Department of Business and Management
Course of Advanced Corporate Finance

Non-Fungible Tokens (Nft), Metaverse and gaming: the new Web 3.0. Business valuation and application to the luxury industry

ROSELLA SANTELLA
Supervisor

ENRICA CATALFAMO ID: 735551
Candidate

PAOLO AGNESE
Co – Supervisor

A.Y 2021/2022

A me stessa e alla mia forza di volontà.

TABLE OF CONTENTS

INTRODUCTION:

In this master's thesis I will conduct a business valuation of LVMH and Kering, the two biggest players for number of sales within the luxury industry, to forecast their share price considering their investments in web 3.0. Web 3.0 is a new market segment which includes Nft (Non fungible tokens), gaming, metaverse and implies the use of the blockchain technology.

Nft are unique pieces of "digital art", verified and secured by the blockchain technology.

Gaming is correlated with the luxury industry since various brands cooperated with videogame companies in the creations of outfit collection for avatars. Examples are those of Balenciaga and Fortnite or Louis Vuitton with League of legends. Both these two cases will be treated in chapter 2. By collaborating with them, they sponsor their capsules collection, sometimes available both in digital format and a physical one on website companies or physical shops. They also are reaching a new customer target that of Z Generation, which is expected to be more than 22% on the total luxury customers by 2025.

"Metaverse" is a virtual world in which people interact between them through avatars (dressed up with Nft outfit or the avatar is represented by the Nft itself).

There are also different platforms like Dress x, that allows the user to receive a picture of him/herself with the chosen outfit, after a virtual fitting by paying a price. This project was created to increase sustainability and reduce waists since after research, a lot of people buy clothes just to publish on social network creative contents to never wear them again.

Another example is the one Gucci which allows the clients to fit items on their app, just by using the mobile camera.

These are just some of the examples that could be done in reporting what with AI is possible to do. Despite luxury brands are reluctant when the change comes, a lot of them decided to invest in these new technologies. Other cases are deepened in chapter 2.

Those topics captured my attention since these new technologies are not structured in a simple way and there is few awareness about them between people.

Even though Nft (Non fungible token) are born in 2014 their exploit is dated to 2021. Their purchase can be done by paying only in crypto values.

Crypto values operations are based on the blockchain technology, which is used to secure transactions, provide speedy or just to authenticate or certify the origin or the production process of items.

Not surprisingly, recently the most famous brands started using the blockchain technology. E.g., Aura blockchain technology (Chapter 2).

My dissertation is composed by three chapters:

In the first chapter is explained how to conduct a financial analysis. The goal in conducting a financial analysis of a firm is that of "assessing the performance in the context of its stated goals and strategy[1]". By analyzing the ratio, it is possible to compare the firm under evaluation firm the peers or with the industry, to check in this way, if some improvements are needed.
Then, I examined the different method to valuate a company. Starting from the difference between asset side and equity side, relative and synthetic valuation to a deep focus on the Dividend Discount Model and The Discounted cash flow method, checking how to compute the weighted cost of capital calculation and the cost of debt. The analysis continued with the flow to equity method and the estimation of the cost of equity; how to compute the beta with its two approaches, how to choose the risk-free rate and the market risk premium. Last, the multiple methodology.

The second chapter explains how blockchain, crypto values and Nft work and their application to metaverse and to the luxury industry.
I reported different examples, focusing more on what maison of the two groups (Kering and Lvmh) under analysis did.

The third chapter is about the financial analysis. I started by reporting the trend of the industry and then I focused on digital and ecommerce. I focused on revenues by ecommerce since there is not enough regulation regarding those topics and it does not exist a specific accounting standard that explains how revenues from web 3.0 must be accounted, so they are for now assimilated to revenues from ecommerce.
The business case under analysis as anticipated, are the one of Kering Group and that of LVMH.
I conducted a past financial analysis based on their income statements and balance sheets, computing various ratios such as EBIT/Revenues, COGS/Revenues, NWC/Revenues, to forecast their values on the time horizon 2022-2025.
The analysis has been followed by the calculation of the long-term growth rate based on the GDP esteems per relevant country; the computation of the equity cost of capital, risk free rate, market risk premium, the beta with a top-down approach using as index the CAC 40 and last, the wacc.
This led to an esteem of the share price for each company, both if the growth rate are the ones expected by the market (best case scenario), and both if the growth rate will not meet the market expectations and will stay at a current level (worst case scenario).

CHAPTER 1: PRINCIPLES OF FINANCIAL ANALYSIS

Financial statement analysis

When analyzing a company, it is necessary to look at their published financial report.

According to the economic and financial legislation, even though there are different rules and exception based on the type of the firm and its dimension, corporations have the obligation of drawing up their financial statement[2].

It consists in four 4 main documents: balance sheet, income statement, cash flow statement and the notes to financial statements, which must be written in compliance with the principles of "fair presentation[3]."

To furnish an accurate and comparable analysis between listed companies also on different markets there is a compilation of principles, better known as IAS/IFRS which indicate the way values and operations must be represented.

It is compulsory to draw up the financial statements according to these rules for all the listed firms in UE regulated markets, for the ones who have public financial instruments, banks, insurance (only if listed and they are not drawing up a consolidated financial statement) and financial institutions[4].

The purpose of this paper is that of keeping informed and updated all the ones who can have interest in the firm's operations and valuation; example could be creditors, investors or stakeholders.

The balance sheet:

The balance sheet is divided into two sections, called assets and liabilities. It is meant by assets all the resources controlled by the entity which come from the results of operations made up in the past by the company itself.

On the contrary, the definition of liability is equal to "all the obligations that the entity must fulfill", most of the time simply by transferring money to the counterparty. Even in this case, it is referred to actions made in the past as result of past events; it is important to highlight this character since it is not possible to consider as liability a future value.

The income statement:

The income statement section is made up by Profit or Loss for that period + Other Comprehensive Income recognized in that period. = Total Comprehensive income for a period.

[1] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019

[2] Annually

[3] Di Lazzaro F., Fabi T., Tezzon M. "Principi contabili internazionali: temi e applicazioni"

[4] D.LGS. 38/2005

"All items of income and expense recognized in a period must be included in profit or loss unless a Standard or an Interpretation requires otherwise[5].

Some IFRSs require or permit that some components can be excluded from profit or loss computation or instead can be included in other comprehensive income section.

There is not a clear and static definition of what Other comprehensive income category includes, but in general, it contains all the effects coming from all the operations regarding asset and liabilities, which do not have correspondences in current expected cash flows.

Example of the components of other Comprehensive income include:

- Revaluation with the fair value method (IAS 16 and IAS 38):
- Fair value gains and losses on Fair value to OCI financial assets (IFRS 9)
- The effective portion of gains and losses on hedging instruments in a cash flow hedge (IFRS 9).
- Gains and losses arising from translating the financial statements of a foreign operation (IAS 21)

Furthermore, when a company must redact the income statement section, it can choose if using just one document (referred to profit and loss and other comprehensive income) or two documents (one shows the profit and loss values and the other represents the OCI section).

When comes the time for an expert to conduct an analysis, he/she strives for reclassify the income statement. The purpose of this operation is that of obtaining more useful information for the "readers"[6] regarding all the revenues and costs that belong to that "financial period" (usually once a year) since in this way positive and negative components are classified by area and homogenized in time and space to make comparisons possible.

There are different methodologies that can be followed up to reach this goal and the most used[7] is called "added value" method, which helps to highlight significative values for example EBIDTA or EBIT.

It is a simple way that can be easily used by analysts who are not working for the company under evaluation since the only information required are those contained in the financial statements.

The other two methodologies are those of "cost of sales" and "contribution margin".

A third document is represented by the cash flow statement: cash flows are classified according to the nature of the operations which they belong to.

To be more precise, they can be:

- investing cash flows (inflow and outflow referred to buy-sell asset operations);

[5] IAS 1

[6] By readers is meant all the people who have interests in the firm's operations and value.

[7] The one that will be used in chapter n.[3]

- financing cash flows (inflow and outflow bounded to the firm's financing choices);
- operating cash flows (cash surplus for company's activity).

Last, there is the "notes to financial statements" section in which are contained all the additional information to better clarify and make easier to understand some specific flows.

Ratio Analysis

The goal in conducting a financial analysis of a firm is that of "assessing the performance in the context of its stated goals and strategy[8]".

Nowadays there is a great number of financial tools that can be used in the computation of index used by readers for better understanding the financial value of the firm or its performance[9]. It is important to choose the ones "applicable" to the business model under evaluation.

They are divided into six categories and the difference between them is found in the objective of the analysis:

- Profitability ratios
- Activity/Efficiency ratios
- Liquidity ratios
- Leverage and Coverage ratios
- Solvency ratios
- Market ratios

Profitability ratios:

Profitability ratios show how well a company is using its asset to produce value and profits.

E.g. Two of these ratios are the gross profit margin and the operating margin.

The first one is given by Gross Profit on Net Sales; the gross profit[10] is given by Revenues – Cost of goods sold (COGS). A firm's gross margin reflects its ability to sell a product for more than the cost of producing it.

The operating margin ratio also known as the operating profit margin is a profitability ratio that measures what percentage of total revenues is made up by operating income.

In other words this ratio demonstrates how much revenues are left over all the variable or operating costs have been paid. Conversely, this ratio shows what proportion of revenues is available to cover

[8] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.

[9] Goel, S. (2015) Financial Ratios. Business Expert Press.

[10] These values are contained in the income statement

non-operating costs like interest expense. It is given by EBIT (Earnings before interest and taxes) on Net sales. Even here these values can be found in the income statement and if the value of EBIT is not given, it can be computed as Revenues less COGS and less Depreciation and amortization.

Activity/efficiency Ratios:

efficiency ratios, also called activity or asset turnover ratios, indicate how efficiently a company is using its assets to generate revenues and cash[11]. Efficiency ratios also help analysts to see how a company handles the operation management. Some commonly used tools in this field are the receivables turnover and the inventory one.

The first one measures how many times in a fixed and given period a firm has the "invoices paid". As evidence of this, its formula is Net Credit Sales / Average Accounts Receivable[12].

The concept is quite the same for the inventory turnover ratio (Cost of goods sold/ Average Inventory), the only difference is that in this case the goal is that of computing how many times the company sells and replaces its stock. Of course, a low result in this analysis would suppose weak sales and excess in inventories[13].

Liquidity ratios:

Furthermore, there are *Liquidity ratios* which shows the ability of the firm to cover its financial obligations, meeting its cash needs and the going concern principle[14].

Examples of them are:

current ratio which shows the amount of the current assent on current liabilities; it is better to have a positive result in terms of value (2:1) since the higher it is, the more the firm can satisfy its obligation; nevertheless, if the value is too high, it could suppose that the company is not handling in a good way its working capital[15].

By the way this ratio is more reliable if compared with the industry average value and it is considered as a good one if it is in line with this or a little bit higher.

The super quick ratio shows if the company has liquidity to pay on an immediate basis. It is given by the cash and bank balances on the current liabilities.

[11] Goel, S. (2015) Financial Ratios. Business Expert Press.
[12] These values can be found in income statement and balance sheet.
[13] It can be also computed as Sales on Inventory avg.
[14] Highest importance to the possibility for the firms of going on in time, just because only across the time there is the possibility for them of showing how much value can be created. The going concern rule imposes that when a company faces up uncertainty or difficult situation, also difficult to solve, must declare it in the financial statement.
[15] Goel, S. (2015) Financial Ratios. Business Expert Press.

Solvency ratios:

At last, there remain ratio categories are the Solvency and the Market ones.

When analyzing the solvency index the focus goes on the capability of the company to repay debt and interests related to it. This is also useful for the reader to understand the way the firm is financed.

The two main ratios are: *debt ratio* and *debt to equity ratio*:

the first one is given by total debt on total asset, measuring how much a company's assets are funded through long term debt as opposed to equity[16].

Meanwhile, the other one (D/E) is equal to long term liabilities on equity.

Considering the various results that can be obtained, as for the current ratio, the optimal result is a (2:1); high value of (D/E) would imply an "hostile" financing policy and on the contrary, lower ones would have as meaning the fact that they are not able to take advantages of the financial leverage.

Finally, the last range of ratio is the one of the market ratios[17].

In conclusion through the results of these computation and above all if compared with other firms' index (basically the ones from the peers), an analyst can draw up performance analysis, useful to check if some improvements are needed over the years and to set some specific goal.

This kind of study also helps the management of the company, creditors, bankers or regulators even in deciding whether to invest capital or not in a firm.

VALUATION METHODS:

A firm value is given by its market capitalization, which is computed by multiplying the price of the company stock by its number of shares outstanding.

The financial value for an analyst (from an investing point of view) is today and the value driver within the analysis is the Cash Flow, since according to the Law of One Price "to value any security, it is necessary to determine the expected cash flows the investor will receive from owning it[18]".

Cash flows can be classified according to the approach used when determine them and the result to the one they lead the user:

Asset side and equity side:

Asset side: this side is also called unlevered side. The result for using a methodology like this one is the computation of the Enterprise value which is a representation of the market value of the total asset of the firm.

[16] Goel, S. (2015) Financial Ratios.Business Expert Press

[17] This topic will be analyzed afterwards in the valuation methods section "multiples method".

[18] Berk, Jonathan B; DeMarzo, Peter M2020, "Corporate Finance" Fifth edition, Global edition.

Equity side: this is also called levered side which, on the contrary leads the analyst to determine the equity value defined as the market value of equity.

