160	120	80	40	0	100	200	300	400
6	0.07	240	200	160	120	80	40	0	100	200	300
7	0.04	280	240	200	160	120	80	40	0	100	200
8	0.02	320	280	240	200	160	120	80	40	0	100
9	0.01	360	320	280	240	200	160	120	80	40	0
Expected loss	-	122	91	88	115	165	231	311	401	498	560

A policy of overbooking is minimizing the expected loss in the long run.

2.6.6. References

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2.7. Lesson 6: Risk management

Author: Dana - Corina DESELNICU – UPB

- Classification of risks
- Risk analysis
- Risk management strategies and mitigation techniques

2.7.1. The concept of risk

Risk identification and assessment is a current problem for any organization, representing an important step towards its stable evolution by critically assessing the environment in which the organization operates, developing its operational strategy, and choosing the optimal options for managing resources, opportunities and threats (Aven, T., Renn, O., 2009).

Risk is generally the uncertainty associated with any outcome. The risk occurs when:

- an event occurs, but its result is uncertain;
- the effect of an event is known, but the occurrence of the event is uncertain;
- both the event and its effect are uncertain.

In the activity of an organization, the risk refers to the probability of not meeting the objectives set in terms of:

- performance failure to meet quality standards;
- time non-compliance with the execution deadline;
- costs overloading the budget.

Currently, there is no commonly agreed risk definition.

Linguistic definitions of risk

The Explanatory Dictionary of the Romanian Language defines the risk as a "possibility of reaching a danger, of having to face a tribulation or to suffer a loss." According to the Webster Dictionary, risk is a "possibility of suffering a loss, damage, danger, imminent danger". Oxford English Dictionary defines risk as "...a possibility of danger, loss, injury or other adverse consequences", "...exposed to danger".

In this context, it can be observed that most of the risk definitions focus on threats management, and the tools and techniques used to do so are directed more towards reducing the negative component of risk.

Relatively recently, the definition of risk concept has begun to include the positive component of risk, i.e., the possibility of creating opportunities through appropriate risk management and strategies.

Definitions of risk from specialized standards

The concept of risk in specialized standards has evolved as follows:

• the combination of the probability of occurrence of a damage and the severity of that damage, in accordance with ISO / IEC Guide 51: 1999;



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- the combination of the probability of occurrence of an event, and its consequences, according to ISO/ IEC Guide 73: 2002;
- the chance that that impacts the objectives is produced, according to AS / NZS 4360: 2004;
- The effect of uncertainty on objectives, according to ISO 31000: 2009.

The British Standard Institute (BSI) states that the risk is "the uncertainty ... which affects the possibility of reaching the objectives."

The Project Management Guide, which was developed by the Project Management Institute, states that risk is "an uncertain event or condition that, if it occurs, has a positive or negative effect on the established objectives. Risk includes both the threats to the objectives, and opportunities to improve these objectives" (Project Management Institute, 2000).

ISO (International Organization for Standardization) in the risk management standard ISO / IEC Guide 73: 2009 Risk Management - Vocabulary - Guidelines for Use in Standards, and ISO 31000: 2009 Risk Management - Principles and guidelines, define risk as the effect of uncertainty on the objectives. They state that:

- the effect is a positive or negative deviation from the expected;
- objectives may have different aspects, namely: financial, health and safety, environmental objectives, and can be applied at different levels, such as strategic, organizational, project, product or process.

The concept of risk versus the concepts of uncertainty and vulnerability

Although the risk results from uncertainty, the risk and uncertainty are not synonymous. They cannot be confused, there are a number of significant differences between these two notions. Of these, the most important one states that: "while for risk it is possible to predict the events that may occur and the probabilities associated with their production, in the case of uncertainty, the decision-maker cannot identify all, or even none of the possible events, and even less to estimate the likelihood of their production". The risk involves situations where the probability of a certain result is known, while uncertainty exists where the probability of occurrence of a particular result is unknown.

Vulnerability is commonly defined as a weak point, a weakness of the system that can be exploited. In risk management, however, vulnerability is the degree of loss in relation to a particular element (or set of elements) at risk, at a certain level of severity

2.7.2. Classification of risks

Organizations must decide on the risk classification system that is most appropriate to them, depending on their nature. Many risk management standards also include risk classification systems. If an organization implements one of these standards, it will need to follow its classification system.

The most commonly used risk classification is where risks can be divided into three categories according to **their consequences**:

a) pure (hazard) risks;



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b) risks of uncertainty (control);

c) opportunity (speculative) risks.

These risks are usually operational risks. Hazard risks can cause disruptions to the organization's normal operations, as well as increased costs and negative publicity due to these disturbing events.

Pure (hazard) risks

Risk management originally developed for the management of this type of risks - pure (hazard) risks, as they had **only obvious negative results.** Consequently, they may undermine, sometimes even very seriously, the achievement of the organization's goals. These risks are mostly insurable with specialized insurance companies because they are easily quantifiable (e.g. damage resulting from a theft or fire etc.).

These risks are usually operational risks. Hazard risks can cause disruptions to the organization's normal operations as well as increased costs and negative publicity due to these disturbing events.

Gambling risk management addresses issues such as health and safety at work, fire prevention, material damage and the consequences of defective products. Risks hazard refers to buildings and other fixed assets of the organization, including manufacturing equipment, computer equipment (which may fail, may be affected by various external or internal). Overall, they can generally affect staff, headquarters, organization assets, suppliers, and information and communication technology in the organization (ITC).

Theft and fraud can also pose significant hazard risks for many organizations. This is especially true for organizations working with cash or managing a large number of financial services.

Uncertainty (control) risks

Risk is sometimes defined as the uncertainty of the results that may occur. These risks are the most difficult to identify and define, often being associated with project management. The overall objective of a project is to deliver the desired results on time, within the limits of the budget and specifications.

Generally, organizations have aversion to the risks of uncertainty. Uncertainty can refer to the benefits of a project, delivering its results on time, within the budget and according to the specifications. Management of control risks is conducted to ensure that the results of business activities fall within the specifications initially set.

Control risks relate to unknown and unexpected events, and can be extremely difficult to quantify. In these situations, it is known that events will occur, but the precise consequences of these events are difficult to predict and control. Consequently, the approach is based on minimizing the negative consequences of these events.

Because control risks cause uncertainty, an organization may be considered to be averse to these risks. A certain level of deviation from the project plan can be tolerated, but it should not be too high to produce serious negative effects.



