



Lisbon School  
of Economics  
& Management  
Universidade de Lisboa

# **MASTER'S IN MANAGEMENT (MIM)**

## **MASTERS FINAL WORK**

PROJECT

**ENVIRONMENTAL LABELLING FOR PACKAGING:  
A TEACHING CASE STUDY**

FRANCESCA SAVINI

MARCH - 2022



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FRANCESCA SAVINI

**SUPERVISOR: PROF. ANA ISABEL ORTEGA VENÂNCIO**

**JURY:**

**PRESIDENT: PROF. JOSE' MANUEL CRISTOVÃO VERÍSSIMO**

**RAPPORTEUR: PROF. INES PINTO**

**SUPERVISOR: PROF. ANA ISABEL ORTEGA VENÂNCIO**

MARCH - 2022

*I dedicate this success to me,  
to my family, buddies,  
university friends, and  
everyone else whose lives  
have intersected with mine  
and left me something  
special.*

**ENVIRONMENTAL LABELLING FOR PACKAGING**

## GLOSSARY

B2B - Business to business

B2C - Business to consumer

CEO - Chief Executive Officer

CO<sub>2</sub> - Carbon dioxide

CONAI - Consorzio Nazionale Imballaggi = National Packaging Consortium

EAC - Equivalent annual cost

ESG - Environmental, social and governance

GLF - Global Line Food Brand

HDPE - High-density polyethylene

HO.RE.CA - Hotellerie Restaurant and Cafe

I.F.S - International Food Service & Partners

PVC - Polyvinyl chloride material

ROS - Return on sales

ROI - Return on investment

ROE - Return on equity

UHT – Ultra high temperature

## ABSTRACT

This case-study presents the challenges faced by Unigrà's packaging development manager, Francesca Savini, in dealing with the new Italian environmental labelling legislation. In 2020, Italy's Ministry of Ecological Transition enacted a law that will take effect in July 2022 in response to the growing customer concerns about the environmental impact of their purchases. To protect the environment and facilitate collection, reuse, recovery, and end-of-life management, all products sold in Italy must include an alphanumeric coding that clarifies the material of packaging. Additionally, for the business to consumer market (B2C), the law requires that the products also include how and where to dispose of the packaging.

This case-study highlights the options that Unigrà's packaging development manager, Francesca, must cope with the legislation. Francesca has listed several alternatives: 1) buy a new printer; 2) ask the packaging supplier to include the alphanumeric code in new graphics; 3) make use of transport documents; or 4) develop digital documents.

It is March 15, 2022, and Francesca is rushing to meet the Unigrà's Chief Executive Officer (CEO) to decide the most cost-effective packaging strategy to cope with new law. She is in the taxi reviewing her presentation and the advantages and disadvantages of each alternative. Time is running out and she must decide the option that best fits Unigrà's and stakeholders' interests and complies with the new legislation.

**KEYWORDS:** Packaging strategy; environmental label; food and beverage industry; Net Present Value (NPV); Equivalent Annual Cost (EAC).

**JEL CODES:** D61; O32; F64; L66.

## RESUMO

Este caso apresenta os desafios da gestora de desenvolvimento de embalagens da Unigrà, Francesca Savini, ao lidar com a nova legislação Italiana de rotulagem ambiental.

Em 2020, o Ministério da Transição Ecológica da Itália promulgou uma lei que entrará em vigor em julho de 2022 para responder às crescentes preocupações dos clientes sobre o impacto ambiental das suas compras. Para proteger o ambiente e facilitar a recolha, reutilização, recuperação e gestão de fim de vida, todos os produtos vendidos na Itália devem incluir uma codificação alfanumérica que clarifique o material da embalagem. Adicionalmente, para o mercado *business to consumer* (B2C), a lei exige que os produtos também incluam como e onde eliminar as embalagens.

Este caso analisa as opções que a gestora de desenvolvimento de embalagens da Unigrà, Francesca, tem para respeitar à legislação. Francesca listou várias alternativas: 1) comprar uma nova impressora, 2) incluir novos gráficos de um fornecedor de embalagens, 3) fazer uso de documentos de transporte ou 4) desenvolver documentos digitais.

Estamos a 15 de março de 2022 e Francesca apressa-se para se encontrar com o *Chief Executive Officer* (CEO) para decidir a estratégia de embalagem mais viável para lidar com a nova lei. Ela está no táxi a rever a sua apresentação e as vantagens e desvantagens de cada alternativa. O tempo está a esgotar-se e ela tem de decidir qual é a alternativa que melhor serve os interesses da Unigrà e dos diversos stakeholders e estar ao mesmo tempo em conformidade com a nova lei.

**PALAVRAS-CHAVE:** Embalagem; rotulagem ambiental; indústria alimentar e de bebidas; Valor Atual Líquido; Custo Anual Equivalente.

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Being abroad, alone, and a full-time student, was not always easy, but I made it.

## 1. INTRODUCTION

This project aims to develop a case study on the dilemma of environmental labelling in Italy. This is achieved by following guidelines of Harvard Business School, looking at examples available at SAGE, and adapting it to the purpose of this project, which is to be applied by students in the management area. The case study aims to analyse the feasibility in the intrusion of the alphanumeric environmental code on each type of packaging. To do such analysis, it begins by analysing the company in question and then assess various projects and the feasibility of them. Having these components, and through proposed discussion questions, the evaluation of this project is possible with the calculation of Net present Value and equivalent annual cost method.

This Case Study, developed as part of the Final Work of the Master's in Management, has the purpose of analysing the company Unigrà and evaluate the possibility on the intrusion of the environmental labelling on the packaging. This case study is divided into two chapters, the Case Study and the Teaching Notes.

In the first chapter, there is a short presentation of the history of the Unigrà company and a brief summary of its progress over the years of activity and its product portfolio. Then, the Italian environmental labelling law is explained. At the end of this chapter, the different options benefits and advantages are presented.

In the second chapter, after presenting the Suggested Classroom Application, to answer the questions suggested for this case study, it is performed an analysis of the options the main challenges that the company will have to overcome. Then, to define the best strategy for the company, it is performed an analysis through the NPV and EAC method to decide with which project the company should move forward. Finally, after deciding to introduce the environmental labelling alphanumeric code in the transportation document, the marketing strategies are defined.

## 2. ENVIRONMENTAL LABELLING FOR PACKAGING: CASE – STUDY

### 2.1 Learning Outcomes

After reading and analysing this case study, students should be able to:

- Evaluate the impact of a change in packaging legislation on a company's business model and culture.
- Understand the challenges of managing the group's packaging strategy.
- Identify and evaluate the different options to cope with the new packaging law, using the net present value and the equivalent annual cost analysis.
- Develop a communication strategy to respond to the new packaging regulation.

### 2.2 Premise

It is Monday morning, it is raining, and Francesca, is rushing to meet the Unigrà's CEO, Gian Maria Martini. In the night before, Francesca could not sleep as she could not stop thinking about her work and how Unigrà should cope with the new environmental packaging legislation. As Unigrà's packaging development manager, she had to quickly propose a solution for the company packaging strategy.

In 2020, Italy's Ministry of Ecological Transition enacted a law that will take effect in July 2022. The law requires that all products sold in Italy must include an alphanumeric coding that clarifies the packaging material and how and where to dispose it. As Unigrà sells margarines and mélanges in anonymized packages, this new law will have a significant impact in the company's business model and production costs. Unigrà works every day to achieve ESG objectives, such as researching alternative packaging options to replace plastic and identifying methods to lessen the company's effect (limit CO2 emissions, efficiency in the use of energy, renewable energy production). In terms of social responsibility, the corporation promotes gender equality and employee benefit.

Francesca is responsible for finding and evaluating alternatives to cope with the new law requirements. More specifically, she must find a cost-effective way to insert the alphanumeric code for all the packages, especially for those that do not have graphics

(anonymized). She lined up several options, however none of them perfectly fitted with Unigrà's business model. Francesca is considering between 1) buying a new printer, 2) asking the packaging supplier to include the alphanumeric code, 3) making use of transport documents or 4) developing digital documents.