The equity value is equal to the difference between the Enterprise Value and the Net Debt; this last could be indicated as Net financial Position whose formula is (long term financial debt + market value of short-term debt – cash).

Analytical and synthetic method:

It is defined as analytical the one that allows to directly analyze the value drivers of the company to estimate year by year the Cash Flows, an example is represented by the Dividend discount model, the Discounted Cash Flow, the Free cash flow from equity. On the contrary, there is the relative valuation, also defined *synthetic valuation*. Following this method, the value of a firm is estimated by looking at values of similar firms expressed by the market. The main example of this category, even if is not the one is the multiples methodology.

Dividend discount model:

This model is used to evaluate firms likely to have payout dividends. An investor can have interest in buying a firm's stocks and detaining them for a specific period (one year or more). By doing so, he/she will expect from this operation two types of cash flows: dividends during the period and their expected price at the end of the time[19].

Since it is difficult to evaluate dividends for the distant future, it is assumed that they grow at a constant rate, which is going to be lower in the "perpetuity time" than the "g rate" used in the short run.

The stock price will be represented by the sum of the dividends, divided by (1+interest rate) raised to the time the allowance is referred to, plus the [20](Dividend(t_{+1})/ (r[21]-$g_{\text{long run}}$)). One scenario to take under consideration is that a firm could find itself already in its steady stage, growing at a stable rate, so the stock price would be equal to its expected dividends divided by the difference between r-g, this assumes the connotation of Gordon model.

The cost of equity can shortly be described as the rate the stockholders will demand for holding the stock based on their assessment of risk[22].

In estimating the growth rate of a firm in a steady stage, it is a duty to deal with its two main issues which are correlated to the most accurate value to use[23].

[19] Damodaran A. "Applied Corporate Finance", Wiley, 2015
[20] Value also known as "terminal".
[21] "r" represents the cost of equity: this topic will be treated later.
[22] Damodaran A. "Applied Corporate Finance", Wiley, 2015
[23] Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley

Firstly, dividends and revenues must increase at the same rate, otherwise there will be dividends higher than earnings or vice versa with a consequence of a payout which strives for zero, not assuming anymore the steady character.

The second instead, refers to what should be the most consistent and correct rate, in order to deliver the terminal value, wondering if "g" can exceed the economic growth rate.

If yes, it is meant that "g" is going to be higher than that and as consequence each year the company would beat the market. This point of analysis is not realistic due to the presence and to the full exploitation of the competitive advantage in the infinitive. So, if "g" > economic growth rate, the computed value will be overestimated.

Answering no, would mean to have a "g" < economic growth rate:

the effect for the firm would imply that it is not going to be able to grow as the economy, reducing its value which will strives for zero in the long run, becoming then negative.

To summarize, the most correct rate that should be considered to compute the terminal value is the inflation rate or the expected consumer price index; if the company is going to grow, that level is going to be maintained (the steps shown this far belong to the so called two stage model).

There are other two sub-models for valuing growth within the dividend discount methodology and they are the H model and the three stage one.

The third is a combination of the two stage and the H one. This last refers to a non-constant growth, higher first and then declined: for example for firms that are expanding themselves rapidly but at the same time are expecting themselves to drop time by time reaching a stable phase. The value of the stock in this specific scenario is given by the sum of its value in the stable moment and its own given by its extraordinary growth (which is assumed to last two years[24]).

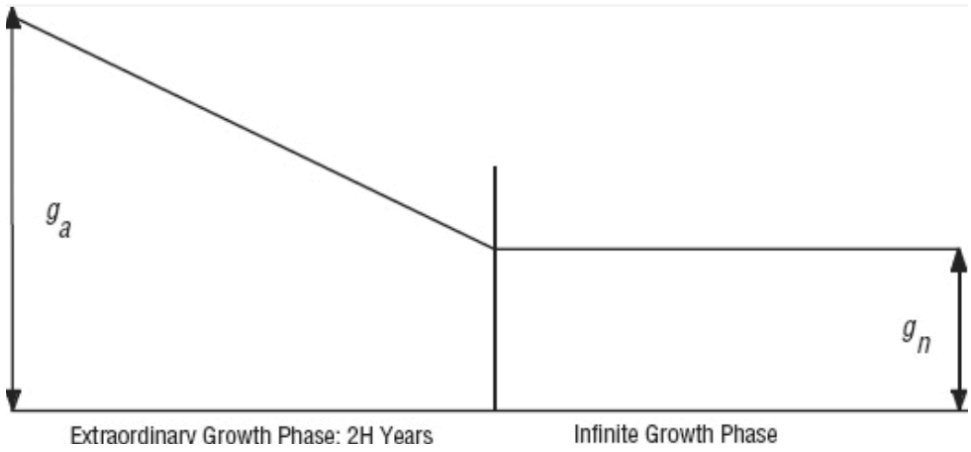

Figure 1: The H model for valuing growth: Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley.

The three-stage model instead counts a middle phase known as "transition", which is characterized by a drop in "g" from the highest moment to the lower, reaching then a stable growth.

[24] Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley.

This methodology is useful for all those companies which in addition to changing growth over time, are expected to change on other dimension as well, for example on payout policies or risk[25].

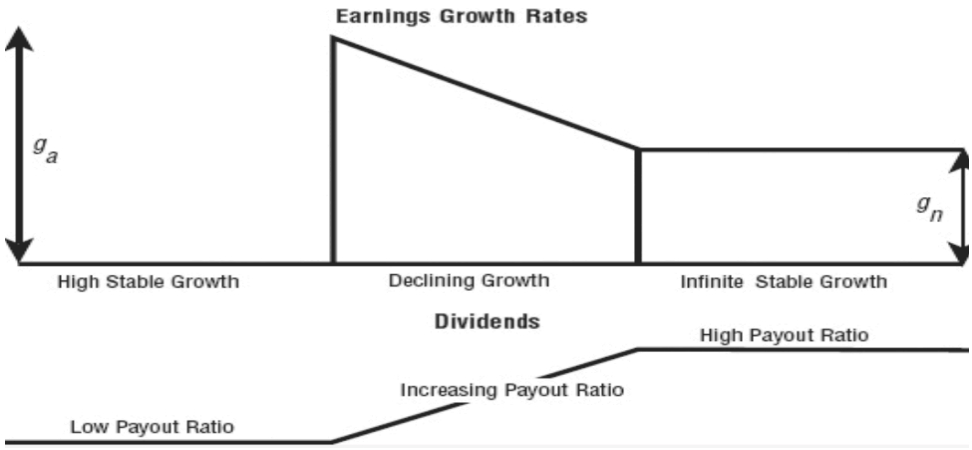

Figure 2: Three stage Dividend discount model

Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley.

Since the formula to compute the dividend level is equal to earnings per share[26] *payout rate (how many earnings are not retained on their total amount), the firm can increase its dividends in three ways[27]:

- increasing net income or earnings.
- increasing its payout rate.
- decreasing its number of shares outstanding.

If the number of shares outstanding is fixed and company invests the retained earnings, then changes in earnings are generated by (ROE multiplied by the new investment).

New investment = earnings*retention[28].

Earnings growth rate= change in earnings/ earnings= retention* roe.

If the payout is constant "g" related to dividends is the same of "g" related to earnings and so g is equal to the retention multiplied by the roe.

If the growth is profitable or not, it will depend on the comparison between ROE and re.

To estimate the average high-growth period, there are three factors that must be taken in consideration the size of the firm within the market

- the existing growth rate and the excess return
- the magnitude and sustainability of competitive advantages

Point number two refers to the correlation between the existing ROI (returns on investments) and the marginal returns.

[25] Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley

[26] Shorter noun "EPS"

[27] Berk, Jonathan B; DeMarzo, Peter M2020, "Corporate Finance" Fifth edition, Global edition.

[28] Retention rate is given by (1- payout)

Unless the company under evaluation is within an industry in a restructuring stage, is far more likely that if the existing excess return of the firm (risk of the market – risk free) is e.g. 15% the new excess return will be on an average level.
The magnitude and sustainability of competitive advantages instead, corresponds to the fact that the competitive advantage itself could be threatened by lower entry barriers.
As conclusion, using the Dividend discount model there is not a direct approach with the financial debt or the debt cost of capital since the starting point is the dividend.
In order to apply the Dividend discount model it is just needed to estimate the payout or the eventual repurchase plan of the company.
Advantages in using this model can be evidenced by its clarity and easiness logic, above all when necessary to assume data for the forecasted dividends (less required suppositions compared to free cash flows).
It must be underlined that there is the possibility of evaluating an entire market or sector using the DDM, in detail: the market price of the stock, dividends and growth rate are given by the average of its own values, obviously referred to the companies within the market/sector. The beta is not taken in consideration since it is equal to 1 by custom.
A limitation of this methodology can be evidenced by the tremendous amount of uncertainty associated with forecasting a firm's dividend growth rate and future dividends. Small changes in the assumed dividend growth rate can lead to large changes in the estimated stock price.

Discounted cash flow method:

This methodology uses the cash flows of a firm under analysis, estimated year by year, discounted at a rate that reflects their riskiness to estimate its enterprise value. "Riskiness and risk" concepts will be faced up later, but at this time they can just be defined in terms of the distribution of actual returns around an expected return[29].
Within this methodology it is a duty to explain what is meant by "the enterprise value of a firm".
It is "*en ensamble*" of effective and actual (value today) flows discounted at a specific rate. As evidence, the value mentioned is given by the present value of all the future cash flow, respecting a fundamental principle of corporate finance: "el valor de los activos es igual al valor presente de sus flujos de caja[30]".

[29] Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley
[30] Armendáriz Lasso, Enrique. "Modelos de Valoración de Empresas Un Análisis Crítico." Ciencia UNEMI revista de la Universidad Estatal de Milagro 5.7 (2015

Given the enterprise value amount, the stock price is equal to this last adjusted by cash and debt also divided by the number of the firm's shares outstanding.

In this model the cash flows are computed as Net income plus depreciation and amortization, less changes in working capital and capex.

Furthermore, the discounted cash flow approach estimates the highest price for an investor when interested in buying[31].

Even in this case it is possible to estimate long term growth rate the company will be subjected to and the steps are the following[32]:

- Define a finite horizon to forecast free cash flows.
- Estimate the terminal value
- Discount free cash flows at the cost of equity; the discounted amount represents the estimated value of free cash flows available to equity[33].

A difference to the dividend discount model is that the cash flows are based on EBIT, not computing interests' expenses and earnings (even though in estimating the share price there are cash and debt components); instead, an advantage in using this model is that it helps in clarifying the information, making a better use of them in investment decisions.

Focus on the Weighted average cost of capital:

The rate used to discount the cash flow is not anymore the equity cost of capital since the stakeholder in this case are not just the equity holders but also the debt one.

The cost of capital that must be taken under consideration is the Wacc, also known as weighted average cost of capital and its equation is: r_e * E/E+D + r_d * D/D+E* (1-tax rate):

"re" stands for equity cost of capital, "rd" as debt cost of capital "E" to equity and "D" to debt.

If the company is not financed by debt, it is obvious that the wacc is equal to re and because debt is generally less risky than equity, wacc value is generally less than re value. This rate could also reflect the average risk of all the firm's investments[34].

Focus on debt cost of capital:

The cost of debt also known as interest rate on debt, is helpful and used when calculating the wacc (as mentioned before) or the present value in asset valuation or the value debt capital[35].

[31] Notes n. 27

[32] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.

[33] Topic explained later

[34] Berk, Jonathan B; DeMarzo, Peter M2020, "Corporate Finance" Fifth edition, Global edition.

[35] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation: IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.

There are different ways in which it could be computed:

One of them is represented by the following formula: Rd= net outstanding debt* interest expense;

Another one consists in looking at the rating associated to the company (methodology used and useful when the one under evaluation is listed); the higher is the probability of default, the higher is the spread linked to the firm: Rd= rf+spread.

A third way that could be used if the company has just issued a bond, is that of considering the yield already applied as rd.

Not traded company case:

From a practice point of view, the last applied yield if the firm has been having finance relationship with banks e.g. with a loan. That yield represents the expatiations of the probability of default. By the way, to reach the most accurate rd is more appropriate to use the formula: Rd= rf+spread.

The spread could be measured taking under analysis the Interest Coverage ratio = Ebit/ Interest expenses; the result given by this calculus will be collocated within a range of a specific rating, which gives to the reader information about the capability of the company to repay its financial expenses. Just because of its scope, it is considered by professor Damodaran as the only relevant parameter when evaluating a company rating.

This ratio is so useful because it indicates how much the operating income can cover the financial expenses. When the ICR is less than one, the EBIT will be lower than the financial expenses, indicating that the operating income is not enough to cover the costs. On the contrary, if the result is a number like "3", "4", "5" would indicate that the firm can repay "3", "4", "5" times the financial costs. To summarize, the higher is ICR, better is the probability of default and lower is the spread.

Free cash flow from equity:

The free cash flow from equity are generated by all the assets invested in the firms, after this one has paid and repaid the financial debt. So, they are generated by the firm, and they are available to the shareholders after adjusting for interest payments, debt issuance and debt repayments.

Looking at the definition of this kind of Cash Flow as "*potential dividends* generated by all the assets invested in the firms[36]" is good to highlight what is considered in their calculation:

Net income, Depreciation, Capex (Capital Expenditures) and delta Working Capital[37].