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Opportunity (speculative) risks

Organizations are also deliberately taking risks, especially market risks or commercial risks, in order to gain a profit. These may be considered as opportunity or speculative risks. This is the most important type of risk for the long-term success of any organization.

Many organizations are willing to invest in high-risk business strategies in hopes of a high profit margin for the investment. These organizations can be considered to have a great appetite for opportunity risks.

There are two main issues associated with opportunity risks. There are risks/ dangers that arise when taking an opportunity, but there are also risks that arise if the opportunity is not taken. Although they are assumed to obtain a positive result, this is not guaranteed. Opportunity risks for a small business include moving the headquarters to a new location, buying a new property, expanding the business, diversifying the range of products etc.

Other risk classification systems take into account: the nature of the risks, their origin, the estimated time to impact, the nature of the impact etc.

Classification of risks by their nature: risks can be classified as economic, financial risks, foreign exchange risks, labor risks, political risks etc.

Classification of risks by origin: refers to the department / activity within the firm where the risk may arise: human resource risks, accounting risks, production risks, supply risks etc.

Classification of risks after the estimated period to impact: we can encounter short-term risks that can materialize quickly, medium to long-term risks.

Risk classification by nature of impact: some risks may affect the organization's financial plan, other activities or its infrastructure. Some risks may have an impact on the reputation of the organization or its status, others on how the company is perceived on the market.

Classification of risks by their size: minor, medium and major risks.

Classification of risks by their mode of production: accidental or foreseeable risks; imminent, latent or manifest risks.

Classification of risks by source: exogenous risks (outside the organization), and endogenous risks (inside the organization).

Risk classification by the level at which it occurs:

- Mono societal level;
- Macro societal level;
- Micro-societal level.

It is important to note that there are no "correct" or "wrong" risk classifications. However, the most common is to divide risks into pure and speculative risks. It is important for each organization to adopt the classification system that is best suited to its specific circumstances.



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2.7.3. Risk Management

Risk management is defined as managing uncertain events for success (Campbell, S., 2005). Risk management is the process of identifying, analyzing and reporting risk factors for the purpose of treating / mitigating / avoiding them. This process focuses on all possible risk scenarios, i.e. "maximizing the likelihood and consequences of positive events, and minimizing the probabilities and consequences of adverse events that may occur" (Project Management Institute, USA).

The risk management process described below (Figure 2.30) reflects the steps to be taken to manage the effects of potential risks in the organization:



Figure 2.30. Risk management process

2.7.4. Risk Identification

Risk is uncertain, it is not sure. The risks that will surely appear are not risks, but certainties. This first stage of risk management involves:

- Identifying the objectives of the project or organization under analysis;
- Understanding the internal and external environment;
- Identifying stakeholders;
- Establishing risk management objectives.



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The following **methods** can be used in the process of identifying the risks:

- Using the managers' intuitive experience;
- Using the experts from the company;
- Using external specialists / consultants (risk audit);
- Brainstorming by activity or compartment;
- Questionnaires completed by persons involved in the activities;
- Risk lists;
- Case Analysis Effect (Fishbone Diagram, Ishikawa);
- Cost benefit analysis;
- PERT method, GANTT method, PESTEL method, SWOT method;
- Pareto analysis (80/20): 80% of the consequences are based on 20% of the causes.

Risk identification ends with a list of risks grouped by categories, followed by a brief description of each and the impact and probability assessment. Only some of the identified risks must be subject to quantitative assessment.

2.7.5. Risk analysis and assessment

The risk analysis and assessment process aims to determine the acceptability and/ or tolerability of risks. Risk analysis is the assessment of potential loss size. The most commonly used risk assessment method uses the measurement of the **probability** of occurrence of a risky event and the possible **impact** that its materialization may have on the organization.

The probability (P) of the occurrence of the risk varies from impossibility to certainty and is expressed on a five-level scale of values:

- Very low probability it is unlikely to happen over a long period of time (3-5 years); has not happened so far;
- Low probability it is unlikely to happen over a long period of time (3-5 years); has happened very few times so far;
- Medium probability likely to happen over an average time (1-3 years); has happened several times over the last 3 years;
- High probability likely to happen over a short period of time (<1 year); has happened several times in the last year;
- Very high probability it is likely to happen over a short period of time (<1 year); has happened many times in the last year.

The impact (I) is also expressed on a scale of five values:

- Insignificant with a very low impact on the activities of the department and on its objectives, without financial impact;
- Minor with a low impact on department activities and on its objectives, and/ or having a very low financial impact;
- Moderate with medium impact on department activities and on its objectives, and/ or having medium financial impact;



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- Major with major impact on the activities of the department and on its objectives, and/ or having a major financial impact;
- Critical with significant impact on department activities and on its objectives, and/ or having significant financial impact.

On the basis of the total scores obtained, a risk classification can be made (very small, small, medium, high), the ranking order highlighting the necessity of applying the control measures (Table 1):

Risk index	Level of risk tolerance	Control measures
1 - 4	Tolerable	It does not require any control measure
5 - 8	High tolerance	It requires medium-term or long-term control measures
9 - 12	Low tolerance	It requires short-term control measures
15 - 25	Intolerable	It requires urgent control measures

Table 2.5. Evaluating the level	of risk tolerance
---------------------------------	-------------------

The risk is thus assessed using an analogue **traffic-lights system** (HSE 2001, Bandle 2007). The red color indicates an intolerable level, the yellow color indicates the tolerable level, and the green color signifies an acceptable level (Figure 2.31):



Figure 2.31. Assessing risk tolerance - the "traffic light" method

Within a company, based on the results of the risk assessment, risks fall into different categories of severity, depending on the acceptable risk level set by the company and its risk appetite:

- Unacceptable risk: Threatens the company's strategy, financial situation or even human health;
- Critical risk: creates difficulties in achieving the company's strategy and can cause significant financial and human losses;
- Significant risk: may cause operational problems, but can be resolved by allocating appropriate budgets;
- Minor risk: It does not generate significant problems and involves low financial losses.

Inherent risk level: is the level of risk that exists before the firm takes any countermeasures



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(mitigating measures) to modify the likelihood or impact of that risk. Often, the risk matrix is used to illustrate the inherent risk level in terms of probability and impact.