It is March 15, 2022, and she is in the taxi mentally reviewing the advantages and disadvantages of each option before meeting with the CEO. She also questioned herself if she missed other attractive options to meet the law requirements.

She had to decide quickly.

### 2.3 Unigrà SRL

Unigrà SRL is an Italian multinational agro-food group, located in Conselice, founded in 1972 by Luciano Martini, which processes and distributes food products. It provides oils and fats, margarine and semi-processed products, bakery goods, chocolates, and related packaged food products. It operates in the vegetable oils and fats processing and in the production of raw materials, semi-finished products for the food industry, confectionery, bakery, and ice-cream market. Its main products include margarines and mélanges, chocolate and compounds, ultra-high temperature (UHT) dairy goods, oils and fats, plant extracts and spreadable creams (see Figure 1). Margarines and mélanges account for 50% of total sales of the group. Except for plant extracts of rice, soy, and buckwheat, which are used to make vegetable drinks, most products are sold in the business to business (B2B) market.

The group operates under the following brands: Master Martini, Martini Linea Gelato, Global Line Food (GLF), Martini Food Service, OraSì and Gioia. Through its brands, Unigrà offers high-end raw materials, goods for resale and finished products across all channels: industrial, artisanal, Hotellerie-Restaurant-Café (ho.re.ca) and retail.

The company main clients include for example, Ferrero, Unilever, and Nestlé.



Source: UKUnigra.pdf

Figure 1 - Unigrà products

The company history goes back to 1963, the year when Luciano Martini founded a lard manufacturing company near Ravenna, Italy, which quickly evolved to include the refinement of vegetable oils and fats. Luciano decided to build the factory because he had a dream: build a large company specialized in the production and selling of edible fats and other items for the confectionery industry. With the establishment of Unigrà in 1972, his dream became a reality. The company moved to an outlying industrial region in Conselice (Ravenna, Italy), due to the expanding size of the production facility. Vegetable fats, margarine, chocolate, and compounds were introduced to the processing of animal fats in the 1980s. In the 1990s, the corporation proceeded to expand its operations at a rapid rate and Luciano Martini's son, Gian Maria, joined him in operating the business. With the establishment of the first distributors abroad, Master Martini Ibérica in Spain and Zao Unigrà in Russia, the company's expanded internationally.

In 2000s, Unigrà established itself as an Italian leader in the refining and processing of vegetable oils, and its activity in the artisanal channel was bolstered by the

establishment of the International Food Service & Partners (I.F.S) Company. During this period, Unigrà focused on expanding its distribution network, and service with the GLF brand. The diversification process continued in the following years. Unigrà made significant investments in the creation of three new plants to produce water-based cream fillings, roasted hazelnuts and hazelnut paste, fondant icing and coloured sugar paste in 2010. Five years later, Unigrà made its debut in the large-scale retail market with OraSì, the product line based on 100% Italian soya and rice, with a view to integration with other farming businesses which are part of the Group.

In 2018, to expand its capacity, Unigrà acquire the Tuscan company D+F, introducing frozen pastry and bakery sector in the group's product portfolio. With this acquisition, the company increased its capacity position and competitive advantage in Italy. After seeing the strategic benefits of acquiring D+F, Unigrà purchased a competitor, Olfood, in 2019. Olfood was founded in 2008 and is located in Brescia district (north of Italy). The company manufactures vegetable oils and fats. Olfood generated a turnover of 40 million euros in 2020, accounting for 10% of exports. This acquisition allowed Unigrà to increase its market-share and its sales.

In 2020, company inaugurated Unica, the Group's advanced training school and started production in Brazil and Malaysia.

The company is still managed by the founder, Luciano Martini, who is the chairman of the Board of Directors, and his son, Gian Maria Martini, CEO.

Figure 2 presents the company's main historical milestones.

In the next years, Unigrà is planning to construct a new production line facility to increase its capacity by 50% in margarine and mélanges, improve its profit margins, save energy costs, and support better planning by shortening lead times. The finished products warehouse will also be added, the mechanical parts warehouse will be enlarged, and the plant services department will be strengthened.





Source: UKUnigrà.pdf

Figure 2 - Unigrà history

Due to its constant search for high quality standards, both in terms of production and customer care, the company is one of the market leaders in over 40 countries. The success of Unigrà is founded on constant search for the best raw materials, a strong focus on product quality, consistent investment in cutting-edge manufacturing technologies and constant attention to market and customer requirements.

Unigrà employs more than 1,200 employees, 750 of which are employed in the Conselice plant, and exports more than 50% of its production. Unigrà sells approximately 1,400,000 total tonnes of products per year, of which 770,000 tonnes are sold abroad. The production facilities are spread over the world: three in Italy, one in Brazil and one in Malaysia. The company has 20 foreign subsidiaries and a large network of distributors and importers in over 100 countries worldwide.

Unigrà's vision is to get its name and products into the kitchens of professional caterers all over the world.

In terms of mission, Unigrà develops effective and efficient solutions for the food industry through strategic planning, combining know-how and experience with innovation and cutting-edge technology. Furthermore, the company provides foodservice professionals with a complete line of high-quality, adaptable, and high-service items to help its customers to grow their business. Unigrà's mission is guided by its core values of honesty, transparency, and fairness in their actions; curiosity, in which they seek

continuous improvement and are motivated by new ideas, possibilities, and solutions; and tenacity, in which their passion for what they do propels them forward with boldness and strong ambition.

The capability of achieving short and long-term goals, as well as maintain a balance between all the components that play a role in the development of a sustainable firm, is the hardest challenge.

According to their latest annual reports, the company had revenues of €566 million in 2020, with a working capital of €115 million and a profit-after-tax of €12 million. From 2018 and 2020 sales decreased by 3.89%, reaching €511 million.

	2017	2018	2019
Production value	618.754.176 €	578.437.054 €	592.566.905 €
Production costs	579.284.149 €	532.284.902 €	545.095.207 €
Net income	39.470.027 €	46.152.152 €	47.471.698 €
Balance of financial income and expense	- 2.039.284 €	-2.468.206 €	7.151.611 €
Profit / loss	15.856.578 €	30.947.758 €	17.613.043 €
Cash flow	39.503.016 €	54.240.251 €	39.338.326 €
Credits	129.332.954 €	116.372.521 €	109.030.609 €
Debts	320.909.726 €	353.874.966 €	379.636.656 €
Equity	264.067.728 €	289.015.480 €	303.017.375 €
ROE	6%	10,71%	5,81%
ROI	6,62%	7,05%	6,85%
ROS	6,38%	7,98%	8,01%

Source: [https://www.informazione-aziende.it/Azienda\\_UNIGRA-SRL](https://www.informazione-aziende.it/Azienda_UNIGRA-SRL)

Table 1 - Financial Performance Measures

Table 1 presents the evolution of the return on sales (ROS), return on investment (ROI), and return on equity (ROE) over the period between 2017 and 2019.

The financial ratios present a favourable evolution.

The ROS indicator continues to rise from 6% to 8% in 2019, suggesting that Unigra is becoming more efficient. Because total returns surpass any connected expenses, the

ROI indicator is always positive, signifying positive net returns. Meanwhile, profitability as measured by ROE is always greater than zero, suggesting that Unigrà generates wealth through the efficient use of equity capital. However, the last two indicators are decreasing. A declining ROE could indicate that management is making poor decisions when it comes to reinvesting resources in inefficient activities. This means that Unigrà is becoming less efficient at developing shareholder value and creating profits. If ROE falls over time, it may indicate that management is failing to make the right decisions for the company's bottom line.

Investments, on the other hand, are the primary driver of decreasing ROI due to their regularity and capacity to compound on portfolio development; for example, upgrading obsolete equipment will reduce ROI, as will investments in sustainability.

Unigrà's equity is growing over the years. When a company's equity increase, the overall result is an increase in the company's equity balance. The sale of shares may increase shareholders' equity, increasing revenue while decreasing operating expenses. An equity increase is a permanent increase in base salary that can be granted to an employee under certain conditions, such as higher responsibility. According to Unigrà latest financial report submitted on 2020/12/31, the company has equity of €307M.