As evidence, the starting point is not the NOPAT as in the Discounted Cash Flow, but the EBIT. Ebit less interest expense (calculated as rd*outstanding debt), then less taxes on that result, produce the net income. This one, is the starting line that must be adjusted with (plus depreciation, less capex,

36 Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley.

37 Account receivable - Account payables + Inventories

less (delta nwc), plus net borrowing (total amount of financial debt of that year- total amount of financial debt of the year before). The fact of having financial debt creates cash due the presence of the interest payments which make the company pay a lower amount of taxes.

As well as happens in the DDM, even here the growth rate can be estimated as the product of retention and return on equity, so what is not given as dividends is reinvested within the company. It is necessary to focus on these two factors when discussing this kind of model, since it is more appropriated to use the equity reinvestment rate *in lieu of* the retention rate, and if expressed in function of net income, the free cash flow to equity stands for Net income*(1-equity reinvestment rate). Instead, focusing on the roe, it is important to specify that it must be correlated to non-cash items[38]. Thus, noncash ROE is equal to: Net income- after tax income from cash and marketable securities on the difference between the book value of equity and cash and marketable securities.

However, independently by the followed approach, at the end, the amount of cash flows is the same.

The value of the stock is computed the same way of the DDM one, just with two differences represented by the FCFE as substitutes of dividends and by the "nonnegative" character, that if dividends can never be less than zero, cash flows can. (e.g. cash flows in the early years of a project with high investment requirements).

In this context are still valid the different growth models illustrated within the dividend discount model analysis, since even here there is the possibility of making assumption of a steady stage growth model (similar to the Gordon hypothesis) and of a three phases models: high growth, transition and low growth (The E Model).

This is an equity side approach of evaluating the value of a firm; the equity cost is represented by the equity cost of capital, estimated with the CAPM.

Following the same logic of the Discounted Cash Flow model, but with different perspective, the timeline is divided (since it is referred to the infinitive) in two parts: the second one starts when the company enters in the steady stage.

Using the flow to equity method, the advantage is that it is possible to directly look at the contribution of the firm to shareholder. There is, instead, a crucial drawback that is linked with the estimation of the forecasted financial debt outstanding, since sometimes, values as net borrowing is difficult to estimate.

Estimating cost of capital

The equity cost of capital represents the shareholder's required rate of return on an equity investment.

[38] FCFE model's character "Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley".

As a general framework of the CAPM (Capital asset pricing model) the *cost of equity estimation is the sum between the risk-free rate and the Equity (or Market) Risk Premium which is a linear function of the security beta to the risk free rate, in fact* CAPM equation for the Cost of Capital is given by

$$r_i = r_f + b_i * (E[R_{Mkt}] - r_f)$$ Risk premium for security i

Starting from the equity cost of capital, the CAPM assumptions are the following:

- Investors are risk adverse and rational (efficient portfolio)
- Identical time horizon
- Identical expectations on returns
- No transaction costs
- No investment-related taxes
- Cost of lending money= cost of borrowing money
- The market has a perfect liquidity

In corporate finance, there are risks when exist variances in the actual return around the expected return. For example, the expected return for a shareholder should be of 10% and the actual one is 8%; thus, for an investment to be risk free in this environment, the actual returns should always be equal to the expected ones. It should be the return of a security which has no default risk, in the sense that in finance, there is risk when the expected return is different from the required one.

Capital Asset Pricing Model (CAPM) focuses on the systematic risk expressed by the beta which measures the volatility of a security (or of a portfolio) compared against the market as a whole.

"The market portfolio contains more of the largest stocks and less of the smallest stocks. Specifically, the investment in each security is proportional to its market capitalization, which is the total market value of its outstanding shares[39]". According to this definition and to what A. Damodaran affirms in its paper on "estimating risk parameters", the risk under evaluation must be measured in terms of "added risk" by the investment to the portfolio. This, on its turn, leads to the division of the risk itself in two primary parts[40]:

- Specific: relates only to that investment or to a few investments like it
- Systematic: contains risk that affects a large subset or all investments. It is the latter risk that is not diversifiable and should be rewarded.

Focus on risk free rate[41]:

There are two major issues that must be considered when estimating risk free rates.

[39] Berk, Jonathan B; DeMarzo, Peter M2020, "Corporate Finance" Fifth edition, Global edition.
[40] Damodaran A. "Estimating Risk Parameters"
[41] Damodaran A. "Estimating Risk Parameters"

The first relates to the definition of a risk-free security and the characteristics a security needs to possess. The second applies when there are no risk free assets and examines how to estimate a risk free rate under these conditions.

What makes an asset risk free? And what to do when is it impossible to find such an asset?

Investors who buy assets have a return that they expect to make over the holding period (horizon).

The conditions under the ones the actual returns on an investment will be equal to the expected returns are the following:

The only securities that have a chance of being risk free are government securities, not because governments are better run than corporations, but because they control the printing of currency and it is difficult for a wellness government to have bankruptcy. At least in nominal terms, they should be able to fulfil their promises (no default risk).

Even this assumption does not always hold on, especially when governments refuse to honor claims made by previous regimes and when they borrow in other currencies than their own.

For an investment to have an actual return equal to its expected return there can be no reinvestment risk.

Even a 5-year treasury bond is not risk free since the coupons on the bond will be reinvested at rates that cannot be predicted today. The risk-free rate for a five-year time horizon has to be the expected return on a default-free (government) five-year zero-coupon bond.

So an investment to be considered as risk free must respect this condition: actual return= expected return; this is a condition non reliable in in real world due to the impossibility in deleting the systematic risk.

The risk-free rate is the rate of return available on a security that the market considers as:

- Free of default risk
- Free of reinvestment risk
- Analysts use the yield of a long-term government bond rate in the country where the firm is domiciled as a proxy of the risk-free rate, to capture country risk in the risk-free rate
- Nominal vs real risk free
- Currency
- Time horizon: analysts select the maturity that best suits the purpose of the valuation (5, 10, or 30 years). Choose a timeline which fits the external worldwide conditions.

From a theorical point of view the best fit approximation is to consider a 10Y Government bond, but in practice it is usually appropriate to match up the duration of the risk-free asset to the duration of the cash flows being analyzed.

In corporate finance and valuation this will lead towards long term government bond rates as risk free rates. It is also important that the risk-free rates are consistent with the cash flows being discounted. In particular, the currency in which the risk-free rate is denominated and whether it is a real or nominal risk-free rate should be determined by the currency in which the cash flows are estimated and whether the estimation is done in real or nominal terms.

Market with no default risk unless on local borrowing:

Under conditions of high and unstable inflation, valuation is often done in real terms. This means that cash flows are estimated using real growth rates and to get a real expected rate of return is necessary to start with a real risk-free rate. Government bills and bonds are not risk free in real terms since inflation can be volatile. Usually the formula is: i real= inom. – infl.

Getting inflation values from the inflation-index treasury securities which provide real return.

The only problem is that real valuation is rarely done in US which inflation is considered stable and with a low expectation.

So, there are two scenarios:

- Capital free flow: USA risk free rate can be applied to any market.
- Capital frictions and constraints: long term rate is equal to the expected real g.

Market with default risk in emerging countries:

There are two main possibilities:

- To look at the largest and safest firms in that market and use the rate that they pay on their long-term borrowings in the local currency as a base. Given that these firms despite their size and stability will still have default risk, it is more appropriate to use a rate that is marginally lower than the corporate borrowing rate.
- If there are long term dollar, denominated "forward contracts" on the currency, it is possible to use the interest rate parity and the dollar borrowing rate to arrive at an estimation of the local borrowing rate.

Focus on emerging countries

Nowadays 10Y Brazilian $R bond is yielding 12,31%

There are 3 approaches which could be used in analyzing this specific scenario:

1. Estimate Default Spread from $ or € denominated bonds:

Brazilian $ denominated bond rate to the US treasury bond rate=default spread for Brazil's sovereign $ debt Risk free rate in $R=12,310% - 2,785%= 9,525%.

Brazil vs United States

Residual Maturity	Bonds Yield: Brazil	Bonds Yield: United States	Current Spread
1 year	13.255%	2.061%	1119.4 bp
2 years	12.337%	2.585%	975.2 bp
3 years	12.290%	2.733%	955.7 bp
5 years	12.433%	2.804%	962.9 bp
10 years	12.310%	2.785%	952.5 bp

Figure 3: Bonds – High yield & Emerging market. Source: World governments bond.

2.Using the Credit Default Swap (CDS):

CDS are expressed in terms of basis point: the value, in % is represented by 3,29% and so:

Risk free rate in $R=12,31%-3,29%= 9,02%

Figure 4: Credit default swap method. Source: Investing.com

3. Estimate a spread based upon the sovereign rating:

Using the rating-based spread, Brazil results to have a Baa3 from Moody's, so Risk free rate in $R=12,31%-2,20%= 10,11%

Moody's/ S&P	Default Spread (%)
Aaa/AAA	0.00%
Aa1/AA+	0.40%
Aa2/AA	0.50%
Aa3/AA-	0.60%
A1/A+	0.70%
A2/A	0.85%
A3/A-	1.20%
Baa1/BBB+	1.60%
Baa2/BBB	1.90%
Baa3/BBB-	2.20%
Ba1/BB+	2.50%
Ba2/BB	3.00%
Ba3/BB-	3.60%
B1/B+	4.50%
B2/B	5.50%
B3/B-	6.50%
Caa/CCC+	7.50%
Caa2/CCC	9.00%
Caa3/CCC-	10.00%

Figure 5: Rating based spread by Moody's/ S&P

Focus on equity risk premium (ERP):

The ERP (Equity *Risk Premium*) is the premium required by the investors as "average risk investment[42]". It exists since that it reflects how much "risk" it is felt within the market and by extension the given price (it is paid less an investment felt as riskier). Another way to explain what ERP stands for is to say that represents the excess return of the market portfolio over the risk-free rate, because the assumption is that it must relay to the premium amount given to an investor.; in formula: rm- rf.

There are different models to compute the excess return and each of them can be used to obtain a different output, in the sense that, established the required result, there is a range of choices:

[42] Damodaran A. "Estimating Risk Parameters"

	Model	*Equity Risk Premium*
	Expected Return = Riskfree Rate + $\text{Beta}_{\text{Asset}}$ (Equity Risk Premium)	Risk Premium for investing in the market portfolio, which includes all risky assets, relative to the riskless rate.
Arbitrage pricing model (APM)	$\text{Expected Return} = \text{Riskfree Rate} + \sum_{j=1}^{j=k} \beta_j(\text{Risk Premium}_j)$	Risk Premiums for individual (unspecified) market risk factors.
Multi-Factor Model	$\text{Expected Return} = \text{Riskfree Rate} + \sum_{j=1}^{j=k} \beta_j(\text{Risk Premium}_j)$	Risk Premiums for individual (specified) market risk factors
Proxy Models	Expected Return = a + b (Proxy 1) + c (Proxy 2) (where the proxies are firm characteristics such as market capitalization, price to book ratios or return momentum)	No explicit risk premium computation, but coefficients on proxies reflect risk preferences.

Figure 6: Equity Risk Premiums in Risk and Return Models. Source: Damodaran on valuation.

It could not be under valuated the relationship between the excess return and factors like inflation: regarding this, it must be said that researches are giving mixed opinions on how it affects the rates, but the most accurate hypothesis nowadays is the one that affirms that "it is not so much the level of inflation that determines equity risk premiums but uncertainty about that level, and that some of the inflation uncertainty premium may be captured in the risk free rate, rather than in the equity risk premiums[43]".

How to determine Equity risk premium:

There are three approaches to estimate the Equity risk premium and they are respectively:

- Survey
- Historical prices
- Implied equity risk premium

The survey and the implied equity risk premium are forward looking, that is that they rely on data that can be considered as the expected Market Risk Premium i.e., the expected market return over the risk-free rate.

The survey approach, e.g., as Professor Fernandez does every year, consists in sending a survey to investors, managers or just to people who are engaged with corporate finance like academies, asking them for expectations to what will be the Market Risk Premium for a specific country.

[43] Damodaran A. "Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2020 Edition Updated: March 2020"

Historical prices:

This methodology takes in consideration historical prices, replicating the top-down beta computation[44]. To estimate the Market Risk Premium are required a lot of information such as errors or standard deviations. There is however an issue, linked to the number of years to go back within the analysis.

The answer is that a high number of observations make decrease the standard error and, as A. Damodaran studied, this solves a tradeoff situation. The cost and the risk of looking so much backward are that of losing the reliability of the data since the current macroeconomic and financial systems are different from the ones had ten/twenty or twenty-five years ago.

This problem can be solved by enlarging the time, so more information linked to a lower range of time.

Implied equity risk premium:

This methodology requires the engagement of the dividend discount model. Damodaran assumes that the long-term growth rate is equal to the risk free one, along with the cost of equity equal to the market risk rate; all this has as conclusion the fact that the equity risk premium is computed as the difference between re-rf.

To choose the more accurate market risk premium it is necessary to consider variables that can impact the actual analysis. So for example, to compute equity cost of capital of Italy, by choosing a Market Risk Premium of a mature market i.e. the one of USA or Germany, the chosen value must not be affected by the country risk premium[45], that is to say, the value which is used to compute the total equity risk premium.

Country risk premium= Total equity risk premium - MRP (mature market).

The country risk premium or CRP is the performance of excess return required by the investors concerned and related to the higher risk associated within their investment in a foreign market (the risk would have been lower if they had invested in their local market). Foreign investments opportunities are joint with higher risks due to geopolitical and macro-economic factors, as A. Damodaran affirms.