Then, the **low or current risk level**, which can be measured **after** the application of risk mitigation measures, can be identified. The effort required to reduce the risk from the inherent risk level to the current (reduced) risk level can be observed on the risk matrix. The inherent risk level is sometimes named absolute risk, residual level or managed risk level.

The likelihood and magnitude of risks can best be highlighted by a diagram called the **risk matrix**. This is a valuable tool for the risk management specialist. The basic principle of the risk matrix is to report the **probability** of materializing of an event to the **impact** (magnitude, magnitude, severity) of that event. Figure 2.32 illustrates a risk matrix. The horizontal axis shows the probability and the vertical axis the impact:



Risk likelihood and magnitude

Figure 2.32. Risk Matrix

Based on the two characteristics, the **Risk Index** can be determined (Kaplan, S., Garrick, B.J., 1981). It appears as a result of the probability of materializing a risk, and its impact:

Risk Index = Probability x Impact

The index (risk factor) takes values between 0 ... 1 (or 1 ... 10, 1 ... 100).

The Value of the Risk Index is then represented on the Risk matrix. As the risks "move" the top right corner of the risk matrix, they become more important and have a greater impact, so they become urgent and must be dealt with as a matter of priority.



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2.7.6. Risk reduction methods

Risk management involves identifying and assessing risks, as well as determining how to react to risks. Risk management aims at eliminating, or at least reducing, the consequences of exposure to losses. Before proposing and applying response measures it is ideal to have:

- The list of risks, with the likelihood and impact of each;
- The list of potential responses;
- The list of those who might be appointed as risk managers;
- Maximum allowable values to define tolerance risk.

Several possible strategies/ measures can be listed for each risk, but only those likely to be applied in the given context will be selected.

Risk reduction strategies

The risk protection measures that can be taken by organizations are diverse and can be classified according to numerous criteria (Campbell, S., 2005). Thus, according to the frequency of occurrence of the risk factors and their severity, the protective measures can be grouped in **four categories**:

- Termination (elimination) of the risk;
- Transfer of the risk (insurance);
- Tolerance of the risk;
- Treatment (resolution, prevention) of the risk.

These main strategies are described in more detail in Table 2.6:

Table 2.6. Risk management strategies

No.	Risk management	Strategy description
crt.	strategy	
1.	Tolerate Accept/retain	The exposure may be tolerable without any further action being taken. Even if it is not tolerable, the ability to do anything about some risks may be limited, or the cost of taking any action may be disproportionate to the potential benefit gained.
2.	Treat Control/reduce	By far the greater number of risks will be addressed in this way. The purpose of treatment is that, whilst continuing within the organization with the activity giving rise to the risk, action (control) is taken to constrain the risk to an acceptable level.
3.	Transfer Insurance/contract	For some risks the best response may be to transfer them. This might be done by conventional insurance, or it might be done by paying a third party to take the risk in another way. This option is particularly good for mitigating financial risks or risks to assets.
4.	Terminate Avoid/ eliminate	Some risks will only be treatable, or containable to acceptable levels, by terminating the activity. It should be noted that the option of termination of activities may be severely limited in government when compared to the private sector.

These risk response (management) strategies (Figure 2.33) are thus correlated with the Risk matrix:



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Likelihood

Types of controls for hazard risks

Figure 2.33. Risk management strategies (Hopkin, P., 2010)

These are generic risk management strategies. They need to be tailored to the specifics of each situation investigated in part.

2.7.7. Risks mitigation methods

Risk management by reducing / controlling risks can be achieved through several different means:

- Compliance with limits specifying the maximum allowable concentration, the maximum allowable emission limit, the maximum allowable exposure levels etc.;
- Performance standards for technological and chemical processes, such as minimum temperatures in waste incinerators;
- Technical requirements for maximum exposure (e.g., protective clothing) or improvement of building elasticity (for example by reinforcing constructions to increase their tolerance limits in the event of an earthquake);
- Government economic incentives such as fees, subsidies and certification schemes;
- Incentives from third parties (e.g., private, monetary or in-kind incentives);
- Settlement schemes (monetary or in kind) type of insurance;
- Cooperation and information options, from voluntary agreements, to product labeling programs, or educational programs.

All of these options can be used individually or in combination, in order to achieve an effective risk reduction. Risk mitigation can also be achieved through such methods as:

- Scheduling. Scientific scheduling of activities with network graphs can reduce risks within reasonable limits.
- Training. Training and awareness-raising programs in the field of occupational safety can reduce the likelihood of accidents and their effects.



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• Redesign. Risks can often be diminished by judiciously redesigning work teams, material flows, equipment use, and labor.

2.7.8. International standards in risk management

The reference standard for risk management is the ISO 31.000 standard. It approaches the entire management system that supports the design, implementation, maintenance and improvement of risk management processes.

Among the ISO 31000 series of standards are also:

- ISO Guide 73: 2009, Risk management Vocabulary: provides definitions for generic terms related to risk management, and pursues a consistent approach to describing risk management activities, as well as achieving a uniform terminology.
- ISO / IEC 31010, Risk management— Risk assessment techniques: A support standard for ISO 31000, which provides guidance for the selection and application of systematic risk assessment techniques.

Exercises

- 1. Please group in teams of 4 people. Identify risks arising from the external environment / internal environment of your organization.
- 2. Choose 3 risks that you have previously identified in your higher education institution and then calculate the probability, impact, and risk index for them, motivating your choice.
- 3. Calculate the Risk Index and place it on the risk matrix. Which one is more important?
- 4. What types of strategies can you apply for managing each risk?

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2.8. Lesson 7: Footwear manufacturing technological process

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2.8.1. Technological framework process for footwear with glued sole

The technological framework process for footwear manufacturing with glued sole is presented, specifying that more and more factories in Romania have started using the modern technologies belonging to the companies of excellence in Italy.

The present technological process relates to the manufacture of footwear with glued sole and has the following main manufacturing phases:

I. Reception of raw materials

Quantitative and qualitative reception takes place in the raw materials storeroom, based on invoices, delivery notes and surveys, based on quality control certificates that accompany the materials and product standards in force.

II. Cutting pieces from flexible materials

Cutting pieces from flexible materials takes place in the CUTTING SHOP and refers to cutting pieces for uppers, outer linings, intermediate linings.