Unigrà's net profit margin ratio in 2018 is 8.69%, considering the 3.89% increase in sales compared to 2020. The Net Profit Margin is a financial ratio that calculates the proportion of profit generated by a company based on total revenue. The net profit margin is expressed as a percentage of net income divided by sales. It is used to illustrate a company's ability to make profit and displays how much profit is generated for every \$1 in sales after all business expenses are deducted.

## 2.4 Corporate Culture

Unigrà is a sustainably integrated company in the food industry. To prevent pollution, the company empower its employees and suppliers to find environmentally friendly solutions and periodically evaluates its environmental performance to continuously improve, optimize the use of natural resources, and encourage the separate collection of waste.

Unigrà is environmentally conscious and uses renewable energy sources such as solar electricity. The company has conducted an analysis to accurately determine the firm's environmental impact since 2007, and they are committed to implementing actions to mitigate the firm's impact, particularly for Carbon dioxide (CO<sub>2</sub>) emissions in the atmosphere; efficiency in the use of energy, water, and primary ingredients; produce renewable energy; and manage waste by encouraging separate collection. This process led to obtaining the UNI EN ISO 14001 certification.<sup>1</sup>

All Unigrà's departments are investigating alternative packaging solutions to replace plastic, as proposed by the "Pledging Campaign," which states that by 2030, all packaging placed on the European market must be recyclable or reusable, and at least half of all waste generated must be reprocessed. While the company is looking for new solutions, Unigrà has already reduced plastic bag thicknesses by 18% and minimized their use by replacing it with recyclable materials. In the preceding two years with the same output, the company reduced water use by 25% through reusing, repairing, and optimizing industrial infrastructure.

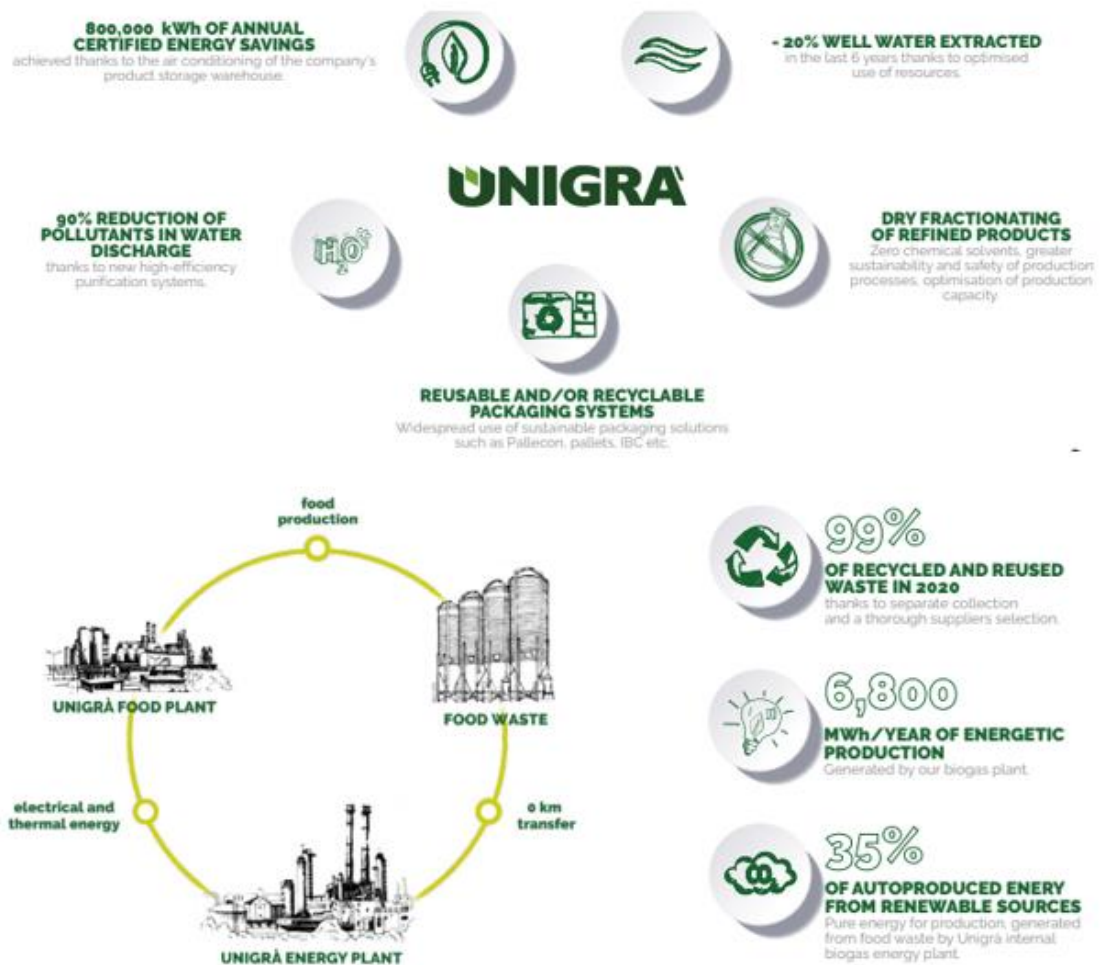
Furthermore, Unigrà imports raw materials that are unloaded at the port of Ravenna, which is close to the factory avoiding long truck rides and, consequently, CO<sub>2</sub> emissions.

Unigrà sustainability system is depicted in Figure 3.

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<sup>1</sup> The ISO 14001 certification shows that the certified organization has a proper management system in place to regulate the environmental consequences of its operations, and that it is systematically working to develop it in a cogent, effective, and, above all, long-term manner.

## ENVIRONMENTAL LABELLING FOR PACKAGING



Source: UKUnigra.pdf

Figure 3 - Sustainability system

Also socially, Unigrà has been continuously improving. The company has planned to construct a large employee dining hall with bars, a self-service restaurant, a managers' dining room, and a relax area within the next two years. This will be particularly appreciated by night shifts workers.

Unigrà's productivity, economic growth, and organizational performance have all improved because of promoting gender equality, and the organization's reputation has risen as a result. Women oversee relevant divisions such as quality and research and development.

In 2019, the company has also identified a tool to facilitate the implementation of new policies to reduce the environmental impact of corporate mobility: avoid single car use and choose an alternative vehicle, such as carpool, train, bus, bicycle, and so on,

assigning the parking spaces closest to the entrance to these vehicles. As a result, many co-workers from the same zone show up to work together. Eco-projects such as the one in 2019 are depicted in Figure 4.

Sustainability is not only fundamental to the company philosophy, but it is also a topic of communication and engagement with the company's internal and external audiences.

Unigrà employs a newsletter to keep clients and users up to date on any firm activities, such as the creation of publications and any changes in laws linked to common interests such as the environment and sustainability.

Unigrà only interacts with organizations that share its commitment to sustainability.



Source: UKUnigra.pdf

Figure 4 – Ecological projects

Due to the limited supply of sustainable materials in the European market, Unigrà does not work at the same speeds if it used new and more advanced materials.

As a result of the above, Unigrà would generate 20% less revenue.

## 2.5 The New Environmental Labelling Law

The Italian Ministry of Ecological delegates all environmental labelling and packaging issues to a packaging consortium, Consorzio Nazionale Imballaggi (CONAI). Founded in 1997, CONAI is a private non-profit consortium, which ensures and provides guidelines and useful information on environmental labelling and packaging to its associates. This consortium came together to commonly respond to essential problems of the industry and comply with the European and national regulations.








It has over 1,000,000 companies, including Unigrà. Packaging manufacturers, importers and users are among the members of the consortium, which annually pay a compulsory contribution.

This consortium proposed a new packaging law to the Ministry of Ecological Transition, which was enacted in 2020 and it will take effect in July 2022. The law requires that all products sold in Italy to include a legible alphanumeric coding that clarifies the type of packaging material and how and where to dispose it.

More specifically the Legislative Decree of 3 September 2020 states that all packaging shall be “appropriately labelled in accordance with the procedures laid down in the applicable technical standards and in compliance with the decisions of the European Commission, to facilitate the collection, reuse, recovery, and recycling of packaging, and to provide consumers with proper information on the final destination of packaging. For the purposes of identifying and classifying packaging, producers are also required to indicate the nature of the packaging materials used, based on Commission Decision 97/129/EC.”