The market risk premium is usually higher for that kind of investments referred to growing and emerging countries.

To compute it, there are two main methods:

[44] More on this topic later

[45] This last variable will be considered in the choice of the risk-free rate.

- Sovereign debt: spread comparison even though sometimes it could not be reliable since it is not correlated to other investor's risk (already faced up in that country).
- Equity risk: return volatility analysis between a specific country and a developed one. Equally, even here it must be considered that if a country has a low volatility index due to the market illiquidity and a few numbers of public firms, the value could be underestimated i.e., frontier markets.

If within the analysis the total equity risk premium is represented by the value of the MRP, the risk-free rate must be 0% since it has been already considered in the Total equity risk premium. These two options are good enough and are equivalent (both are right).
The first is the most used by professional, while the second one should be used if a prudential analysis is required, because the second computation has an equity cost of capital higher than the first.
A higher equity cost of capital makes, for example, decrease the stock price (there is a negative relationship between them).

Focus on Beta:
Beta computes the systematic risk which is the sensitivity of excessing total returns on any individual security (or portfolio of securities) to the total market excess returns, usually expressed by a benchmark index (typically, it is the domestic market index of the firm under evaluation).
To be more precise, it measures the expected variation of a title's return considered each variation (1 point %) of the market return; expected return of a stock moves linearly with its own beta.
Stocks with a beta higher than 1 have as result great market movements (riskier than the market). Generally, it is assumed that firms with strict and aggressive policies or the ones with high debt level have the highest beta.
On the other hand, stocks with beta between 0 and 1 go in the same direction of the market (activity less risky than the market).
i.e., a stock with a beta equal to 1,5 refers to the possibility of price variation equal to 1,5 times the market; to be more precise the market *vibe* would expect increase/decrease delta of 1,5 times the market premium; this is the reason why the beta value is multiplied by the excess return (rf-rm), when computing the equity cost of capital.
It is important to highlight that the beta measures the covariation (how the return of two titles *moves* together) not the volatility of the stock prices: to low values of beta could correspond high levels of volatility.
Beta (i, mkt) = Cov (Ri;Rmkt) = SD (Ri)*Corr (Ri; Rmkt) Var (rmkt) SD (Rmkt).

The value of the beta could be computed following two different approaches: one is the top down and the other is the bottom up one.

The beta (Top-down approach):

The beta top-down approach supposes the past principle, that is what happened in the past will be reflected in the future; as evidence what already happened, will happen again and the return of the security will be equal to (price t+1)/ (price t -1)[46].

From a visual and graphical point of view, this is represented by the slope function of these values computed as (first society, then market) = beta.

Once found its value, it must be adjusted considering that in real word all the beta strives for one.

The beta is estimated by comparing the excess return on an individual security and the excess return on the market index.

The choice of market index affects Beta estimation and about it, there are three kind of market index:

- Equity: hypothetical portfolio of investment holdings that represents a segment of the financial market[47].
- Fixed: it counts for steady payments based on the performance of the index they are referred to. Benchmarks are the S&P 500, the Nasdaq, the Russell 2000 or the Hang Seng[48].
- Real asset: real assets as investments in liquid real estate, infrastructure, natural resources, and inflation-linked bonds[49]

Market index does not contain all the securities, for example S&P 500 does not contain all the securities in the USA but just the first 500 for market capitalization.

A second issue linked to the market index is that it could be market weighted.

First, it is meant by a market weighted index one which respects these conditions:

Market capitalization= (Number of Shares of *i* Outstanding) * (Price of *i* per Share).

The portfolio weights are therefore equal to:

Market value of the security on the total market value of all the securities which belong to this portfolio. Comparing the Wilshire 500 with the S&P 500, even if S&P has a lower number of securities within, it is market weighted, so this is more reliable.

In the choice of a market index, it is better to analyze an index with a lower number of securities, but market weighted.

---

[46] Referred to closing prices.

[47] https://www.investopedia.com/terms/m/marketindex.asp#:~:text=A%20market%20index%20is%20a,weighting%2C%20and%20fundamental%2Dweighting.

[48] https://www.forbes.com/advisor/retirement/fixed-index

[49] https://www.spglobal.com/spdji/en/index-family/multi-asset/real-assets/#overview

Other issues are linked to Time period and Internal Return:
as in the estimation of the historical prices for the estimation of the equity risk premium, even in this case it is important to establish how many years to look backward for having a good esteem of the beta and how many observations must be taken under evaluation.
An issue could arise considering that even if looking back to a high number of years, the esteem is not going to be reliable if there have been changes in the company business model or competitive arena.
The best solution according to Damodaran is that of choosing weekly data over the last 2 years or monthly data over the last 5 years.
The last issue mentioned before is linked to the internal return:
for a security which is not traded for 7/10 days, it is impossible to look at daily or weekly prices since the opening price will be equal to the closing one; this would involve an internal return which strives for 0.
The solution is that of looking at more reliable data: if weekly ones are not available, then looks for monthly and so on.
As a result of these relevant factors, A. Damodaran in its paper called "Estimating risk parameters" affirms that "different services often end up with different estimates of beta for the same firm". To avoid so, Bloomberg estimates the so called "adjusted beta" by doing the following:
Beta Adj= 2/3*B+1/3*bM
These fixed weights are a strong assumption representing a limitation of the mode. By applying the adjusted formula to the beta, the result will imply that for all the Beta <1, the new one will be greater than the beta raw; on the contrary for all those values greater than 1.

The Beta (Bottom-up approach)
By using this approach, the beta is estimated as weighted average of beta unlevered referred to the different firm's business unit and then adjusted:
"[50]The beta of a firm might be estimated from a regression, but it is determined by fundamental decisions that a firm takes on where to invest (the more sensitive to market conditions the more the beta will be higher) , cost structure and how much debt it takes on it."
How also affirms Binder, J. J. in its paper *"Beta, Firm Size, and Concentration. Economic Inquiry",* Beta is negatively correlated with the product market concentration in competitive markets:

[50] Damodaran A. "Estimating Risk Parameters"

larger firms in a competitive market are more efficient than private one, even though their uncertainty level regarding market value is higher.
This leads in associating to them low values of beta since the first effect dominates the second.
Same reasoning for average costs, firms with low-cost structure have low beta and vice versa.
Furthermore, other things remaining equal, if the financial leverage of a company grows, its beta follows it.
Considering a risk correlated to stockholders with a beta of the debt equal to zero,
$Beta_{Levered} = Beta_{unlevered} (1 + (1-t) (D/E))$.

Bottom-up approach – private company:
When a firm is not listed and there is not available information regarding its return, the used methodology to compute the beta is the one of an estimation of its peers:
It is necessary to build a panel of companies that can be considered similar to the one under evaluation. The mainly theoretical requirements to be considered as said, are:

- Risk level
- Growth rate
- Size
- Competitive arena

By slope function between peers and market index, the beta is computed as follows:
$B_{equity}/(1+(1-t) *(D/E)$: this is also called Hamada Formula.
The beta levered of comparable is affected by the presence of D/E, while the B_{asset} just reflects the operative risk linked to that specific company.
Once we have B_{asset} computed as shown before, comes the time to estimate the average B_{asset} which gave as result the B_{asset} of the Industry.
To have the B_{equity} it is a duty to re-leverage the B_{asset} (Industry) using a specific D/E (that of the company under evaluation).
$B_{equity} = B_{asset}*(1+(1-a) *(D/E))$.

Multiples methods

Another kind of methodology opposed to the analytical mentioned before, is *the relative valuation*, also defined *synthetic valuation*. Following this method, the value of a firm is estimated by looking at other values (of similar firms to the one under analysis) expressed by the market.
In other words, as Damodaran says “the objective is to value an asset based on how similar assets are currently priced by the market.”

A multiple is a ratio between the Enterprise Value or Equity Value of the company within a panel of comparable divided by a financial measure considered for an amount times firm's financial measure. The multiples methodology directly takes the expected growth of the company and its risk through values expressed by the market.

Multiples exist because it is necessary to convert the market value of equity or of the firm into values. Furthermore, if the analysis is well-conducted and structured, the results provided by the analytical and relative valuation e.g., Discounted cash flows and Multiples will coincide.

There are a multitude of ratio used to measure the performance of a firm at a market level.

The most used index is the price on earnings, which is the ratio of the value of equity to the firm's earnings, either on a total basis or on a per-share basis[51].

According to this concept the share price must be in line with the earnings of the company, in fact P/E = (share price/earnings).

It is a useful index to take under evaluation since can make the reader understand whether a stock is over or under value based; a further consideration is evidenced by the fact that within an industry firms strive for having the same P/E.

Yet, there is an exception represented by the different leverage that companies can have; this "problem" is solved by substituting the earnings with EBITDA (Earnings before interests, tax, depreciation and amortization) or EBIT (Earnings before interests and tax)

When the analytical valuation method is used, the valuation is more accurate because there is a direct esteem of the value driver of the firm; to be more specific, using this methodology there is a direct incorporation of the value drivers of the firm because of the look at prices expressed within the market.

In formula, the value of the firm is expressed by the following relationship= M[52]* firm's financial measure. Since identical firms do not exist in real life, the value of the firm is equal to the average multiples[53] e.g., they differ in the distribution of products or in the risk-free rate value.

Ideally, the firm considered as "peer" should come from the same country of the one under evaluation to not reflect potential macro-economic differences, but this is not always possible due to the existence of small equity markets; in this case, the last and only thing to do is that of considering the differences between countries, for example differences in risk free rates.

To decide whether a company can be considered as said, from a theoretical point of view it is necessary to look at simply requirements:

[51] Berk, Jonathan B; DeMarzo, Peter M2020, "Corporate Finance" Fifth edition, Global edition.
[52] (multiple)
[53] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.

- Industry.
- Subindustry.
- Competitive conditions.
- Size.
- Similarity in growth rates and risk level.

A critical issue is the choice of multiplicative factor since voices must be homogeneous to the accounting standard.

Summarizing, to apply the multiple methodology is necessary to do:

- Comparable identification
- Calculation and selection of multiples: choose which measure of performance or value must be used as the "basis".
- Application of multiples to the firm
- Possible application of discount premium: sometimes due to the presence of different market capitalization or different acquisition process it is possible to apply discount premium given by the market.

As reminder, the multiples could belong whether to the asset or equity side:

Asset side multiples:

In the asset or unlevered side prospective, the equity value is esteemed in a direct way, evaluating the enterprise value and then subtracting the net financial position: in a detailed formula:

Enterprise value= Market value of equity + Market value of debt – Cash holdings.

By using this methodology, the numerator is represented by the enterprise value, while at the denominator is common to find accounting values as "sales or ebitda or ebit and so on".

- EV/Sales: enterprise value on sale is and index for the one returns and economic policies do not have a huge influence and it strives for not changing a lot when time passes.
  It is bounded with the firm's growth (at the denominator there are sales), for this reason it is used a lot when analyzing startups.
- EV/Ebitda: this multiple "[54]tells investors how many times EBITDA they have to pay, were they have to acquire the entire business". Usually used when analyzing stable stage growth and mature firms; in formula: Enterprise value/Ebitda.
- EV/Ebit: it is used to compare the stock price of the firm under evaluation within the other one from the "peers".

54 https://corporatefinanceinstitute.com/

High value implies an overvaluation, conversely a low one an undervaluation.

"[55]Ultimately, the lower the EV/EBIT is, the more financially stable and secure a company is considered to be".

Equity side multiples

- Price/Earnings: the formula to compute this multiple is expressed as follows: share price/earnings per share.

  It expresses the relationship between the price of the stock and the earnings of the firm under analysis. To be more precise, it represents the amount of money the investor must pay to receive a portion of earnings.

  The values given by this index are consistent when compared with the others belonging to the industry.

  A high P/E ratio gives the reader two kind of information:

  high level of risk and growth and overvaluation of the firm (usually in this case it is better to learn more about it).

  A low P/E implies the existence of value stocks; they are stocks traded at a lower price than its real value, leading the investors to buy before the market corrects the price; in this way they generate a profit on the delta stock price.

  A limitation is expressed by the fact that a price of a stock is always moving, while earnings are fixed; this problem could be solved looking at the delta earnings quarterly.
- Price Earnings to Growth: it is a more accurate index than the P/E. The determinants are the same excepted for the denominator made up by earnings growth rate. Lower g rate firms will have high PEG ratios and vice versa.
- Price/Book Value: this index shows the comparison between the firm's market value and its book value. Clearly, to consider the book value it is necessary to calculate the remaining part from its depreciation so: book value= purchase price - accumulated depreciation. Another way to compute the book value is to subtract from the total asset value the one of the intangibles and liabilities.

  the value expressed by this ratio is used by investors to reach out which is a solid or valid investment. Usually, when its value is less than 1, it is considered as "solid"[56].

55 Check note 52.
56 https://www.investopedia.com/

By the way, using "1" as parameter is quite indicative since it is difficult to establish range of values given that they can vary from industry to industry or under determined conditions, for example public companies.

Advantages and drawbacks of Multiples methodology:

Multiples are easy to compute because they are a shortcut of the value of the company and after having analyzed the panel of comparable, the last thing to do is to apply the formula mentioned before. Also, multiples valuation does not require detailed factors such as cost of capital, profitability or growth data[57].

A possible issue of using this method is referred to the fact that market prices are real, but not always: e.g., speculative bubbles: all the value of the firms were overpriced; macroeconomic condition ex. Covid / Russia war.