III. Preparing the pieces of the upper ensemble of the footwear (uppers)

Operations are executed on technological lines of preparation and refer to preparing pieces by: equalizing, thinning, burning edges, dyeing edges, stamping, marking the pieces prepared for gluing, coating, cambering (where appropriate), etc. Linings will also be assembled here, if possible.

IV. Assembling uppers by sewing

Operations are executed on technological lines of sewing and refer to assembling the pieces constituting the upper ensemble of the footwear.

V. Punching and preparing the pieces from rigid materials

Operations are executed in the PUNCHING SHOP and refer to cutting pieces from rigid materials for the lower ensemble of footwear: insole, insock, exhibition last, sole fillers and sole.

VI. Lasting and soling

Operations are executed in the LASTING-SOLING SHOP and refer to forming the uppers on the last and attaching the sole.

VII. Finishing and final inspection of the footwear

Operations are executed on technological lines of FINISHING and serve to enhance the commercial appearance of the shoes or preserving against external agents.

At the end of the process, the final inspection of the finished product is done.

VIII. Branding, packaging, storing and shipping footwear

These operations are executed according to standards in force referring to branding, packaging and storing footwear.



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For each delivery, each batch of footwear is accompanied by the quality certificate made according to legal stipulations in force.

2.8.2. Main operations in the footwear manufacturing process

The technological process of footwear manufacturing comprises five distinct groups of operations, following the general footwear manufacturing scheme, cutting and stamping pieces, preparing, assembling uppers by sewing, lasting and soling, finishing the footwear. In the technological process, these processing batches are made through a large number of distinct operations, in a given order, determined by the characteristics of the product, the raw material used, and by the processes that can be adopted depending on the existing equipment.

Characteristic of the technological process of footwear manufacturing is the fact that similar products can be obtained by different processing and component assembling technologies. What is important in the footwear manufacturing process is to achieve high productivity, low consumption of materials and quality products. Prior to developing a technological process for footwear manufacturing, it is necessary to know the component materials and their nature, how to process the uppers, how to assemble the uppers with the soles and the finishing method. The main operations in the footwear manufacturing process are:

Cutting uppers

Natural leather continues to be preferred by consumers for its characteristics. The following must be considered when purchasing and processing hides:

- choosing the right types of hide suitable for the product;
- thickness, softness and elasticity of the hide;
- frequency of defects;
- the destination of the shoe.

Natural leather uppers are cut using swing arm punching machines (Figure 2.1) and synthetic materials are cut in layers, using travelling head punching machines (Figure 2.2), with a very high productivity.



Figure 2.1. Swing arm punching machine



Figure 2.2. Travelling head punching machine

In companies using computer-assisted design, more and more automatic cutting machines are used. For example, the **CM44CN COMELZ** cutting machine - ITALY (Figure 2.3) performs blade cutting for leather and synthetic materials.



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Figure 2.3. CM44CN COMELZ cutting machine – ITALY

Preparing the uppers for assembling

Application of reinforcements

The most recommended reinforcement to be used for almost all types of footwear is the thermo-adhesive one. They are made up of a textile substrate, in most cases having a high proportion of cotton fibers, covered point-to-point with a hot melt adhesive with a grain size of $300-500 \mu m$.

Point-to-point coverage with special adhesive coating installation is the most appropriate technology that preserves the sanogenetic properties (water vapor permeability, water absorption and desorption, air permeability) of the natural leather. This ensures optimal microclimate during the wearing of the shoe.

Thermo-adhesive reinforcements can be intermediate and outer (linings). Intermediate ones are especially indicated to strengthen leather with weaker tissue to confer the necessary resistance in the manufacturing process and during wearing.

The design of these intermediate linings makes sure that their edges are fastened to the stitches joining uppers, so that upon mechanical stress the effort is also sustained by the lining, not only by the uppers (fig. 6.4). Reinforcement strips also have the purpose of strengthening the lateral sides of the shoe in the region of the meta-tarso-phalangeal joint and are especially used for children's and men's shoes. Applying the strips is done so that the posterior part is attached to the quarter-vamp stitch and the front part reaches up to the toe cap or is caught in the cap-vamp seam.



Figure 2.4. Designing intermediate linings

The external thermo-adhesive linings can be used in shoes made of both leather and leather substitutes. Their design is according to the model for both the vamp and the quarter or for the whole upper up to the joint with



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the anti-slip. Application of thermo-adhesive reinforcements is performed by hot pressing using special machines (fig. 6.5):





Figure 2.5. Pressing machine

The parameters used for hot pressing of the uppers are: temperature approx. 160-180°C (depending on: the nature of the upper materials, their thickness and the melting point of the thermo-adhesive), pressing time 5-8 s., working pressure 4-5 atm.

It is worth mentioning that this technology enables the simultaneous application of both the toe cap (only if it is thermoplastic and thermo-adhesive) and of the intermediate and external reinforcements.

The advantages of this technology are multiple:

- increasing labor productivity;
- eliminating workplace toxicity;
- ensuring the quality of the footwear through the accuracy of the execution;
- increasing footwear comfort by keeping the sanogenetic characteristics.

Cambering

The application of thermoadhesive reinforcements is also indicated in the case of higher footwear such as boots, ankle boots requiring space in the vamp area (Figure 2.7), before assembling by sewing. This is done using a cambering machine (Figure 2.6), moistening and preforming the uppers.



Figure 2.6. Cambering machine





Figure 2.6. Cambered vamp



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Skiving the parts

Is a mandatory operation. The skiving method is selected depending on the model and the type of material used (Table 2.1):

Table 2.1. Upper skiving method

No.	Region on which skiving is performed	Fig. 6.24	Type of edge processing	Type of skiving	Dim. (mm)	Fig. 6.23
1	The top of the quarter in shoes and the front of					
	boots	а	simple			
2	The free lower area of the quarter with cut out counter	b				
3	The top of the vamp in sandals and slippers	с	bent	Skiving for bending	8-10	а
4	Sandal straps	d				
			burned			
			piping			
	The two of the succession is called by the state and by the	-		Chining for double	-	b
5	The top of the quarter in ankie boots and boots	e f	Any processing of uppers	flanged edges	8-12	С
6	The top part of two overlapping sewn pieces: toe cap, vamp, quarter, counter	g	bending	bending	8-10	а
		h	lacing	lacing	4-6	d
		i	burning	burning	2-3	е
		j k	-	-	2-3	h
7	The part that is sewn with half-reversed seam	l m	-	-	4-6	g
8	The part that is sewn by zig-zag seam	l m	-	-	2-3	h
9	Joining area of free parts: tongue, strap, top of the back strap	l m n	-	Long skiving	12- 14	j
10	Lower part of the overlapping seam	h, i, j, k	Any processing	overlapping	4-5	i
11	Lateral parts of the back strap	0	-	Right or for burning	2-3	k,k'
12	Free parts of the tongue	р	-	right	3-4	I
13	Reinforcement around the eyelets, reinforcement in the back	-	-	equalization	-	m



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Figure 2.8. Skiving type



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Figure 2.9. Region where skiving is performed

There are skiving machines on which any type of skiving can be programmed (see fig 6.10).