The Commission Decision of 28 January 1997 establishes the identification system for packaging materials (This regulation is available in Exhibit 1).

The purpose of this regulation is to establish the numbering and abbreviations on which the identification system is based. Figure 5 defines the numbering and abbreviations.

						
PETE	HDPE	PVC	LDPE	PP	PS	OTHER
Polyethylene Terephthalate	High-Density Polyethylene	Polyvinyl Chloride	Low-Density Polyethylene	Polypropylene	Polystyrene	Other

Source: <http://www.flexicon.co.nz/nav/post/id/42>

Figure 5 - Number and abbreviation of plastic materials

This new law applies to all three types of packaging namely, primary, secondary, and tertiary packaging. Figure 6 exemplifies this type of packaging. While the primary packaging is in direct contact with the product, the secondary packaging accommodates

individual product packages, and the tertiary packaging is essential for storage and shipping.



Source: <https://www.crbgroup.com/insights/food-beverage/food-packaging-process>

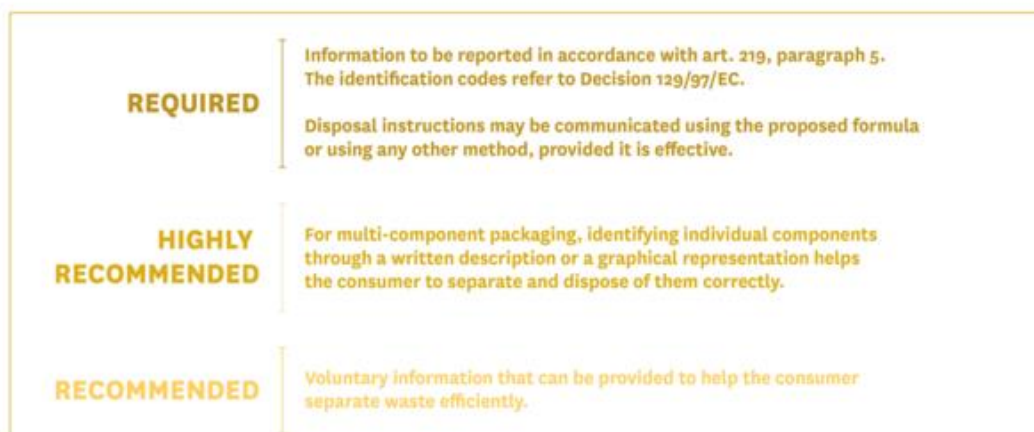
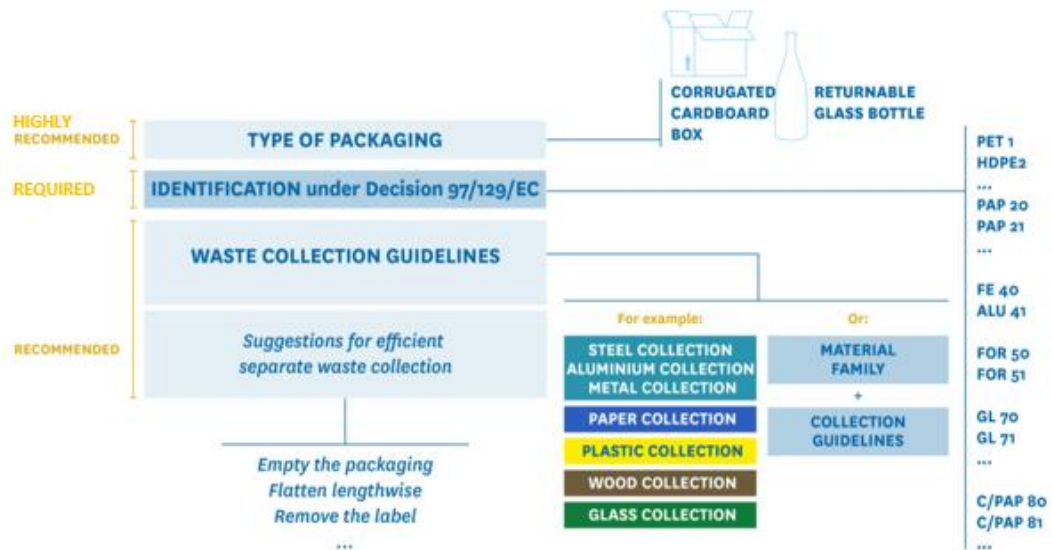
Figure 6 - Type of Packaging

The requirements for the packaging of products sold in the B2B market are lighter. Packages do not need to provide information on where to dispose the packaging materials (e.g., paper collection) or information on how to dispose them (e.g., empty the packaging, flatten the lengthwise, remove the label, ...), but they must mandatorily include the alphanumeric code of the composition materials of the package in accordance with Commission Decision 129/97/EC. Every other information remains voluntary. Nonetheless, it is highly recommended that companies identify the type of package (e.g., corrugated cardboard boxes). Figure 7 illustrates the new package requirements for products sold in B2B market.

Companies that do not obey the new law will have to pay a pecuniary sanction between € 5.200 and € 40.000, depending on the company's annual sales.



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Source: <http://www.progettarericiclo.com/en/docs/environmental-labeling-packaging>

Figure 7 - Information for the environmental labelling of B2B packaging

As the new environmental packaging law (Legislative Decree of 3 September 2020) has not yet been standardized at the European level, the type of information to be provided via labelling, as well as the methods of application, only apply to packages sold in Italy. The new labelling system is still optional in other countries, but CONAI encourages its associates to start thinking about implementing the same requirements for products sold abroad, as the information provided in the packages benefits the consumer, the brand, and the environment.

## 2.6 Unigrà and the New Environmental Law

Francesca was hired as Unigrà's packaging development manager on September 1st, 2021, to define the appropriate packaging strategy of the group in accordance with the new environmental packaging law. She already knew about the legislation, as it was heavily announced in the news. Nonetheless, she did not expect the decision to approve and implement the law to be done so quickly. The increasing environmental concerns and global warming prompt CONAI to move fast and lobby for the law enactment.

On her first day of work, she was invited to a meeting with the Unigrà CEO and CONAI executives to discuss possible and manageable options for implementing the new law in the company. Although the company is environmentally conscious, the effects of the new law were not yet properly addressed by Unigrà previous manager. Except for the tertiary packaging (i.e., pallets, interlayers, and stretch wrapping), the other types of packaging were not yet assessed by the company. For the tertiary packaging, Unigrà decided to include the code in the transportation document, as this type of packaging proved to be very difficult to insert on the packaging.

Francesca had a long journey ahead her. She started by reading all information available about the group to understand the business, the products, and the packaging problems. After a few days, she realized that the main challenge would be the primary packaging of margarine and mélanges products. For the secondary packing, Francesca's decision was simple. As Unigrà mainly used cardboard, incorporating the alphanumeric material coding on paper was an easy and simple task. Fortunately, the company was already implementing this procedure for most of the products.

Margarine and mélanges are the main products of Unigrà. The sixteen production lines offer a wide range of products that differ in terms of the nature and quantity of the fatty phase and format. Of these production lines, nine require anonymous packaging, unprinted packaging that does not include any graphics.

Francesca decided to focus her attention on these products and their packaging as these were precisely, the target of the new law (see Figure 8).



Source: <https://madein.md/en/news/drumul-laptelui/butter-how-to-choose-aqualityandhealthy-product>

Figure 8 - Anonymous Packaging

Annually, Unigrà buys 110.000 kg of anonymous packaging for margarine and mélanges lines and currently pays € 2, 95 /kg. The wrapper of the 10 kg margarine and mélanges does not have any graphics regarding the type and material of the packaging. Anonymous packaging is the preferred choice of the B2B customers because they can resell the products under their own brand. With the new law, however, this type of packaging must include the alphanumeric code.

As the margarine and mélanges products are packaged in a single primarily package that comes into direct contact with the product, if Unigrà decides to ink and print the alphanumeric code on the package, the goods may be damaged.