Economic Value-Added method

The develop of economic value added (EVA) concept is referred to Stern Stewart & Co and defined as a new model for maximizing the value created, which can also be used to provide incentives at all levels of the firm.

Basically, it stands for the firm's performance indicator which formula is given by the difference of the Net operating income and the cost of capital (WACC) related to the specific income under evaluation.

It is useful in understanding whether an investment produces a profit level that justifies the capital outlay.

If the result within the analysis has as value of EVA > 0 the firm's is creating value generating a return higher than the cost of capital.

It is preferred to use this index when analyzing asset rich, stable and mature companies.

Market value added method[58]

Like the EVA method there is another one called "market value added"; they differ since the MVA methodology is a "wealth measure". It computes how much value has been created by the company since its "birth". The formula as fact is Market value of shares - book value to shareholders' equity.

Investors prefers firms with high results in terms of MVA since it implies wellness for the company itself.

[57] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.

[58] https://corporatefinanceinstitute.com/

FORECASTING

By forecasting is meant to "preview" what the future results of a company will be according to different variables[59]. The forecasted data are usually applied by analysts to check the impacts that an applied and specific strategy or trends will have in the future in terms of cash flows or market values. To better understand assumptions taken into consideration, to do not forecast unrealistic facts and to easily check each step within the analysis, a comprehensive representation of income statement, balance sheet and cash flows statement is necessary (condensed financial statement[60]).

It could be said that everything within the analysis turns around on some key drivers, which are obviously different from industry to industry; nevertheless, they are qite the same between them unless when analyzing a financial firm.

Two drivers are the revenues forecast and the profit margin, with an asset turnover with a delta equal to zero, variations in PPE (Property plant and equipment), working in capital, growth rate, investment and financing area.

The values that must be included in the income statement section are: Revenues, Nopat (Net operating profit after tax), Nipat (Net investment profit after tax), Interest expenses after tax and profit/loss.

Looking at the balance sheet the necessary values are Net operating working capital, Net non-current operating asset, Investment asset, debt and equity. The information about the first two elements and the way the company is financed are reported at the end of the forecasted period.

To make projections for the future firm's data, one of the approaches is that of looking at the past operations (the same period of the year n-1.)

If the information is gathered with others from the market or experts' analysis (analysts have at their disposal data extrapolated from previous report, competitor policies and so on) it is reliable to have good future data's esteem.

[59] Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.

[60] Summarize in a unique documents the company's income statement, balance sheet and cash flow statement.

CHAPTER 2°: BLOCKCHAIN, NFT AND METAVERSE

How crypto values and blockchain works:

The blockchain system is born in 2008 (thanks to Satoshi Nakamoto) with Bitcoin, the first Blockchain ever created. Thanks to this technology, the registration transaction process and the asset[61] traceability, are clear, easy and the risk of the so called "double spending" is lower.

When someone sends a word file to a friend, he/she loses its right on the document since the file could be sent a lot of times and also modified.

Here comes the utility of the blockchain technology: if the "sent file" was previously created with the blockchain technology, once the one who received the document sends it to another subject, it loses the right on that paper (unicity of the asset character).

Blockchain collects information together in groups, also known as blocks which hold sets of information. Blocks have certain storage capacities and when filled, are chained into the previously filled block, forming a chain of data known as the "blockchain."

Before a block is appended to the chain, the so-called miners check whether the information, i.e., the stored data is correct.

Blockchain's speedy and security are strongly correlated with its validation protocols and they could be many:

- Proof of Work (PoW): this protocol is the one used by Bitcoin which implies that the users[62], to add a "new block to the chain", must solve an encrypted puzzle (so called mining process). However, even though this methodology is the most famous and adopted, it presents some drawbacks, such as the huge amount of electricity needed to "mine" (strongly connected with high costs).

  Furthermore, the bigger the blockchain becomes the more the server used to "mine" needs higher capacity; increase, as a consequence of this, the transaction's time.

  Examples of other crypto that use this system are "MANA (Decentraland)" and "Sandbox (SAND).
- Proof of Stake (PoS): Whitin this system the users must prove that they own a specific number of asset or of crypto values; this process is called "forging".

[61] By assets is meant houses, cars, money, patents, copyright and so on.
[62] Meant by this noun who verify transactions and that are remunerated with a commission.

Depending on the number of crypto owned by the user, there will be the possibility of being chosen as the next "user" that will validate the future block. Examples of crypto that use this system is "ADA (Cardano, project born to manage smart contract[63])".

Because of the decentralized nature of Bitcoin's blockchain, all transactions can be transparently viewed, so anyone can see transactions occurring live.

Blockchains could be public, private, authorized (both public or private may need authorizations when have to operate) or joint to a consortium:

- Public blockchain: everyone could join this service with the drawback that the transaction's privacy and security could be reduced since processes are registered and contained in *all* the "blocks" of the chain (relevant character if a company wants to adapt this technology to its business model). Example of this kind of blockchain is the one of Bitcoin.
- Private blockchain: it differs from the public because in this context only who has an authorization can operate and use this technology (processes are registered and contained in *some* "blocks" of the chain).
- Consortium blockchain: it is defined as it follows when the responsibility management of the chain is referred to more than one firm or organization.
  In this case whoever operates within this system needs an authorization and has a joint responsibility with all the other users.

One of the most important peculiarities of this system is its efficiency in guaranteeing safety and fast transactions.
The blockchain database works 24/24 every day with an accounting time of a few hours, differently from banks which are open usually from Monday to Friday and an operation takes days to be accounted.
Characteristics of those kinds of values are represented by low transaction costs thanks to the blockchain system and high level of volatility, which is strictly correlated with their high-risk rate.
The irreversible and immutable features of cryptocurrency symbolize that it is impossible for anyone unless the owner of the respective private key, to move their digital assets. That transactions, however, cannot be changed once it is recorded on the blockchain.
There are another two ways to describe the blockchain: "Internet of people or Internet of value";

[63] Smart contracts: decentralized platforms used to transfer data on the occurrence of determined conditions.

this concept refers to the generation of a new form of "social relationships", since the blockchain use allows anyone or most of the people to check and verify transaction details.

Application to luxury industry – The AURA blockchain

The Aura Blockchain Consortium is the world's first global luxury blockchain created by LVMH (Louis Vuitton Moët Hennessy), Prada Group, Cartier, part of Richemont on April 2021 and in October 2021 the OTB Group[64] (Only the brave group) joined. Recently also entered the consortium the luxury jewerly and accessory brand Chopard and Mercedes Benz.

The founding and associate members instead are Cartier, Louis Vuitton, Maison Margiela and Prada, meanwhile the affiliate members are Bulgari, Hennessy and Hublot.

Aura's vision is that of having partnerships with all the luxury brands (no matter the firm's size) worldwide, embracing "a culture of collaboration, collaborative spirit, trust and innovation".

It also offers membership, collaboration and participation within its governance or in its General Assembly. Also financial/government/technology organizations have the chance of joining Aura.

Figure 7: Aura Blockchain Consortium One-year celebration event

"The first time we started thinking about how we could use blockchain was in June 2019. We started from scratch and now it's a major innovation for our industry. It is an unprecedented collaboration between key players of the luxury industry. It represents a single, innovative solution to share challenges such as communicating information on authenticity and responsible sourcing and sustainability in a secure, digital format" affirms Agnès Vissoud (Digital innovation director at Louis Vuitton) in its interview with LJ Silverman (Head of the London School of Economics). As evidence of the blockchain characters presented before, the main aim of the Aura blockchain is that of

[64] Italian holding which controls Diesel, Maison Margiela, Marni, Viktor & Rolf, Amiri, Jil Sander, Staff

accelerating and guaranteeing to the costumers the transition to a circular business model, based on trust and transparency.

e.g. of the creation process: implementing more and more an innovative and sustainable model, enhancing in this way the customer experience.

Last recent news on May 3rd is that Aura Blockchain Consortium teamed up with Sarine Technologies to check and trace Diamonds.

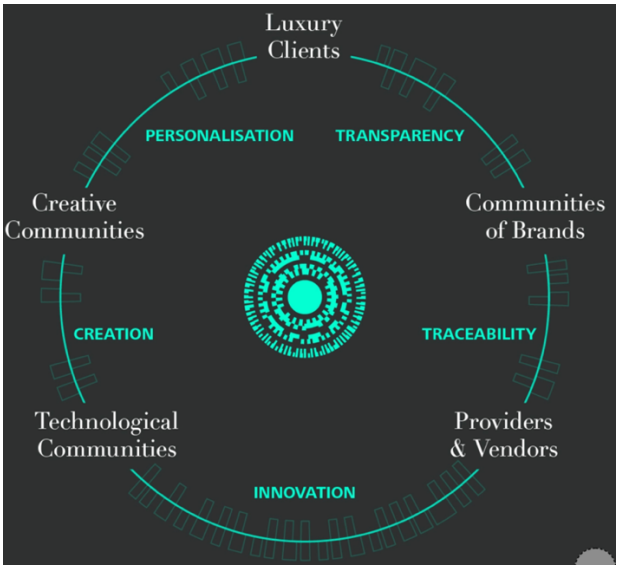

Figure 8: The AURA blockchain process. Source: Aura blockchain website

Last April 21th was the one-year anniversary of the birth of the Aura Blockchain Consortium and, during the event, it has been announced that the Aura consortium launched Nft solutions (Non fungible tokens[65]), respectively Aura Gifting and Aura Nft Whitelabel. Thanks to these brands can, from now on, create their own Nft Storefront or Nft as gift.

Whatever regards the transaction is kept private only to the authorized brand who "build or add" blocks, ensuring in this way, privacy to its members.

Application to luxury industry – Bulgari Case study

Figure 9: Bulgari "Octo Finissimo Ultra Watch". Source: Bulgari

[65] Topic drawn up later

Bulgari launched the new watch “Octo Finissimo Ultra”, a limited edition made up by only 10 pieces, which collection marries the digital and the real world.

As is showed by the picture of the item above, it contains a “Qr-code” which could be used by the owner to learn more about that specific product and its history. The intrinsic Nft it is a concrete representation of what has been explained about the benefits and the role of the blockchain, since it guarantees authenticity and unicity.

Metaverse

This term was first used by Neal Stephenson in its sci-fi novel published in 1992.

According to Stephenson, Metaverse is a virtual reality in which is possible to access by using an internet connection and some devices.

Everyone can access Metaverse and the only things required are internet connection, computer and a pair of special sunglasses. At this purpose during the Super Bowl 2022 have been launched the “Oculus Quest 2” the sunglasses that allows the user to play videogames, watch movies simulating a theatre atmosphere, create a specific multi monitor configuration useful to work, play videos and photos at 360°.

Figure 10: Representation of a person entering the Metaverse, using the needed equipment.

Some boutiques already opened in Metaverse such as the one of Balenciaga, Concept store of Gucci and Louis Vuitton using The Sandbox.

The sandbox is a videogame in which it is possible to build ecosystem thanks to the blockchain system. The user must sign up using its crypto wallet e.g., Metamask, Bitski, Venly, since transaction are made up only by crypto values. Once done this, the user must personalize its avatar and then he/she can:

- Play the game
- Buy lands: there are simple or premium lands based on their characteristics; it is also possible to buy more lands or to build the so called “district” if more owners agree about it. The advantage in buying lands consists in the fact that the owner can ask for payments for whoever wants to explore its area or is interested in renting.

- Create Asset: as asset is meant clothes, tools, buildings that will then be coined on the blockchain as Nft.
- Create Game: Ludic experience that could then be coined as Nft.

Figure 11:The Sandbox platform in metaverse. Source: the sandbox

Metaverse and fashion – gaming: BALENCIAGA Case Study

The one of Balenciaga is the first luxury collection to enter Metaverse trough Fortnite Videogame (a game about survival which counts around 400 million users).

The game industry has a value of 176 billion dollars (according to the last report made by Mckinsey and Bof (Business of fashion) called "The state of fashion") and attracts more than 3 billion players worldwide. It is expected a value of 219 billion by 2024.

The collection launched in September 2021 is divided in two lines, one purely virtual which can be bought by playing to Fortnite and paying with Fortnite's virtual money called V-Bucks, with the most expensive item paid 1500 V-Bucks, equivalent to 12 $.

Another site to buy them is in Balenciaga's virtual store called "Strange Times". The "real" collection is instead available on Balenciaga website.

This specific drop is made up by 4 skin and one sneaker, this last inspired by the Balenciaga speed 3.0 model. The reason why people acquire luxury clothes for their avatar is intrinsic in one of the luxury characters, "the status".

Figure 12: Balenciaga x Fortnite collection. Source: Balenciaga

That of Balenciaga signed the beginning of "luxury" in virtual world, since Metaverse is nowadays in the luxury *maison* crosshairs.

This year the Decentraland[66] (MANA) platform hosted the first virtual fashion week, from March 24th, 2022 to March 27th 2022. The brands who joined the event were various and some of them contributed to new activities.

- Etro: it inaugurated a new pop-up store in metaverse, to specify on Decentraland, where it is possible to buy Etro's items.
- Dolce & Gabbana: launched 20 new outfits for avatars.
- Hogan: hosted Bob Sinclar after party concert in virtual Vegas, giving to users Nft, POAP, and tickets for the chance of acquire Hogan Nft.
- Estée Lauder: new digital "serum" to unlock which could be applied on avatars to "levigate" their "skin".