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Figure 2.10. Skiving machine

Assembling by sewing

There are modern technologies that ensure increased productivity while offering excellent quality and provide flexible technological lines, equipped with machines with a high degree of automation.

Thus, automatic sewing, embroidery (fig. 6.11), application of ornaments and accessories can be achieved using high-performance machines.



Figure 2.11. Embroidering machine

Also, the traditional tools have been improved, ensuring: removing the surplus lining while sewing the uppers, cutting the thread, sewing the zippers, buttons etc. The edges of the uppers can be folded with special machines that consecutively perform the application of the adhesive, the strengthening stitch, notching of the edges of the uppers in the curved areas and bending the edges throughout the outline of the uppers (Figure 2.12).



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Figure 2.12. Folding machine

In order to reinforce the uppers in areas highly stressed during the formation (very sharp curves, corners) details made of self-adhesive materials can be used. These are glued by simple manual or mechanical pressing at ambient temperature. These materials are textile substrates entirely coated with permanent adhesives. Self-adhesive strips of 12-14 mm width are used particularly to strengthen the stitches, such as double flanged edges and smoothing the stitches at the back of the quarters. This operation can be done mechanically using a smoothing and self-adhesive tape application machine (fig. 6.13), these two operations being performed concurrently.



Figure 2.13. Smoothing and self-adhesive tape application machine

Figure 2.14 shows a machine that measures the required thread for each stitch, thus monitoring consumption closely and not wasting material:





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Figure 2.14. Thread measuring machine

Preparation operations prior to lasting - application of toe caps and counters

Prior to lasting, the production is regrouped, the lasts, the soles, the insoles are prepared and the toe caps and counters are applied. Thermoplastic and thermo-adhesive toe caps and counters are recommended for footwear manufacturing. Thermoplastic and thermo-adhesive **toe caps** are divided into two categories:

a) Fully thermoplastic materials

They are made of hot melt polymers, applied in the melted state directly to the shoe upper. Special machines are used: USM type ETA-B model using cord-like adhesives, or Sigma STD model using cylindrical bar adhesives. The polymers used are based on polyamides, e.g., Tru Line 3, Helmidur L55, which require application temperature of 160-180°C, or polyester based, e.g., Tru Line 7 with application temperature of 180-200°C.

These toe caps are applied in the upper assembling shop, and when lasting the uppers, they are brought to the plastic state by hot activation.

Toe caps produced using this technology have a good elasticity and are especially designed for children's and women's footwear.

b) Layered thermoplastic and thermo-adhesive materials obtained by impregnating a dispersed textile material and then applying layers of a polyamide thermo-adhesive, ethylene-vinyl acetate.

Among the companies producing this type of material are: USM - Austria - Tuflex toe caps, Giardini - Italy - Tadas toe caps, Caloux - Italy - Calorex toe caps, Dolezal - Austria - Hartflex toe caps.

These toe caps are backed by textile materials, mainly nonwoven, obtained by interlacing, impregnated to give them rigidity, applying the thermo-adhesive by hot melting.

The thickness of the materials is 0.4-1.3 mm depending on the destination.

This type of toe caps is applied to the shoe upper by hot pressing using USM presses, BIMA with flat or spatial pressing moulds, the upper mold being heated (Fig. 6.15).

The parameters required for application are: temperature (80-160°C), pressing time 5-15 s, pressure 4-5 atm, depending on the polymer used and thickness of the material.

This type of toe caps is easy to apply, they do not require special machines.







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Figure 2.15. Toe cap application machine

When fitting the uppers on the last, toe caps require hot activation in order to be brought to the plastic state, required by the forming operation. Thermoplastic toe caps are easy to form, they quickly strengthen and retain the shape of the last after removing it from the shoe.

Counters

Materials for counters (fig. 6.16) have the advantages of thermoplastic and thermoadhesive materials listed above. They are made of non-woven textile fabrics or cotton/cotton blended fabrics, with rough appearance and long fibers to anchor the dispersion used for impregnation and the thermoadhesive deposited by hot melting. It is deposited on both sides of the substrate and may be polyamide, ethylene-vinyl acetate, polyester.



Figure 2.16. Counter

Companies producing thermoplastics and thermoadhesive counters globally are the same manufacturers that produce and supply toe cap materials. Counters have different thicknesses: 0.7-2 mm, depending on the footwear destination. The technology of applying these thermoplastic and thermoadhesive counters is based on the activation of the uppers in order to reactivate the thermoadhesive film of the counters placed between the uppers and the lining under the action of temperature. Then they are glued and pressed. These two operations are achieved with special counter preforming and stretching machines.

In order to fix the insole to the uppers in the back, their activation is required, which is done simultaneously with the warming of the uppers formed on the last.

It is worth mentioning that the preforming and stretching of the uppers in the back requires special equipment (fig. 6.17), with metallic last moulds corresponding to the type of shoe. In this field there is a variety of machines, advancing to perfected machines that activate uppers and thermoadhesive counters and cool them by refrigeration. This ensures an exact shape of the last and stability in the technological process and in wearing.



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Figure 2.17. Counter stretching and preforming machine

Lasting – Soling

a) Launching lasts and parts

Depending of the production schedule, lasts and parts: insoles, soles and uppers are launched.

b) Fixing the insole on the last

The operation can be done mechanically, using tacks. In this operation the aim is to perfectly center the insole to the last (fig. 6.18).



Figure 2.18. Fixing the insole to the last

c) Lasting

Depending on the construction and work method of machines, at present, adhesive lasting is done in two or three steps: lasting from the front, lasting from the sides and lasting from the back (fig. 6.19).

Fig. 6.42 presents the operation of lasting from the front, using a machine that employs a traditional system, namely the upper is pressed onto the last with the Teflon mould. If the last shape is changed, the Teflon mould should be changed as well.