The primary packaging of the margarines and mélanges of 10 kg pats is coloured anti slip high-density polyethylene (HDPE) film and comes in polyvinyl chloride material (PVC) spools of up to 100 kg each. HDPE is a thermoplastic polymer made from petroleum. As one of the most versatile plastic materials around, this plastic is used in a wide variety of applications, including bottles, milk jugs, and margarine and mélanges wrappers. The main advantages of this packaging are its permeability and resistance. This material is the ideal wrap as it is easy to fold, prevents mould growth by not allowing the product to ooze, and has chemical and physical features that protect the goods from the light.

Besides Unigrà's margarine and mélange production, Olfood also produces the same products in two additional lines using anonymous packaging. Olfood and D+F are

independent companies, and consequently some of Unigrà's decisions might not be followed, such as is the decision to cope with the new environmental labelling law.

D+F does not face the environmental labelling law dilemma because it has no automation production, and it uses only cardboard boxes as packaging.

The requirements of the new law will increase the production costs; therefore, Francesca needs to identify the most cost-effective solution to minimize its effects in the company's financial statements. Francesca identifies several options: 1) buy a new printer, 2) ask the packaging supplier to include the code in new graphics, 3) make use of the transportation documents or 4) develop digital documents.

### 2.6.1 First option: buy a new printer

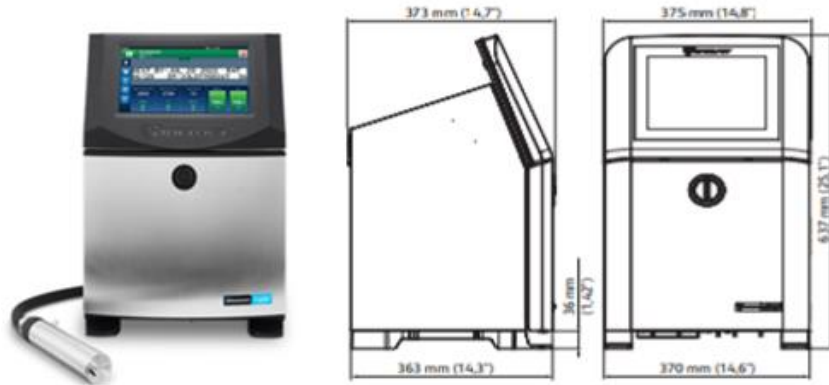
A printer will allow Unigrà to add the expiration date, the batch number, and the alphanumeric coding directly on the wrapper.

This option is a valid solution as it ensures good printing quality (the alphanumeric code does not disappear), offers low starting costs, and quick turnaround times. In addition, the setup will be easy implement as the code will not change (i.e. HDPE 2, in accordance with Decision 129/97/EC).

To implement this option, Unigrà would have to purchase nine printers for each production lines and two additional printers for Olfood. Each printer requires one additional employee, which will have to turn the printer every time an anonymous packing appears in the production line, including night shifts. The average salary of a factory worker is approximately € 1.400 per month.

Unigrà's production lines are approximately 15 meters long, with several bends and a variety of products that must be employed in the following days. To include the printers in the production line, the company would need to reorganize the entire margarine and mélange department and restructure the production process.

On the other hand, Olfood produces less quantities of margarines and melanges, and the production lines have larger space available along the chains, making this option very attractive. Figure 9 presents the dimensions of the printer.



Source: printer technical sheet

Figure 9 - Inkjet Printer

In terms of expenses, Table 2, presents the information collected by Francesca for three best ink-jet printers:

	Videojet 1580	Videojet 1280	Videojet 1860
Initial investment	9.000,00 €	8.500,00 €	7.500,00 €
Maintenance costs per annum	4.000,00 €	3.000,00 €	4.000,00 €
Years	5	4	3
Discount rate	20%	20%	20%

Table 2 - Printer options

Inkjet’s printers are based on liquid ink, deposited on the page through a print head that uses dozens of micro nozzles. The print head projects microscopic droplets of ink onto the paper or plastic. Inkjet printers tend to be less expensive than laser printers because of their use of less complex technology.

All printers allow Unigrà to comply with the new law.

Additionally, Francesca highlighted the following characteristics in the printer's brochure:

- Videojet 1580 includes instructions to help users get the most out of it. Through a simple 10-inch touchscreen display, the interface simplifies operator interactions with the printer, helping to prevent potential user errors.
- Videojet 1280 incorporates the print head and fluid system technology, ensuring consistent performance and reliability. The annual user-performed preventative maintenance takes only five minutes.
- Videojet 1860 includes a new Profinet Workflow module. Profinet is an open industrial Ethernet standard for data transmission between several devices in the automation industry. With this technology, the printer reduces unplanned downtime by providing real-time performance and communications exchange for automated applications, as well as it provides an overview of machine status in a short period of time.

### 2.6.2 Second option: ask the packaging supplier to include the alphanumeric code

Another option considered by Francesca was to ask the packaging suppliers to print the alphanumeric code on the packaging provided. To evaluate this option, on February 1<sup>st</sup>, 2022, she sent an email to all packaging suppliers that Unigrà has worked in past 5 years. Unfortunately, she only received one proposal of one supplier, Giovanni of the Plast Company. The supplier provides packaging with the alphanumeric code in high relief at the cost of € 4, 05/kg.

Exhibit 2 presents the proposal details.

### 2.6.3 Third option: make use of transportation document

Francesca also considered including the alphanumeric code on the transport document, which accompanies the margarine and mélange products. This option has already been implemented for the tertiary packaging and Francesca thought that it could be extended to primary packing.

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In addition to the product description, the billing office would print all the alphanumeric codes for each type of packaging as a note to the transportation document. Figure 10 presents an example of a transport document highlighting the place where the alphanumeric code would be place for each packaging components.

If option were implemented, primary and tertiary packaging alphanumeric codes needed to be entered with each article code and its description.

```
Vs. Ordine COMO FORM del 27.10.2021
Consegna N° 8042173165
Lotto 21291 t.m.c.: 03.10.22 CB 2
AV88AA ORASI BARISTA SOY L 1x6 EDGE CB 2,00
PARI A NR COLLI 2 (x 6 Pezzi )
BEVANDA DI SOIA
Codice EAN: 8002180014012
Lotto 21279 t.m.c.: 01.10.22 CB 2
LPPZ10 PALLETS LEGNO RINFORZATI NR 1,00
80x120 cm
Luogo di destinazione della merce per inoltre al
Destinatario:
70017141 STEF ITALIA S.P.A. (dep. Tavazzano)
VIA MAJORANA 1
26038 TAVAZZANO CON VILLAVESCO
Italia PI:IT00748180349
```

Source: Unigrà transport document

Figure 10 - Example transport document

Implementing this option would increase the length and easy of reading of the document. The transport document will have to describe the packaging material and all its components. The main problem is that products might have several packaging elements. For instance, in the margarine and melanges lines of the 10 kg anonymous loaves, the document would have to include the HDPE 2 film (primary packaging) and stretch film to hold the loaves together in transit (tertiary packaging).

A data centre operator would have to manually enter these packaging components into the management system. Currently, the management system does not allow to include this kind of information. As Unigrà outsources the accounting and billing services and the data management system to third-party organizations, to implement these options the company would have to fill a ticket and talk with their service providers to evaluate its

feasibility. The basic fee for a management system adjustment is €800. Due to the urgency and complexity of the task involve, a 50% increase of the fee is expected.

Unfortunately, Olfood will not be able to adopt this option since its management system is different and it does not allow customization.

#### 2.6.4 Fourth option: develop a digital document

Francesca also considered using a digital solution. A digital solution would simplify, dematerialize, and secure the information required by the new packaging regulation.

This option would be in line with the recent trend from technological innovation and simplification. The digital solution could imply developing an application or website. Depending on the technology used, the services included, and the amount of information included, developing a custom website would cost between € 1.900 and € 5.500.

In contrast, developing a basic application would cost around € 20.000.

It is Monday morning, it is raining, and Francesca, is rushing to meet the Unigrà's CEO, Gian Maria Martini. She is in the taxi, reviewing her presentation, the advantages, and disadvantages of each option and her computations. The slide regarding the alternative that Unigrà should pick to cope with the new regulation is still blank. Time is running and she must decide.