Fashion week was opened both to Metaverse guest and to Metamask wallets owners. It was possible to attend after parties, catwalks or conferences reaching new customer targets as Z Gen, which on average, spent in 2020, 8 hours per day "online". As evidenced, the new developed "universe", is for brands a new way to expand themselves.

The most used channel to enter the gaming world, but also the Nft one, is Discord.

Discord have been chosen by companies as the main communication tool when entering the new Web 3.0 market. The access is direct linked when playing *meta-games* on platforms as Roblox, Decentraland or The Sandbox. It allows the users to be in touch between them while playing and it is

[66] MANA crypto price went up of 7% the day before the beginning of fashion week.

also used by a multitude of firms communicate new releases. Z Gen or Millennials have been using this application for a while, so it is easier for them to handle the various updates.

Nft (Non-Fungible Tokens):

Non fungible tokens are *smart contract,* in the practice defined as unique pieces of "digital art", verified and secured by the blockchain technology. As evidence, their main characters are authenticity of origin, ownership, uniqueness (scarcity).

By digital art is meant whatever form of art: digital art, digital collectibles[67], images, videos, gif, audio, 3D model, text or poems, digital real estate, domain names and so on.

An Nft to be owned and transferable needs some requirements: name, description, main content (purpose) and supply. Nft may present an "unlockable content" which character gives to the Nft owner the possibility of accessing to some kind of contents that will not be accessible in a different way, e.g. story of the birth of that specific "piece of art.".

Another interesting feature is that of "Ongoing Royalty" (high response level of this trait): it consists of "earnings[68]" for the creator of the Nft which are collected by himself once the item is sold in the future.

Nft have a speculative aim, however, recently they started to configure themselves as "tokenized projects to solve problems or to create something unique for users[69]".

Figure 13: examples of the Bored Ape collection. Source : Open Sea Marketplace

[67] Digital art created to remain in its digital form
[68] A % that the creator receives on the sells
[69] Matt Fortnow, QuHarrison Terry "The NFT Handbook How to Create, Sell and Buy Non-Fungible Tokens

The most famous creator of Nft nowadays is The Bored Ape Club, who launched 10,000 Bored Ape NFTs which allow the owners to enter into the Internet Yacht Club, a "digital bathroom where is it possible to take a "pen" for drawing, writing, or creating graffiti on walls every 15 minutes.[70]"

The one of the "Digital Bathroom" is just one of the examples of Nft that allows the owners to access to special events or platforms.

Figure 14: FlyFish Club Nft: source OpenSea[71] market

A while ago a project born, called "Fly Fish Club", which will provide access to the owners of its Nft to the first Nft Restaurant (Private dining club) that will open in New York in 2023.
Initially Flyfish Nft were reserved to the investors, while now they can be bought by anyone.
As each Nft, they are paid by crypto values and, for example, in this special case by ETH (Ethereum), with a reached lowest price right now of 2,45 ETH (6736,45 $) and, a highest (first Nft on the left looking up) of 88 ETH ($241.962,16).
The price is variable depending on the desired experience, since the restaurant will offer various culinary, cultural and social experiences.

Coin Vs Token:

Coins/crypto values possess their own blockchain, meanwhile tokens use coin's blockchain. The most known and used is the Ethereum blockchain also indicated as ERC20 or ERC_{1155}/ERC_{721} for Nft, even though there are many others such as WAX (World Asset eXchange) or FLOW. These last two are engaged in Nfts about NBA, League Baseball, Binance smart chain.

[70] Look at note 66
[71] Opensea is the most used and famous platform where Nft can be bought and sold which reached and exceeded 1 billion $ in sales in 2021.

It is a duty to highlight that on the blockchain are reported only information about the supply and the Ongoing Royalty; the whole rest such as what the Nft represents is contained in metadata (smart contract), otherwise the blockchain system could be slowed down by the "*document*" size.

NFt POAP:

The NFt POAP is a particular form of Nft which is used by people whose attend a particular event and use the Non fungible token to certify their attendances. E.g., on May 25th I have been at an event organized by Binance[72] at the Blockchain week Rome, and I received by scanning a QR code, an Nft POAP.

They can give to the owner the right to some benefits such as rescue gadgets or much more.

Nft within the luxury industry:

As said before, Nft are defined under the blockchain technology which implies authenticity and ownership to that specific article. Before of the blockchain technology, that of authenticity was a big issue for the *maison*, due to the existence of counterfeit items. The blockchain technology helps, also, who want to accede the segment of the second hand market, giving to customers certainty regarding the origin of what is about to be bought.

"[73]In the digital world, luxury has the same aspirational relevance that it has in real life: it is an asset to differentiate oneself and express one's way of being and values".

A lot of luxury brands in these last months developed an Nft, most of the time in collaboration with other fashion *maison*/artists. As digital assets, Nft are offering a new way for customers to shop and exchange authenticated goods thanks to the blockchain technology. The launch of Nft's collection is correlated 99% of the time to the presentation of a new physical or digital collection of the brand. Example could be those of Givenchy x Chito, Prada with its "Time capsule" and so on.

Nowadays, the total addressable market for digital fashion has a value of 31 billion with more than 100 brands collaborating[74].

The benefits of join this new segment, that according to Morgan Stanley will assume the connotation of "Virtual Luxury goods" and will reach a value of 50 $ Billion by 2030, could be many:

by testing the collections before their launch in real life, luxury *maison* have the possibility to estimate how much the demand for those items could be, controlling in this way the amount of the inventory.

[72] Binance is the biggest platform in which digital asset can be exchanged.
[73] Deloitte, Global Power Of Luxury Goods. 2021
[74] Mckinsey and Bof: "The state of fashion"

Furthermore, there is a saving in raw material costs since by producing some collection exclusively virtual, there is no need of them and the labor is minimal, so they apport big margins.
Also, almost all the digital assets have royalty fees or revenue shares on future transactions, so it represents a continued revenue.
Another point in favor as the Metaverse consultant Cathy Hackl affirmed is that "Not everything they create in the metaverse needs to be new. They can leverage their many years of history and heritage and introduce their legacy to new generations. Nostalgia is a powerful sentiment, and at the end of the day, creativity is creativity."
The first Italian Fashion community of Nft was launched by Dolce and Gabbana, in collaboration with the marketplace "Unxd". Domenico Dolce and Stefano Gabbana created an Nft collection called "Genesi – D&GFamily", made up of nine unique pieces of digital couture, inspired to the Venetian tradition and some of these items have been produced for real.

Figure 15: Dolce and Gabbana catwalk, Genesi collection. Source: D&G

The Nft's owner has the possibility to access to special drops of limited edition of the brand jointly to the possibility of attending special events both in real world and metaverse.
The D&G Nft collection have been sold for 1.185.719 ETH (5,65 million $). The collection embodies the cornerstone of the brand, that is that of a community that shares the same values and passions.
This was just one of a multitude of projects launched during 2021.

Gucci Case Study

Gucci is a luxury brand founded by Guccio Gucci in Florence in 1921, which belongs to the French Kering group since 1999.

Gucci is showing worldwide its digital innovation and power through collaboration with various artists regarding Nft creations.

Furthermore, some Gucci's US stores (New York, Los Angeles, Miami, Atlanta and Las Vegas), will accept crypto values payments starting from the end of May 2022. The crypto that could be used as payment method are Bitcoin, Bitcoin cash, Ethereum, Wrapped Bitcoin, Litecoin, Shiba Inu and Dogecoin[75]. Gucci could be defined as the pioneer of the Web 3.0, which is becoming one of the most influent digital brands.

The first digital step could be related to the fact that using Gucci's app it is possible for the customers to try a various range of items starting from make-up, accessories and ending with shoes. If the client is satisfied and wants to buy that specific article will be rerouted to the shopping cart.

Figure 16: Gucci Virtual Fitting. By Gucci App

Another event which marked the Gucci digital evolution is represented by the launch of Gucci Virtual 25, a virtual fluo color sneaker made up by wheel instead of shoelaces which could be worn in metaverse. It has a cheap price of 10 euros.

The evolution was followed by the opening of the Gucci concept store called "Vault"[76]. On this website it is possible to buy second hands items both from Gucci and other brands, for example from *Maison* belga Delvaux, the most ancient leather goods producer, Charvet, the most ancient blouse producer and born in 1838 in Place Vendôme in Paris, others like Wales Bonner, Martine Rose, Vans, Collina Strada, Cormio, RUI e Rave Review.

[75] Source: Yahoo Finance.
[76] https://vault.gucci.com/it-IT

At this purpose it is a duty to highlight the fact that the secondhand market is nowadays developing itself more and more with revenues estimations of 33 billion in 2021 (according to Kering last financial report).

People is more interested in reducing wastes, above all due to the last news regarding the environmental issues; it is configured also as a more accessible way to luxury for young generation.

Examples of project already realized are:

- Nft Aria Fashion show
- SUPERGUCCI with a partnership with SUPERPLASTIC
- 10KTF Gucci Grail.

Nft Aria Fashion show:

This is the first time Gucci entered for real the Web 3.0 by launching an Nft in collaboration with Christie's (Auction house), Lady Phoenix[77] and Floria Sigismondi[78]. This piece of non-fungible art consisted in a short videoclip of the last Gucci's Aria fashion show, with a starting bid of 20 thousand dollars which have been donated to UNICEF USA.

Figure 17: Gucci Aria Nft, source: Gucci

SUPERGUCCI Project:

this is a collaboration between Gucci and Superplastic. Superplastic (whose artists are Janky and Guggimon) is the worldwide leader for producing cartoon characters. It created with Gucci a super limited edition of Crypto Janky Nft and ceramic sculpture. The drop counted 500 pieces and they can be bought on Superplastic website, Gucci Vault and Open Sea.

Last sales volume according to Open Sea are around 4ETH (7 thousand dollars today).

[77] Expert in digital art and media
[78] Creative and photo director

Figure 18: GUCCI MISESI #14 Source: Open Sea Marketplace

10 Ktf Gucci Grail:

It is a project in which Gucci's Creative Director Alessandro Michele meets the famous digital artisan Wagmi-san in its Atelier based in New Tokyo.

Figure 19: Gucci creative director with Wagmi-sun

This is a collaboration with the virtual shop "10 KTF" where Wagmi-sun lives. The project is opened to 5000 customers which possess an Nft within a range of 11 collections (Bored Ape, World of Women, Cool Cats and so on); furthermore, another requirement to take part at the drop is that of being part of the Vault Discord community or already have "lived" in 10 KTF.

Figure 20: Gucci Grail APE #4704 Source: OpenSea Market. Last sale for 0,99 ETH.

So, Gucci produced digital outfit for those who already has an PFP, that is to say a "Picture for Proof" as Nft. The outfits are inspired by the Gucci "Aria" collection and "Love Parade", making the customers express themselves and their luxury taste not only in real life.

The ones selected between the ones who applied, had the chance of choosing the outfit and then have received the avatar dressed up as they desired.

Figure 21: Gucci Grail WOW #8196 Source: Open Sea Market. Last sale for 1ETH.

Gucci Virtual Town

Gucci *Maison* inaugurated in May 2022 a new space in Metaverse which is accessible to users through the Roblox platform. It consists in a digital town, made up by different "areas", starting from coffee shops, mini-games, art galleries and boutiques as the Vault shop.

When visiting the boutique, the users have the possibility of shopping digital items for their avatars.

Figure 22: Gucci Town. Source: Gucci

Visitors will have the chance of collecting Gucci gems, that are virtual coins that could be used as payment method.

Gucci is the first brand which created a "permanent" space on Roblox to increase its digital power and its community more accessible from now to new generations.

Louis Vuitton Case Study – Nft and gaming

"Louis the game" is a videogame launched by the Louis Vuitton *maison* in August 2021 to celebrate the 200 birthday of the house.

It consists in a mascotte, called "Vivienne" who looks for "candles", which possess, gives the user the possibility of unlock anecdotes regarding Louis Vuitton's story (both brand and stylist).

While learning about them, it is possible for the user to be able of being chosen by the creators of the platform to collect Nft for free.

Recently, if the total available amount of Nft was equal to 30, now there is the possibility of participating to a new launch which will count 10 new Nft and two new levels of the game to explore. They refigure Vivienne in different outfits and they will be able to be transferred to other platforms or to be used as avatar.

Figure 23: Louis Vuitton video game. Source: Louis Vuitton

It is not the first time this *maison* works and collaborates with the videogame industry, since in 2019 it worked close with League of Legends, creating digital outfits for the avatars and a new collection which was available in stores.

Figure 24:Louis Vuitton x League of Legends. Source: Louis Vuitton

Another example is represented by the fact that always during 2019, Louis Vuitton launched a game to promote the men autumn winter collection by Virgil Abloh.

CHAPTER 3°: FINANCIAL AND MARKET ANALYSIS:

Luxury industry general trends:

"I aspire to become; I express to belong[79]".

"Luxury" meaning can be described by using different connotations such as value, quality, heritage, status, scarcity.

There is not a "birth date" for this concept, since in life it always existed; just think about when in ancient time the upper class had more benefits than the other social classes just because they had the availability to pay for them.

Even now the concept did not change, since luxury could be represented by affording the possibility of going to a five stars luxury hotel, going to a five stars restaurant or by possessing determined items (limited edition from luxury *maison* e.g.,) paying in each case a conspicuous price.

Looking at its economic side, from a *maison* point of view, luxury is strictly connected with "deliver excellence" to customers. It is not a coincidence that this is one of the core principles of the LVMH group (Louis Vuitton Moët Hennessy), leader of the luxury industry.