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Figure 2.19. Lasting from the front - traditional system

There is a new system that does not use Teflon (fig. 6.20): the upper is pressed using a system of mobile rollers that perfectly follow the edges of the last, one of the advantages being that there is no need to change the Teflon mould.



Figure 2.20. Lasting from the front - new system (without Teflon)



Figure 2.21. Machine for lasting from the back



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d) Soling the footwear

Soling the footwear comprises a set of operations through which pieces making up the lower part of the footwear are joined with the uppers formed on the last and fixed to the insole (fig. 6. 22).



Figure 2.22. Upper formed on the last and fixed to the insole

These operations have the purpose of definitively fixing the sole to the footwear by adhesion.

The equipment used for soling by adhesion, depending on the operations for which they are used, is divided into:

- machines for adhesive application;

Adhesive application machines are different depending on the substrates on which the adhesive film is deposited and on the adhesive used. They are built on the basis of two principles: application by means of rollers that directly take the adhesive from the adhesive tank and nozzle machines.

- roughing machines;

Roughing machines (fig. 6.23) are equipped with sanding rollers with high-grain abrasive paper, with abrasive cloth tape, wire brush, rubber disc with wire insert.



Figure 2.23. Roughing machine

The aim is to obtain surfaces with the highest possible roughness, without breaking the fibers thus leading to the weakening of the joints.



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- activation machines (fig. 6.24);

There are infrared activators and hot air activators.



Figure 2.24. Reactivator

- pressing machines (fig. 6.25).

Mechanically, hydraulically or pneumatically operated presses are used, which may have two or more pressing spots.



Figure 2.25. Sole press

Footwear finishing

The finishing of the shoe, as the last set of processing operations, is of particular importance in the manufacturing process and can be mechanical and chemical.

Upper finishing raises the most complex issues. The materials from which they are made, natural leather, is subjected to a tannery process the that provides uniform softness, surface condition, colour, gloss, etc.

In the manufacturing process, these characteristics change somewhat. So that modifications do not adversely affect quality, it is necessary to know leather finishing methods in order to be able to intervene



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effectively to remove defects and then restore superficial optical properties, for example by means of a machine equipped with brushes (Fig. 6.26).



Figure 2.26. Brush

In order to obtain high quality footwear, the manufacturing process must be performed so as to prevent defects. This is possible through the full knowledge of processes, by adopting processes that do not affect component parts and by establishing a severe discipline for the application of established prescriptions.

In terms of finishing, there is a wide variety of materials, mainly imported, which ensure compatibility with the diverse nature of the materials for uppers and soles.

Finishing operations have the role of enhancing the shoe to give it a commercial appearance, or to protect it against external agents.

There is footwear with glued sole but which must subsequently be sewn.

This operation is also done on the finishing technology lines and is represented in fig. 6.27.





Figure 2.27. Sole sewing operation

Aware of the footwear industry evolution, ELETTROTECNICA B.C. has developed a series of machines to sterilize products in boxes (fig. 6.28). This treatment removes all bacteria that lead to mould formation on the leather, especially *Aspergillus niger*, which causes lung allergies. This issue strictly targets shoes stored in containers, but also shoes that remain for a long time in store stocks. The shoe loses its original gloss, showing unaesthetic white and opaque spots (molds, marks, etc.). To eliminate all bacteria, the sterilizing machine



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performs a double combined treatment. Initially a quartz lamp is used for quick stabilization and for homogenizing the temperature of the shoe, then a UV light is used to sanitize the product.





Treated footwear

Figure 2.28. Footwear sterilization machine



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2.9. Lesson 8: Footwear Design

Author: Traian Foiasi - INCDTP- ICPI

2.9.1. Idea Sketch - Message of the Product Concept and Decoding it in Footwear Design

The main concern of designers is to penetrate into the layers of personal and group identity in trying to understand the mechanisms underlying the construction of identity in general and of visual identity in particular. Questions seeking answers are related to what identity means and to which domain it can be attributed with preponderance.

Fashion has always helped define the human condition, designers being the ones who predict what the public needs and provide a wardrobe for protection, exhibition or simply for fun. This makes fashion so fascinating.

If we think of our professional and social life, our walks on the street, we will recognize that our affinity is towards those people who make a favorable first impression. This truth will convince us to pay special attention to the relationship between object (design) and style. Especially for women it is important to find and maintain a style that will put them in the best light.

The first rule is related to the quality and comfort of shoes and purse, these two basic pieces must be of very good quality. We will notice that a purse costs more the simpler, the more comfortable it is and the more beautiful accessories it has. A very good leather purse lasts for about 10 years old and does not go out of fashion. Clothes and accessories can be nice and low cost at the same time.

Footwear design is not only about the image of the product and the image elements of the elaborated stylistic concept, but also about the transposition of an idea sketch into parts and patterns. In design, ideational logic is organized on the principles of classical logic, and from an economic point of view, the organization of the product concept is based on the principles of efficiency.

That is why, in designing the footwear, the designer takes into account stylistic, technological, marketing and financial elements, demonstrating once again that fashion design is an industry that belongs to a unique economy with cultural and artistic components, but which remains an industry.

The path to achieving the first elements that foreshadow the high-class product is filtered by successive stages, which can be cultural, emotional and less pragmatic as an initial approach. Of these "filters" the emotional one leads to an identification of the self with the sensors of the surrounding atmosphere. An object, no matter how trivial it may seem at first, can awaken a state with a very artistic, emotional charge, and eventually lead to the selection of an image codification and recodification process in various forms.

The designer has the role of data receiver and processer, translating the prefigured model into superior, not only aesthetic, shapes. The atmosphere, or everything that surrounds us, merges with the designer's inner state, with his sensibility, artistic restlessness, eventually leading to the first landmarks in creating the product. The style emerges from the expression of aesthetic forms of useful objects, characteristic of a period of time.

The imaginative transfer to a state that will become reality in the process of creating an object, regardless of its destination, becomes an artistic composition using the means offered by the modern, classical and artisanal technologies. Stylists are the ones who have insights and show the way to success. The mélange of images becomes a challenge for experts in the field and for receivers alike. Designers of accessories create concept pieces, making a prototype first. Received images become defining elements of the creative concept, and they are transposed into artistic and aesthetic proposals as applied research.