## 2.7 Discussion Questions

1. How does the new Italian packaging regulation fit with Unigrà's culture and financial performance?
2. Olfood managers are considering buying the printers. Select the machine they should buy from the three options presented in the case. Assume that Unigrà applies a 20% discount rate to account for the time value of money and risk uncertainty.  
Discuss the benefits and costs of adopting different packaging strategies within the Unigrà group.
3. Evaluate the alternatives available to Unigrà to comply with the new Italian packaging legislation. Identify and evaluate other possible alternatives not considered by Francesca.
4. Develop a communication strategy for Unigrà considering the alternative chosen to comply with the new packaging legislation and Unigrà culture.

## 2.8 Further Readings

Rewarding Consumers for Recycling Packaging: Kimberly-Clark Seeks Shared Value.

(n.d.). Berkeley Haas Case Series. Retrieved February 21, 2022, from

<https://cases.haas.berkeley.edu/2017/01/kimberlyclark/>

Ivey Publishing - Ivey Business School. (2022). Iveypublishing.ca.

<https://www.iveypublishing.ca/s/product/rocky-mountain-soap-company-the-move-toward-sustainable-packaging/01t5c00000CwpCTAAZ>

Wooster, J., & Nuttall, J. (n.d.). Case Studies for Improved Sustainability in Packaging.

<https://www.tappi.org/content/enewsletters/eplace/2007/07PLA20.pdf>

Switch Packaging Specialists - switchpackaging.co.uk. (n.d.). Switch Packaging

Specialists - Switchpackaging.co.uk. Retrieved February 21, 2022, from

<https://www.switchpackaging.co.uk/sustainable-packagingsolutions/file/casestudies.php>

## 2.9 References

Unigrà. (2021). *UKUnigra* [PDF file]. Conselice.

## 2.10 Online Documents, Websites and Articles

*Environmental labeling for packaging*. Conai Progettare Riciclo. (n.d.). Retrieved May 27, 2022, from <https://www.progettarericiclo.com/en/docs/environmental-labeling-packaging>

*Company*. Unigrà. (2021, October 29). Retrieved May 27, 2022, from <https://www.unigra.it/en/company>

*UNIGRÀ invests in growth and future*. MasterMartini. (2019, January 9). Retrieved May 27, 2022, from <https://www.mastermartini.com/en/news-eventi/unigra-invests-in-growth-and-future/>

*Unigrà Lancia La Margarina Senza sale orasi*. Distribuzione Moderna. (n.d.). Retrieved May 27, 2022, from <https://distribuzionemoderna.info/news/unigra-lancia-la-margarina-senza-sale-orasi>

Econerre, R. (2019, December 16). *UNIGRÀ vince per la Mobilità Sostenibile*. Econerre. Retrieved May 27, 2022, from <https://www.econerre.it/news/storie-di-imprese/unigra-vince-per-la-mobilita-sostenibile/>

*Ravennatoday*. RavennaToday. (n.d.). Retrieved May 27, 2022, from <https://www.ravennatoday.it/>

*Equivalent Annual cost*. (EAC) | Definition, Formula & Example. (n.d.). Retrieved May 27, 2022, from <https://xplains.com/143298/equivalent-annual-cost>

Team, T. I. (2022, May 18). *Environmental, social, & governance (ESG) criteria definition*. Investopedia. Retrieved May 27, 2022, from <https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp>

*Lex - 32022R0545 - en - EUR-lex*. EUR. (n.d.). Retrieved May 27, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R0545>

*Unigra' srl di conselice*. Elenco Aziende Italia. Informazione di Aziende, Elenchi di Aziende. (n.d.). Retrieved May 27, 2022, from [https://www.informazione-aziende.it/Azienda\\_UNIGRA-SRL](https://www.informazione-aziende.it/Azienda_UNIGRA-SRL)

Ciccolella, N. E. S. S. U. N. O. di M. (n.d.). - *reportaziende.it - il fatturato delle Aziende Italiane*. Report Aziende. Retrieved May 27, 2022, from [https://www.reportaziende.it/unigra\\_srl\\_ra](https://www.reportaziende.it/unigra_srl_ra)

*Unigra' srl active*. footer. (n.d.). Retrieved May 27, 2022, from <https://italy.globaldatabase.com/company/unigra-srl#book-a Demo>

### 3. ENVIRONMENTAL LABELLING FOR PACKAGING: TEACHING NOTE

#### 3.1 Case Study Summary

This case study explores Francesca Savini's efforts to ensure that Unigrà, the company for which she works, complies with Italy's new environmental labelling legislation.

The new Italian legislation requires the insertion of an alphanumeric code on the packaging wrap, in accordance with Decision 129/97/EC. The alphanumeric code identifies the packaging material with the goal to safeguard the environment, facilitate collection, reuse, recovery, and recycling of the packaging material.

Francesca has to figure out how to incorporate the alphanumeric code into non-graphic, anonymous, margarine and *mélanges* products packaging. Francesca is rushing to meet with Unigrà's CEO, Luciano Martini's son to suggest a solution to comply with new regulation.

Francesca is considering the following options: 1) buy a new printer; 2) ask the packaging supplier to include the alphanumeric code, 3) making use of transport documents or 4) develop digital documents.

The case challenges readers to evaluate the most cost-effective strategy, using net present value and the similar yearly cost technique, for projects with different longevity and the same risk. Furthermore, the case teaches students about the problems of controlling the complete packaging system to become more sustainable.

The case help readers to understand and apply several scenarios, weighing the pros and cons of each option before making a conclusion.

### 3.2 Teaching Objectives

The specific teaching objectives can be summarized as follows:

- Use net present value and the equivalent annual cost method to determine the most cost-effective solution.
- Recognize how a change in legislation affects a company's performance.
- Understand how to assess projects with different life and same risk.
- Study and apply different scenarios, evaluating the feasibility of all options before making a final decision.
- Learn about the complexities of managing the company's entire packaging system and trade-off between financial incentives and sustainability.

### 3.3 Target Audience

This case study can be used in the Master's in Management, MBA and Postgraduate programs in sustainability or management courses. Students should identify current problems and risks in the management of environmental labelling in Italy and then propose solutions to minimize previous problems. The case presents all the references that students can use to guide their discussion and solve the case study.

No additional information needs to be gathered.

### 3.4 Materials

Students should only have access to the case. Teaching note should only be available to instructors.

### 3.5 Suggested Teaching Strategy

For many students, the concepts presented will be complex and potentially unfamiliar, making it more suitable for use as a group assignment at the semester's end. After all the aspects have been lectured, it is suggested that discussion and execution of this case be

performed as a group assignment. It is also suggested that students work in groups of three to five elements. By working in groups, students are more likely to study together and engage in a larger dialogue.

The case should be shared with students at the start of class, and the instructor should encourage students to begin answering each question as soon as the specific concepts are lectured. Once the cases are completed, students should be able to present their answers and findings in class during the final week of the semester.

1. Summary of the case	10 min
2. Structuring the approach for solving the case	10 min
3. Discussing and solving the case (in groups)	50 min
4. Presentation of each group's strategies	30 min
5. Wrap-up and discussion of all Unigrà's options to do next	20 min
<b>Total time</b>	<b>120min</b>

Table 3 - Suggested teaching strategy

1. Summary of the case (10 minutes): What is this case about?

The instructor can ask participants to summarize the case by providing an overview of Unigrà and the new environmental labelling legislation and presenting the core questions in the case.

2. Structuring an approach for solving the case (10 minutes): What is the key problem in the case? What are the challenges?

Problem: Unigrà has to deal with the new Italian environmental labelling legislation.

All products sold in Italy must include an alphanumeric code that clarifies the packaging material.

Challenges: identify the most cost-effective option to comply with the legislation. How should the case be solved? Francesca has listed several alternatives: 1) buy a new printer; 2) ask the packaging supplier to include the alphanumeric code in new graphics; 3) make use of transport documents; or 4) develop digital documents.

3. Discussing and solving the case (50 minutes). (*Refer to point 4*)
4. Presentation of each group's strategies (30 minutes): Which alternatives should Unigrà pursue?

Evaluating all the cost increases Unigrà might have, the company selects the inclusion of environmental coding in the transport document as the best option.