According to the last report published by Statista with the most recent update to March 2022, the market share of the luxury industry is divided as follow[80]:

- LVMH: 15%
- KERING: 5%
- Estée Lauder: 5%
- L'Oréal group: 5%
- Others: 70%

The luxury cars segment is the largest within the luxury industry. The second one is represented by personal luxury goods which includes accessories, apparel, jewellery and eyewear.

To make an overview of the market trend of all the luxury industry segments and as reported by The Luxury Monitor of Altagamma and Bain, it is possible to say that during 2021 any of them increased, with the only exception of the cruise segment which went down.

Luxury goods segment grew up of 29%, Cars between 7% and 9 %, *Hôtellerie* about 22%,

[79] Bain e Company, Altagamma: "luxury monitor 2021"

[80] Sources: Statista, World Bank, Financial Statements of Key Players, FH - Federation of the Swiss Watch Industry, Credit Suisse

Wine between 12% and 14%, Food gourmet 8-10%, Home design of 13-15%, Fine art 18-20%, Jet and Yacht 1-3% and Cruise down of 40-42%.

Disaccording with what was initially forecasted by the markets when the covid 19 pandemic exploded, the luxury industry recovered ahead of schedule, since 2019-2021 estimations previewed that the occurred time would have been much longer.

Furthermore, to compare the growth between countries, China and USA are recovering faster than Europe and Japan, which are expected to recuperate by 2023-2024.

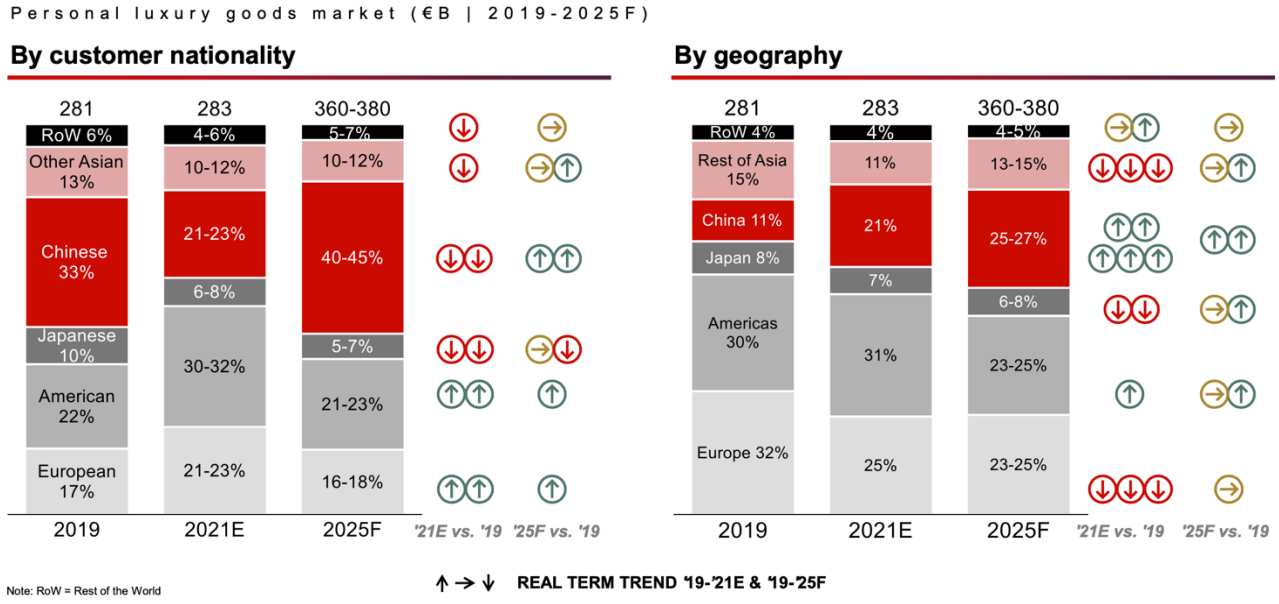

Figure 25: Luxury industry by customer nationality and geography. Source: report by Bain and Altagamma

In the figured just showed it is evidenced what explained before in the analysis by geographical variables, with the addition that it does not matter where the store is physically located (in this specific case looking always at China and USA), but what is relevant is the nationality of the customers.

Luxury goods market achieved in 2021 283€ Billion revenues differently from the 220€ Billion reached in 2020.

Overall, the industry has a forecasted CAGR (annual compound growth rate) of 6-8%, that is in value around 360-380 € billion.

To forecast growth trends, the experienced based goods, such as travel or meals at restaurants, are predicted by the market analysts to grow during the 2021-2025 horizon at a rate between 6 and 10 %; meanwhile pure luxury products around 5-9%.

Luxury *maison* with the digital revolution and the continued evolution of tech instruments had to change many prospects regarding different aspects:

Starting from the physical/online shop, the customers target, new digital KPI in company evaluation, investment in digital asset (CAGR 13/16% 2021-2026) with the creation of a new stream of revenues[81] and so on.

Focusing on customers, the Z Gen will represent the 50% of new customers that is the 25% of the personal luxury goods market[82]. At this purpose, with this new digital business model there are also new KPI:

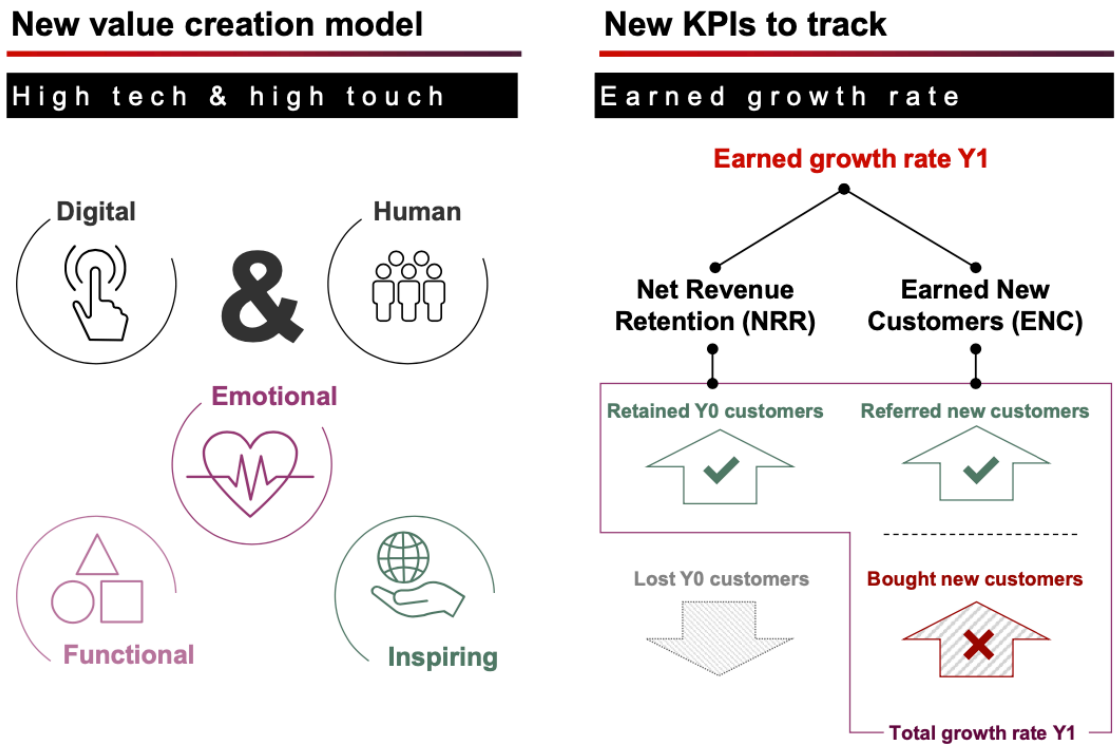

Figure 26: New KPI to consider with the evolution of web 3.0 and digitalization. Source: Rebort by Bain and Altagamma

Digital and e-commerce trends:

Besides the quality and the scarcity of their offered product, it plays a central role the experience that the client could go through when shopping in a physical store. At this purpose, it is a duty to highlight that luxury brands have been reluctant in selling their articles online because they did not want to lack their luxury identity; most relevant was the possible lack in giving their usual *in-person* customer service, since they did not feel that they could deliver the core value of the brand through digital channels[83].

[81] Related to gaming, nft, metaverse.
[82] Deeper focus in the next paragraph.
[83] Deloitte, Global Power Of Luxury Goods. 2021

With the digital revolution during the last few years and the Covid-19 pandemic, almost each shop/supermarket/fashion or luxury *maison* opened an online website in which was possible to shop items.
Jointly with this, the continued growth of the online luxury channel could also be attributed to the birth of digital luxury marketplaces such as Net-A-Porter or Farfetch reaching almost 3 $ billion of market capitalization.
Robert Triefus, Chief Marketing Brand of Gucci (Kering Group), affirmed in an interview that now luxury world has changed its horizons, with a deep understanding of what digital could add in terms of value. R.T also said that he strongly believes that the new Web 3.0 will grow more and more in the future years, raising awareness within the population of all the new tech instruments as blockchain and crypto values;
nevertheless, *maison*s are still doing researches to understand how to maximize the value that digital assets as Nft have and could deliver to them.

Unfortunately, there is not a clear and specific regulation regarding those topics, both from a legal and tax point of view and from a standard setter to accounting purpose. For this reason, within the next financial analysis, revenues from Web 3.0 will be considered as revenues from ecommerce.

Nowadays, for a client it could be better to shop online instead of going to the store, since it is felt as a "more comfortable" experience; it is a relevant feature for the firms in order to "deliver excellence" that of meeting the clients where they are, in the grip of their inspiration.
This justify a high CAGR of investments in digital asset since the market largest segment in this field is represent by the robo – advisors.
"The ability to shop anywhere, anytime is their luxury. That is how the digital age has broadened and enriched, not restricted or tarnished, the concept of a luxurious experience" affirms the Chief Omnichannel office of LVMH Michael David: ecommerce is nowadays offering new experiences and services, like payment options, online pick up or shopping directly on social: e.g., Gucci virtual fitting and direct link to the shopping cart.
Trusting the digital revolution, companies might think of revenues not just in term of money, but also focusing on less measurable benefits such as brand awareness and marketing impact. By entering the video game industry and the one of digital art, they are acquiring a new target of consumers, that is that of Z Gen.

As a market study made up by Bain & company in collaboration with Altagamma affirms, by 2025 the Gen. Z will be more than the 50% of the total luxury population, trend justified by old Gen whose leaving the luxury market[84].

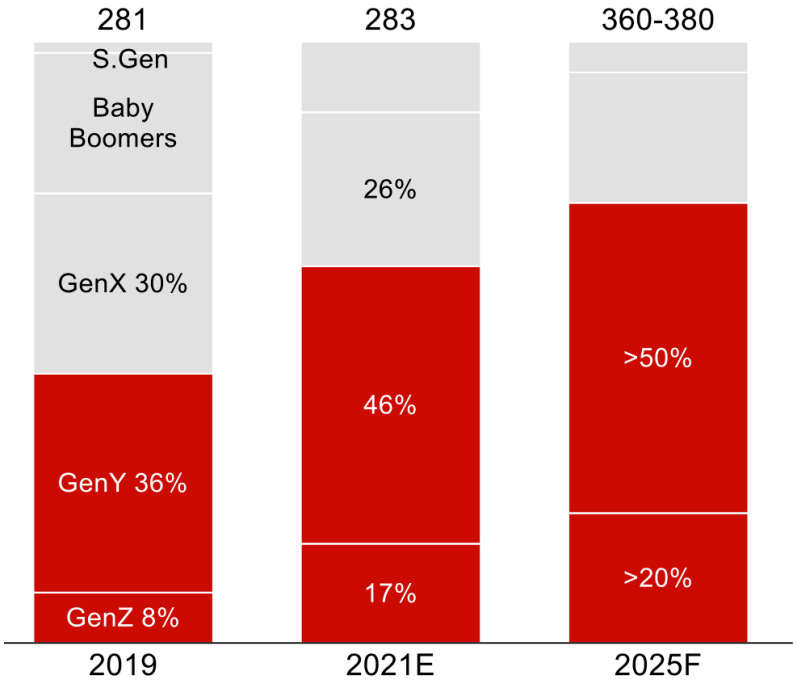

Figure 27: Luxury industry by generation forecasted to 2025. Source: Report by Bain and Altagamma.

(Gen Y and Z might represent the 180% of the total growth by 2025).
Is meant by Baby Boomers whose born between 1946 and 1964; by Gen X the ones between 1965 and 1980; by Gen Y who born between 1981 and the end of 90's. Last, Z Gen includes who is born amid the end of 90's and 2010.

Another benefit of the collaborations between videogame firms and the luxury *maison* is that of a new segment of revenues (example of Balenciaga and Fortnite).
Firms should also consider that after the Z Generation there is the Alpha one, which is expected to be the one with the highest spending power within the luxury industry since they are always in touch with the digital sphere; they are considered as

- Global
- Digital
- Social
- Sustainable

[84] Bain e Company, Altagamma: "luxury monitor 2021"

Robert Triefus, in its interview published by BOF and Mckinsey also affirmed that right now the revenues of investing in the online segment and entering the web 3.0 might be represented by a combination of a new revenue stream and branding, since people are willing to pay a huge amount of money for NFt, digital collectibles and a second life in the metaverse.There, is where the potential revenues reside.