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AQUATIC – MARINE – MOTHER-OF-PEARL



Figure 2.29. AQUATIC - MOTHER-OF-PEARL idea sketch, with explanatory elements for accessories



Figure 2.30. Technical design in 2D, dimensional expression for component parts



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ECOLOGY - ETHNOGRAPHY - NATURAL



Figure 2.31. Idea sketch embodies the combination of different textures made from ecologic materials, natural fibres (bamboo, hemp, palm), with ornaments inspired from natural elements



Figure 2.32. Transposition into two-dimensional plane, after passing through the 3D system, leads to parametric design, that enables detailing of pieces of the created model.



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COLOUR – DYNAMISM

Optimism, joy and confidence makes you think about a mix of strong colours, graphics, leopard prints accessorized with oversized ornaments in contrast with small ones.



Figure 2.33. Idea sketch defines the balance of coloured surfaces with different contexts and oversized accessories



Figure 2.34. Transposition into two-dimensional plane, after passing through the 3D system, leads to parametric design, that enables detailing of pieces of the created model



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2.9.2. Style and Fashion in Daily Life

Graphics accompany any fashion product in the whole process of conception, design, advertising, media, and from idea to illustration, because its form of expression is art, with its whole arsenal or visual instruments.

The need for artistic education is justified by the fact that the easiest way to express a new product idea is to make a sketch of that idea.

Fashion design does not just express a new idea, but also a cultural communication through the product (the message behind the idea of the product), a technical communication through the technical sketch of the product, a commercial communication through the collection and an advertising communication through the fashion illustration. Thus, the sketch, as a graphic form of expressing the idea of the product, is a mandatory working tool, in all stages of the design and in all forms of fashion manifestation, from haute couture to mass class.

The idea or impulse sketch expresses the idea of the product, immediately after it was thought, it expresses the aesthetic message of the product concept. It has the role of providing customers with clear and practical solutions to fashion trends in a particular fashion sector.

The imaginative transfer to a state that will become reality in the process of creating an object, regardless of its destination (by fashion design excellence), becomes artistic composition using the means offered by modern, classical and artisanal technologies.

The compositional sketches of the elements that make up footwear design are found in the sketches of ideas that will lead to the elaboration of a designer collection with implications of design in everyday life.



Figure 2.35. With rigor, ultra-low sandals accompany the concept. Relaxed attitude blends with the light attire and ethno-chic accents



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SLIP-ON MANIA



Figure 2.36. Apparently classic, but comfortable and refined. Lively and diverse prints, material inserts and shimmering appliqués accompany this style



COMFORTABLE CHIC

Figure 2.37. The fusion between slipper and sneaker created comfortable chic with black & white soles, pop-art prints and vintage effect



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FORMAL - INFORMAL



Figure 2.38. Traditional elegance, dynamic and metropolitan allure with punk-chic decorations are part of the latest men's fashion trends



Figure 2.39. Season after season, this style continues to surprise by the novelty of material textures and the combination of classic pieces with Hi-Tech versions



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CREATIVE SPORT



Figure 2.40. The eclecticism and versatility of this trend make the designers' imagination propose a sportlike but also prêt-a-porter footwear

2.9.3. Extensions of Footwear and Leather Goods Design in Day-to-day Life - Compositional Solutions and Stylistic Concepts for Sustainable Development

The fashion market world is a broad field of design experiments, a field where fashion professionals can extract, from specific situations, conditions that reveal a cultural phenomenon of social communication in the declared and outlined trend.

An outfit is complete when accompanied by accessories, shoes, handbags, matching jewelry, and elements that complement fashion trends.

In the game of fashion, accessories that accompany the outfit not only make the difference, but they always bring their essential contribution to perfecting the outfit.

The role of the designer is to discover the rules for a cultural phenomenon expressed through high-class fashion, to break it into communication codes through aesthetic expressions, to discover the innovative direction by knowing the central and marginal elements of the aesthetic current, so as to spot the energies of the fashion market, to adhere to the rules of design and to the science of making a product in this area of day-to-day life.

Specialists, psychologists, economists, stylists, designers, observing both the changes in the economic sector and the specifics of the social behavior in day-to-day life, define the research methodology of the cultural phenomenon as a trend, analyze the most optimal design procedures characteristic to the designer's profile and ensure that the institutions understand very well the trends of the fashion consumer, so that they can make a forecast for the future season.



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The prognosis of these special products is expressed through all the phenomena of communication in the system, through the entire trajectory of promotion, through its many tools, from the collection brochure to articles ordered in specialized magazines or collection promotion tours. The battle for supremacy on the market is not only for economic reasons, but also for keeping the brand image in the top of designers.

Through this economic mechanism of supply and demand, it is demonstrated that, beyond the fashion world, the image of the new collections, and the aesthetics, the fashion industry is a superior vision of what will happen "tomorrow".

The essence of everyday fashion is represented by the balance between different rhythms of use, making accessories (footwear, leather goods) more accessible. The design of accessories, like other areas of fashion and art in general, is a form of expression of an artist's vision, a manifestation of beauty through a creative approach.

Idea Sketches, Generators of Modern Aesthetic Concept in Everyday Fashion

A simple walk in the city becomes an immense challenge for the fashion designer. The pulse of the street, the fluster of shops, work places, lunch breaks, relaxation, and last but not least, having fun with your friends, inspire you to a joyful, colourful, optimistic collection. Day-to-day life offers the most varied forms of expression and manifestation of fashion, from minimalism to exoticism, from theatre, film, to sports and beauty techniques. The choice of shapes, volumes, materials and accessories that will constitute components of the concept collection will be part of the data obtained from the artistic approach of the fashion designer. The round shapes of the lasts as well as the most aggressive shapes (sharp) are very well intertwined with massive heels of different heights. The stiletto and the very low heels (10mm) remain trendy, while classical heels do not exceed 50-70 mm. The soles are very colorful and give support, comfort and variety.



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Figure 2.41. Heel models

The materials used are part of the latest trends offered by leather manufacturers. Innovative technologies allow manufacturers to offer a wide range of leather samples to designers who choose, not very easily, to design a collection.

Varnished leathers, with not too strident tones, but colors full of optimism, from red, green, orange, yellow to their counterparts white, black, and blue, are part of the everyday life. The black and white prints that make us think of theater-film blend very well with the very colorful ones, with graphs, dots, lines, reptile imitation, and floral drawings.