5. Wrap-up and discussion of all Unigrà's options to do next (20 minutes). (*Refer to point 4 above*).

Through this case work, students will apply their knowledge of numerous management and packaging concepts - business investment evaluation project with NPV, EAC method to evaluate projects with same risks but different lives, packaging sustainability, ESG and financial forecasting.

### 3.6 Suggested Answers for the Discussion Questions

1. *How does the new Italian packaging regulation fit with Unigrà's culture and financial performance?*

Unigrà strictly follows the regulations, self-disciplines itself to improve daily, and interacts to achieve maximum cooperation. As a result, the new legislation has been viewed as a task to be effectively met rather than an obstruction. Unigrà considers that adhering to a legalized model of sustainability requires considering all components of the complete production cycle to protect the environment. Unigrà has discovered intentional decisions, targeted acts, and inventive approaches where the primary goal is acquisition while adhering to ethical and environmental norms.

Unigrà's culture is built on respect of environmental, social and governance values. The company pursues these values not only through education and awareness of the topic, but also by choosing suppliers who share the same principles. Unigrà protects the environment by importing raw materials that are unloaded in the port of Ravenna to save long truck travels. According to its ECO-PROJECTS, Unigrà limits car trips to reduce

CO2 emissions and supports carpooling. Aside from the consistent growth in garbage collection, Unigrà invests in research to identify new sustainable alternatives, such as recycling water and reducing the thickness of plastic bags. It solely employs recyclable packaging and avoids the use of aluminium multilayers, which, according to the "Pledging Campaign," will be obsolete after 2030 because they are too difficult to recycle.

Furthermore, Unigrà's working circumstances demonstrate a strong commitment to the health and safety of its personnel. Unigrà considers gender equality to be vital because it is "fair" and "ethical," as well as because it influences a country's overall economic success. The initiative to develop a huge employee dining room with a bar, self-service restaurant, manager's dining room, and relax area over the next two years will also be socially advantageous.

According with the positive indicators, such as ROS, ROI, and ROE, Unigrà demonstrates its ability to handle any challenge. Any costs the company may incur to comply with Italian packaging regulations will not have a negative impact on profitability ratios.

As a result of the increased ROS, the company's efficiency is improving. However, ROE and ROI are declining. This mean that management is making poor decisions on reinvesting capital in unproductive assets. Unigrà is becoming less efficient at creating profits and increasing shareholder value.

Unigrà's net profit margin ratio in 2018 is 8.69%. This margin was calculated by dividing net income and sales. Sales in 2018 are calculated by adding 3.89% to sales in 2020. So,  $511M \text{ €} + 3,89 \% = 530.877.900 \text{ €}$ . The net profit margin of 2018 is  $= 46.152.152/530.877.900 = 8,69 \%$ . Unigrà has a medium-low net profit margin, indicating that it has an inefficient cost structure and/or bad pricing strategies. As a result, a medium-low ratio might be caused by ineffective management, large expenses, and poor pricing methods.

Because of weather instability, large inventory, operational overheads, the requirement for agricultural and storage space, and resource-intensive operations, agriculture-based industries typically have low profit margins.

Moreover, a consideration of what is currently available on the European market can be done. In order to have materials that can be processed and are eco-sustainable with the quantities that Unigrà requires, the supply is limited, and, in addition, the new and more



advanced materials do not allow the company to operate at the same velocities as it does now. This implies Unigrà will have to produce less. The scarcity of materials, the absence of appropriate technology, the high cost of resources and the slowed production rate are surely not factors to be overlooked.

Unigrà is facing a significant challenge due to decreasing profitability and a tension between profit and sustainability aims. As a result, the Unigrà's primary focus will be on balancing eco-sustainable and economic/financial aspects, finding which projects may produce results from both perspectives.

All of this is to suggest that Unigrà is financially and sustainably solid and will face no problems in existing or future legislation. The environmental labelling law will be executed on time and at a reasonable cost.

*2. Olfood managers are considering buying the printers. Select the machine they should buy from the three options presented in the case.*

*Assume that Unigrà applies a 20% discount rate to account for the time value of money and risk uncertainty. Discuss the benefits and costs of adopting different packaging strategies within the Unigrà group.*

Olfood managers decided to buy a printer to comply with the new law because its operations are less complex than Unigrà. Olfood only have two margarine production lines and there is space along the production line to put a printer. As the management information system of Olfood is different from Unigrà, the Olfood will not be able to make use of the transportation document. Although a printer becomes obsolete after 3-5 years due to technological advancements. It was assumed that the Olfood will repeatedly buy similar printers over time, with similar acquisition costs and expenses.

To identify the best printer Olfood, students should apply the equivalent annual cost (EAC) method. EAC gives the annual cost of owning and maintaining an asset indefinitely in the future. It allows to compare assets with different useful lives but the same risks. The net present value (NPV) alone is not adequate method to apply because the printers have different lives.

To compute the EAC, we start by computing the NPV of each printer considering a 20% discount rate.

*Videojet 1580 std Inkjet coder Printer*

Year	0	1	2	3	4	5
Costs	-9.000,00 €	-4.000,00 €	-4.000,00 €	-4.000,00 €	-4.000,00 €	-4.000,00 €

$$\text{NPV Videojet 1580} = - 4.000 \times \frac{1-(1+20\%)^{-5}}{20\%} - 9.000 = - 20.962,40 \text{ €}$$

*Videojet 1280 Continuous Inkjet Printer*

Year	0	1	2	3	4
Costs	-8.500,00 €	-3.000,00 €	-3.000,00 €	-3.000,00 €	-3.000,00 €

$$\text{NPV Videojet 1280} = -3.000 \times \frac{1-(1+20\%)^{-4}}{20\%} - 8.500 = - 16.266,20 \text{ €}$$

*Videojet 1860 Continuous Inkjet printer enhanced with PROFINET technology*

Year	0	1	2	3
Costs	-7.500,00 €	-4.000,00 €	-4.000,00 €	-4.000,00 €

$$\text{NPV Videojet 1860} = - 4.000 \times \frac{1-(1+20\%)^{-3}}{20\%} - 7.500 = - 8.425,93 \text{ €}$$

Next, we convert the NPV of each option to an ordinary annuity of duration equal to the asset life. More specifically:

$$\text{EAC Videojet 1580} = \frac{-20.962,4 \times 20\%}{1-(1+20\%)^{-5}} = - 7.009,42 \text{ €}$$

$$\text{EAC Videojet 1280} = \frac{-16.266,2 \times 20\%}{1-(1+20\%)^{-4}} = - 6.283,46 \text{ €}$$

$$\text{EAC Videojet 1860} = \frac{-8.425,93 \times 20\%}{1-(1+20\%)^{-3}} = - 4.000,00 \text{ €}$$

As the EAC is lower for Videojet 1860, Olfood should purchase two Videojet 1860 printers and consider hiring to two operators (assuming that there is night shifts).

Unigrà and Olfood will adopt different packaging strategies. Olfood has always been a different reality with independent autonomy. These two organizations share competitive

advantages and aspire to attain strategic goals that Unigrà alone could not achieve. Both realities are connected by a common thread.

There are several benefits of using different packaging strategies withing a group. Because of customer loyalty, different strategies can provide protection against competitive rivalry and may create entry barriers for competitors. It increases profits and eliminates the need for a low-paying role. Differentiation generates higher margins, which can be used to counteract supplier power.

However, implementing a differentiation strategy is costly, and it may take years for a company to develop a strong brand image that distinguishes it. During that time, the company is vulnerable to shifting consumer tastes or preferences.

In such a case, the company may not have enough customer demand to offset its higher costs, resulting in a loss.

3. *Evaluate the alternatives available to Unigrà to comply with the new Italian packaging legislation.*

*Identify and evaluate other possible alternatives not considered by Francesca.*

First option: Buy a new printer.

From question 2, Videojet 1860 STD Inkjet coder printer is the preferred model. As Unigrà own nine margarine production lines, the total expense of this option would be: €  $8.425,93 \times 9 = € 75.833,37$ , plus four worker per printer with a salary of € 1.400,00 per month.

Second option: ask the packaging supplier to include the alphanumeric code.

Unigrà buys 110.000 kg of packaging for margarine lines, annually. The supplier can reproduce packs already with the alphanumeric code printed at a price of € 4, 05 /kg. However, Unigrà currently pays, for HDPE wrapper, € 2, 95 /kg. The total annual cost without alphanumeric code is:  $110.000 \times € 2, 95 = € 324.500$ . The total cost with alphanumeric code is:  $110.000 \times € 4, 05 = € 445.500$ . Unigrà would have an increase in annual cost of €  $445.500 - € 324.500 = € 121.000$ .

Third option: Make use of transportation document.

The adoption of this option entails the following costs:  $800 + 800 \cdot 50\% = \text{€}1,200$ , plus the time it takes operators to update each document with any packaging, primary and tertiary components.

Fourth option: Develop a digital document.

Depending on the quality, developing a custom website can cost between € 1.900 and € 5.500. In contrast, developing a basic App can cost around € 20.000.

	<b>Costs</b>	<b>Benefits</b>	<b>Problems</b>
<b>Option 1:</b> buy a new printer	€ 75.833,37 + employee's salary	High-quality printing. Low start-up costs. Quick turnaround times.	Ink might pass to margarine and melange.
<b>Option 2:</b> ask the packaging supplier to include the alphanumeric code	€ 121.000	No effort required – it receives the wrapper from the supplier.	Expensive.
<b>Option 3:</b> make use of transportation document	€ 1.200	Easiness of reading. Longer transportation documents. Physical paper document.	Long process - products might have several packaging elements.
<b>Option 4:</b> develop a digital document	€ 1.900 to € 20.000	Simplify and secure the information required. Efficiency improvements. Greater transparency. Ecological advantage.	Financial investment.

Table 4 - Summary options

Another option could be applying a sticker with the alphanumeric code directly to the wrapper. Due to the problematic adhesion of the HDPE 2 material, these options might not be feasible. No adhesive glue binds to this type of plastic perfectly.

Furthermore, machinery would be required in each margarine and melanges line to apply the sticker. However, due to a lack of physical space in the manufacturing process, the machine would have to be positioned at the end of the line before palletising, which is forbidden because it is considered unsafe and risky for the division's staff.

- 4. Develop a communication strategy for Unigrà considering the alternative chosen to comply with the new packaging legislation and Unigrà culture.*

Communication strategies are imaginative plans supported by a variety of specialized tactics that help Unigrà achieve its aims. Communication strategies are to increase brand awareness, strengthen for competitive position and accelerate sales. Customer education, consultative selling, and social media marketing are all methods that Unigrà should implement. Digital interaction reinforces personal interaction.

Regular post-sales contact with consumers is another important part of an efficient customer communication plan to ensure that they got their order correctly, are using the products appropriately, and are aware of updates, such as the implementation of new regulation. Unigrà employs an educational plan to guarantee that clients are aware of all newly implemented legislation. The company educates consumers through a newsletter by creating articles for trade publications and staying up with legal changes.

To inform all the customers, Unigrà emails a newsletter including information about the Directive 129/97/EC, informing for example, that each component of packaging has alphanumeric coding included in the transport document they will receive with the goods. Each customer is also assigned to a salesperson who is competent in packaging and its rules. This is a customer satisfaction communication approach that assures customers have a direct phone extension and email address to reach their representative.

Unigrà's key message to its customers is that it is a serious company that complies with all new national and international legislation and works to develop daily in terms of ESG principles.

### 3.7 Notes

This case is based on a real business situation. For confidentiality and data protection reasons, the information regarding financial data is approximated and non-public information has been changed and transformed into a fictitious situation to avoid violation of rights and professional secrecy.

#### 3.7.1 Mathematical Notation

$$NPV = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n} - I$$

Where  $r$  is the period discount rate,  $n$  is the number of years and  $I$  is the initial investment.

NPV conversion in annual terms, treating the net present value obtained as the present value of an ordinary annuity with a duration equal to the life of the asset.

$$NPV = EAC \times \frac{1 - (1+r)^{-n}}{r}$$

$$\text{Equivalent Annual Cost} = \frac{NPV \times r}{1 - (1+r)^{-n}}$$

## 4. CONCLUSION

Evaluating all the cost increases Unigrà might have, the company selects the inclusion of environmental coding in the transport document as the best option. Customers will receive the transport document upon arrival of the ordered goods, including information about each product packaging component.

## 5. APPENDIXES

Exhibit 1- Commission Decision 97/129/EC of 28 January 1997

COMMISSION DECISION of 28 January 1997 establishing the identification system for packaging materials pursuant to European Parliament and Council Directive 94/62/EC on packaging and packaging waste (Text with EEA relevance) (97/129/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES, Having regard to the Treaty establishing the European Community, Having regard to European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (1), and in particular Article 8 (2) thereof, whereas the identification system is to be voluntary at least in a first stage but subject to revision to establish whether to introduce it on a binding basis at a further stage;

Whereas the identification system will be periodically reviewed and, if necessary, revised in accordance with the procedure laid down in Article 21 of Directive 94/62/EC; Whereas the measures provided for in this Decision are in accordance with the opinion of the Committee, established pursuant to Article 21 of Directive 94/62/EC, HAS ADOPTED THIS DECISION:

### Article 1

This Decision, which covers all packaging covered by Directive 94/62/EC aims to establish the numbering and abbreviations on which the identification system is based, indicating the nature of the packaging material(s) used and specifying which materials shall be subject to the identification system.

### Article 2

For the purposes of this Decision:

- The same definitions set out in Article 3 of Directive 94/62/EC shall apply where relevant,
- composite: means packaging made up of different materials, and which cannot be separated by hand, none exceeding a given percent by weight which shall be established

in accordance with the procedure laid down in Article 21 of Directive 94/62/EC. Potential exemptions for some materials may be established by the same procedure.

Article 3

The numbering and abbreviations of the identification system are as laid down in the Annexes.

Their use shall be voluntary for the plastic materials mentioned in Annex I, the paper and fiberboard materials mentioned in Annex II, the metals mentioned in Annex III, the wood materials mentioned in Annex IV, the textile materials mentioned in Annex V, the glass materials mentioned in Annex VI, and the composites mentioned in Annex VII.

A decision whether to introduce on a binding basis the identification system for any material or materials may be adopted in accordance with the procedure laid down in Article 21 of Directive 94/62/EC.

Article 4

This Decision is addressed to the Member States. Done at Brussels, 28 January 1997.

For the Commission Ritt BJERREGAARD

Member of the Commission

Numbering and abbreviation system (1) for plastics

Material	Abbreviations	Numbering
Polyethylene terephthalate	PET	1
High density polyethylene	HDPE	2
Polyvinyl chloride	PVC	3
Low density polyethylene	LDPE	4
Polypropylene	PP	5
Polystyrene	PS	6

Numbering and abbreviation system (1) for paper and fibreboard

Material	Abbreviation	Numbering
Corrugated fibreboard	PAP	20
Non-corrugated fibreboard	PAP	21
Paper	PAP	22



## ENVIRONMENTAL LABELLING FOR PACKAGING

Numbering and abbreviation system for metals

Material	Abbreviation	Numbering
Steel	FE	40
Aluminium	ALU	41

Numbering and abbreviation system <sup>(1)</sup> for wood materials

Material	Abbreviation	Numbering
Wood	FOR	50
Cork	FOR	51

### Exhibit 2- Email from supplier with the packing proposal

“Dear Francesca,

In response to your email of February 1<sup>st</sup>, 2022, we confirm that we can include the alphanumeric code in accordance with the Legislative Decree of September 3, 2020 and Decision 97/129/EC in the packing.

The new packaging will cost € 4, 05 /kg. This price increase is due to the requirement to step print during extrusion and then turn the goods in the cutter to ensure proper packaging direction. Please note that the printing is done in high relief, without the use of ink or colour as it is presented in the figure attached.

I look forward to hearing from you,

Best regards

Giovanni, Plast Company”



Source: <https://www.pressup.it/blog/tecnica-di-stampa-lembossing-240/>

Figure 11 - Figure attached high relief print without ink