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Figure 2.42. Leather samples for footwear

The large volumes accompanied by the refinement of the shapes characterize the accessories used for the 2018-2019 season. The effect of nickel and not very bright gold, to which are added the colored enamels applied on various surfaces of buckles give a note of versatility in the artistic approach.



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Figure 2.43. Accessories for leather goods



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Figure 2.44. Artistic theater-film prints, combined with hot shimmering red takes you into show business



Figure 2.45. Graphics, lines with optical effects and colours convey lightness and are part of everyday chic



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Figure 2.46. Polka dot prints and reptile skin effects convey comfort and relaxation



Figure 2.47. Floral designs combined with strong colours, black-white-red contrasts highlight a note of dayto-day elegance



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Collection – Concept, Transfer from Ideas to a Tangible Item

The transfer of identification of shapes, volumes, materials, accessories, sketches of ideas and, last but not least, the fashion creator's restlessness in developing a concept collection with extensions in everyday life involves a multiple collaboration between creative technology and fashion design. Fashion design does not just express a new idea, but also a cultural communication through the product (the message of the product idea), a technical communication through the technical sketch of the product, a commercial communication through a collection portfolio and an advertising communication through the fashion illustration.

Thus, the sketch, as a graphic form of expression of the product idea, is a working tool, mandatory in all stages of design, in all forms of fashion manifestation.

The materials in the 2018-2019 trends are biodegradable and have aesthetic expression according to the trends that designers in the field offer as artistic and technical suggestions to the fashion industry excellence companies. Synthetic leather, laser engraved, printed, with external effects used in 3D technology, plus high-tech textiles, will satisfy the wearer's comfort. Unlike stylism, footwear design does not only deal with the image of the product and the image elements of the elaborate stylistic concept, but also with the transposition into components and patterns of an idea sketch.

In design, ideational logic is organized on the principles of classical logic, and from an economic point of view, the organization of the product concept is based on the principles of efficiency. Footwear design involves a complex process of ideation, conceptualization, design, graphic design, advertising, illustration. Trend samples are designed to provide industry customers with clear and practical solutions to fashion trends in a particular fashion sector. Concept creations are edifying for a collection in the trends of 2018-2019.



Figure 2.48. Geometric designs with coloured polka dot imitations recompose slipper models



Figure 2.49. Reptile imitations in harmony with theater-film prints and contrasting black-red patent leather straps



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Figure 2.50. Theater-film prints are supported by nickel accessories and patent leather accents



Figure 2.52. Enamel applied to metalized accessories, massive heels, striped leather inspire balance



Figure 2.54. YELLOW-BLACK, challenge to the office style among others





Figure 2.51. Combination of multicolour lines with phosphorescent prints and neutral areas convey relaxation and dynamism



Figure 2.53. The play of colours convey relaxation, clubbing, joyful atmosphere



Figure 2.55. The classic pump becomes theatrical and spectacular



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Figure 2.56. The creative play of blacklife even on a dark and gloomy day



Figure 2.57. Daily life can become a memory, white-yellow becomes part of day-to-day COURREGES the 60s avantgardist leaves room for interpretation



Figure 2.58. Leather with mother-of-pearl insertions intensifies a sunny day



Figure 2.60. Flared heels in resonance with round shapes give comfort and





Figure 2.59. Boots with round, balanced shapes, the colour contrast, femininity induce



Figure 2.61. Harmonization of colours and decorative elements turns the classic style into a challenge

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Figure 2.62. Romanticism, joy, femininity, liberation inspires safety, optimism





Figure 2.63. Prints, coloured nickel zippers in contrast with black and white for a sport look

Figure 2.64. Show, theater-film, contrasting red, perfect accessorization for morning and evening



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Figure 2.65. Easily adaptable to a casual outfit after the break



Figure 2.66. Easy to accessorize in the evening



Figure 2.67. Linear, average volume, identity



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Figure 2.67. "Slight" hesitation between free-style and event



Figure 2.68. Balance, dynamism, confidence



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Figure 2.69. Goes with any outfit. The combination of free-style and day-to-day life



Figure 2.70.

2018-2019 concept collection with extensions in everyday life



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Figure 2.71. 2018-2019 concept collection with extensions in everyday life



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Conclusions

Fashion design does not just express a new idea, but also a cultural communication through the product (the message of the product idea), a technical communication through the technical sketch of the product, a commercial communication through a collection portfolio and an advertising communication through the fashion illustration.

Thus, the sketch, as a graphic form of expression of the product idea, is a working tool, mandatory in all stages of design, in all forms of fashion manifestation.

Materials in the 2018-2019 trends are biodegradable and have an aesthetic expression according to the trends that designers in the field offer as an artistic and technical suggestion to the fashion industry excellence companies. Synthetic leather, laser engraved, printed, with external effects used in 3D technology, plus hightech textiles, will satisfy the wearer's comfort.

The imaginative transfer to a state that will become reality in the process of creating an object, regardless of its destination (by fashion design excellence) becomes artistic composition using the means offered by modern, classical and artisanal technologies. Stylists are the ones who have insights and show the way to success.

The mélange of images becomes a challenge for specialists in the field and receptors alike. Accessory designers create concept pieces, making a prototype first. The received images become defining elements of the creative artistic concept, and they are transposed into artistic and aesthetic proposals as applied research. The way to get the first elements that prefigure the object imagined by the designer of the high-end product is filtered by successive stages, that can be cultural, emotional and less pragmatic as an initial approach.

Unlike stylism, footwear design does not only deal with the image of the product and the image elements of the elaborate stylistic concept, but also with the transposition into components and patterns of an idea sketch. In design, ideational logic is organized on the principles of classical logic, and from an economic point of view, the organization of the product concept is based on the principles of efficiency.

That is why in the design of the footwear, the designer takes into account both stylistic, technological, marketing and financial elements, demonstrating once again that fashion design is an industry that belongs to a particular economy with cultural and artistic components but which remains an industry.

Footwear design involves a complex process of ideation, conceptualization, design, graphic design, advertising, illustration. Trend samples are designed to provide industry customers with clear and practical solutions to fashion trends in a particular fashion sector, as well as a database of creative ideas that will contribute to the competitiveness of industrial products in a unitary conceptual direction, allowing specialists to have a new source of inspiration for their own projects, to better understand the fashion market, to identify new models. These will be the starting point for their implementation in the industry.

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