Even in this case, luxury *maison* are reluctance versus what could put their heritage at risk, but they are choosing of "trusting" these new phenomena.

So, the Luxury 4.0 model is being characterized not only by the online as channel but also from the digitalization of the client's journey by using those various technologies.

The pure offline shopping, according to a McKinsey study, is equal to a share of 22% since the remainder has continued touchpoints with the digital sphere.

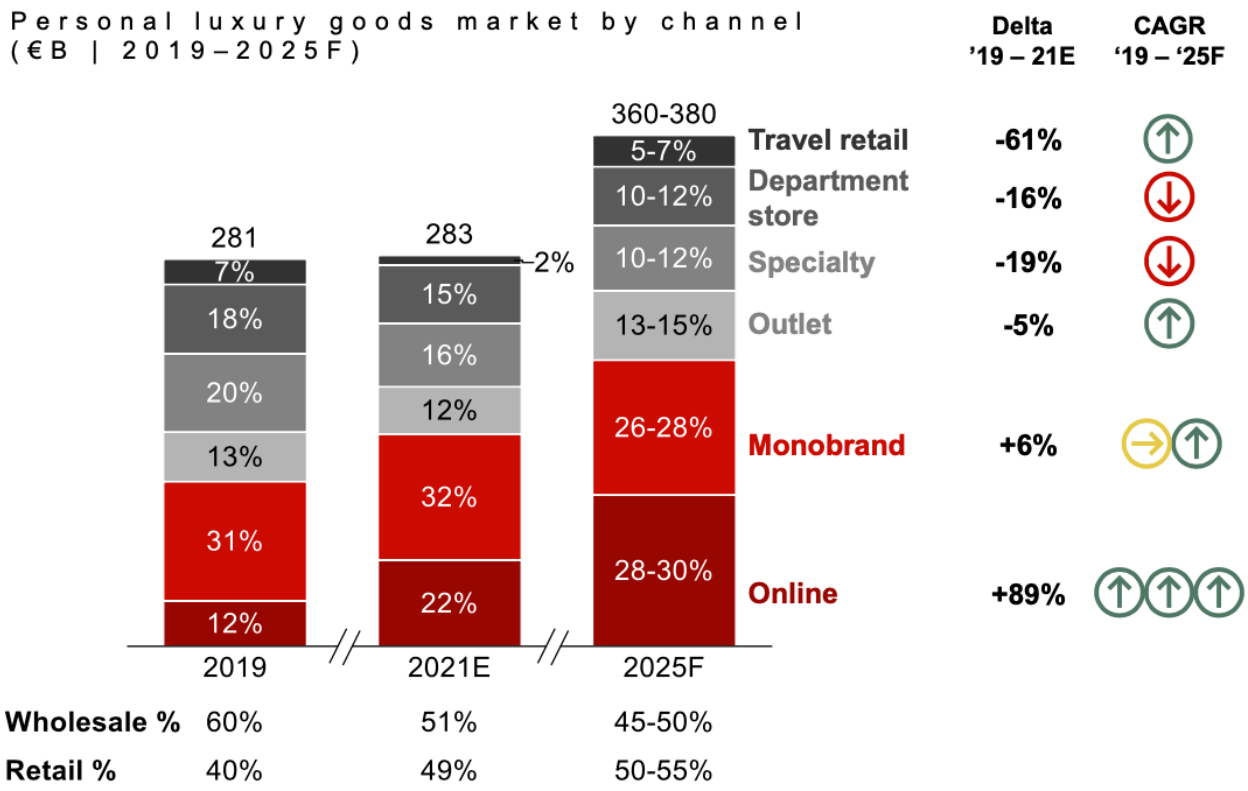

Figure 28: Forecast of sales by channel. Soucre: Report by Bain and Altagamma.

By this graph taken from the Bain & Altagamma Luxury Monitor 2021, is highlighted what reported before, that is that the online is growing and it will grow always more in the long run.

Another trend that is taking over is that of the monobrand (e.g., www.gucci.com for the online or the Gucci Store for physical.) Nowadays, monobrand websites reached the 40% shares of the online market with high sales for leather goods, sneakers, and skin care.

The forecasted trends for the online segment as shown above by Bain, are those of reaching by 2025 the 28- 30% of the total market, huge volumes if compared with the ones of 2019 equal to 12% or those of 2017/2018 which were about 9-10%.

KERING Case study:

General Overview of the Company:

Kering is one of the leaders of the luxury industry jointly to LVMH, whose groups, according to the last Deloitte luxury monitor, are the first two in a top 10 chart for volumes of sales within the luxury industry.

Kering is listed on the Euronext segment in Paris since 1988 and it belongs to the CAC 40 index since 1995. The headquarter is in Paris.

Kering president and CEO is François Henri Pinault, which family founded the group in 1963.

In 1999 Pinault-Printemps- Redoute (old name of the group) acquired the 42% shares of Gucci and the 100% of Saint Laurent.

During the years it continued its expansion through acquisition of other's firm market share, to became today the group which counts *maison* as: Gucci, Balenciaga, Yves Saint Laurent, Alexander McQueen, Bottega Veneta, Boucheron, Brioni, Pomellato, DoDo, Queelin and Kering Eyewear.

Kering Financial Analysis:

As almost of the companies the four years period 2018-2021 is characterized by ups and downs in revenues due to the Covid 19 pandemic.

As evidenced, revenues fell of 18 % in 2020. Nevertheless, up with the luxury industry trends, Kering recovered in 2021 even in comparison with the pre-Covid 19 years. Sales decreased mainly for one reason: lockdowns. Store were closed, tourists number collapsed and since people were obliged to stay at home, the desire of shopping fell.

By the way, when someone desired to shop, had the possibility of doing it thanks to the online channels. This trend, that from that moment in time, continued to grow.

Another relevant factor that contributed to the developing of the online channel was the fact that with the pandemic supply and logistics suffered and some items were only available on websites.

Historical Income Statement	**2021**	**2020**	**2019**	**2018**
Revenues	17.645,20 €	13.100,20 €	15.883,50 €	13.665,20 €
Revenues Growth rate	35%	-18%	16%	
REVENUES by E-COMMERCE	2.646,78 €	1.703,03 €	1.111,85 €	819,91 €

Figure 29: Kering revenues trend computation. Excel file made by myself. Refinitiv data

During the FY of 2021, Revenues by e-commerce for Kering were equal to 15% on total net sales, percentage that increased compared with the past years.

By region, the higher number of sales has been registered in Asia, both in 2020 and 2021; those data are correlated to what are the market forecasts of revenues by region for the next years.

REVENUES BY REGION	2021	2020
Asia and Pacific	6.695,40 €	4.975,70 €
Europe	4.045,00 €	3.657,10 €
North america	4.685,30 €	2.742,40 €
Japan	1.059,40 €	931,10 €
Total	16.485,10 €	12.306,30 €

Figure 30: Kering revenues by region. Source data: Refinitiv. Own elaboration

Furthermore, according to the Kering final year report, the sales were divided as follows:

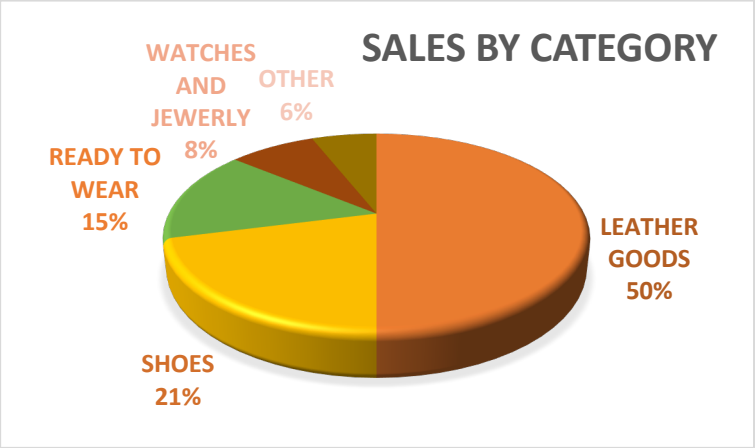

Figure 29: Kering Sales By category. Source: Kering report, excel analysis

Leather goods segment jointly to the shoes one outperformed the market, since their average market shares are of 22% and 8% while the others are quite in line with the industry.

Looking at the side of the *maison* instead, Gucci takes up the 57%, 15% for Saint Laurent, 9% to Bottega and the last 19% to the others.

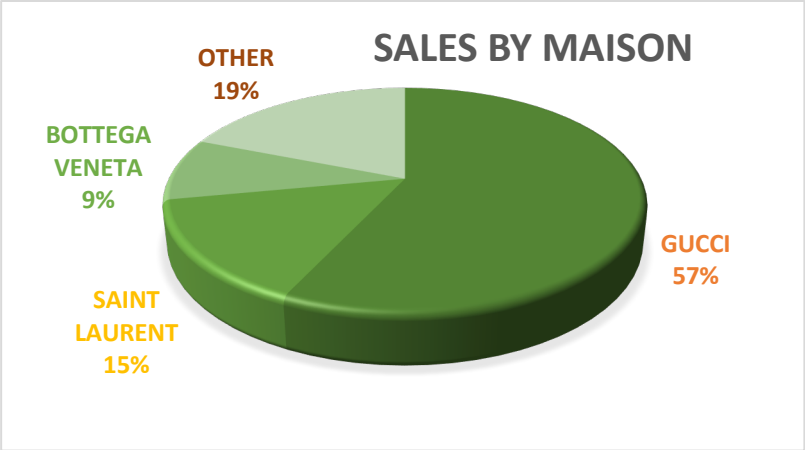

Figure 31: Source: Kering report, excel analysis.

Key significant events of 2021 are represented by the acquisition of the Danish luxury eyewear brand Lindberg, the acquisition of a 5% stake in Vestiaire Collective, a platform which resales luxury items. It could not be highlighted the fact that 1% of Group's total revenues comes from Ukraine and Russia, since Russia customers accounted for the 2-3% of the total luxury market; the consequences about what the war will provoke on luxury markets are still unknown.

Kering Long term g estimation:

to compute the growth rate applicable in the long run, the analysis has been developed considering the estimation of the GDP value in 2026 within the geographic area indicated as relevant by Kering.

Areas	Real GDP in 2026	Net sales 2020	Net sales 2021	Average	%total net sales	GDP on sales
Asia and Pacific	3,52%	4.975,7	6.695,4	5.835,6	0,405367575	0,014268939
Europe	1,66%	3.657,1	4.045,0	3.851,1	0,26751391	0,004440731
North america	4,89%	2.742,4	4.685,3	3.713,9	0,257983287	0,012615383
Japan	0,49%	931,1	1.059,4	995,3	0,069135228	0,000338763
Total		12.306,3	16.485,1	14.395,7	100%	3,17%

Figure 32: Source: excel analysis. www.imf.org

Once computed the average value of the net sales in each country during 2020 and 2021 and how much each of them weights, it was possible to compute by multiplying the % on total net sales with the estimated GDP , the total value for the long run, which is equal to 3,17%.

Kering Beta computation:

To compute the Beta of the company, the analysis was conducted with the top-down approach, choosing a timeline of 5 years with monthly data, and the CAC 40 as index. The choice of the CAC 40 is strictly correlated to the fact that the company is listed in Europe, its head office is in Paris and, according to official data, the highest number of exchanged volumes is on the CAC 40. The R^2 between Kering and CAC 40 is equal to 0,34, so it has been considered as eligible.

The beta adjusted has a value of 0,95 by approximation, which is coherent with the one expressed by the market of 0,96.

Date	*KERING*	*CAC 40*		*KERING RETURN*	*CAC 40 RETURN*
31/05/17	273,6592	5.283,6300		0,03461594	0,00309
30/06/17	277,1915	5.120,6800		0,01290756	-0,0308405
31/07/17	274,6817	5.093,7700		-0,0090544	-0,0052552
31/08/17	293,0868	5.085,5900		0,06700519	-0,0016059
30/09/17	313,3045	5.329,8100		0,06898195	0,04802196
31/10/17	365,7775	5.503,2900		0,16748243	0,032549
30/11/17	346,4894	5.372,7900		-0,0527318	-0,0237131
31/12/17	365,3128	5.312,5600		0,05432605	-0,0112102
31/01/18	379,0701	5.481,9300		0,03765896	0,03188105
28/02/18	360,6650	5.320,4900		-0,0485533	-0,0294495
31/03/18	361,4087	5.167,3000		0,00206202	-0,0287925
30/04/18	445,8117	5.520,5000		0,23353893	0,06835291
31/05/18	489,7000	5.398,4000		0,09844582	-0,0221176
30/06/18	483,6000	5.323,5300		-0,0124566	-0,0138689
31/07/18	456,0000	5.511,3000		-0,057072	0,03527171
31/08/18	468,0000	5.406,8500		0,02631579	-0,018952
30/09/18	461,7000	5.493,4900		-0,0134615	0,01602412
31/10/18	393,6000	5.093,4400		-0,1474984	-0,0728226
30/11/18	384,0000	5.003,9200		-0,0243902	-0,0175755
31/12/18	411,6000	4.730,6900		0,071875	-0,0546032
31/01/19	437,5000	4.992,7200		0,06292517	0,05538938
28/02/19	480,1000	5.240,5300		0,09737143	0,04963427
31/03/19	511,2000	5.350,5300		0,06477817	0,02099024
30/04/19	527,0000	5.586,4100		0,03090767	0,04408535
31/05/19	465,9500	5.207,6300		-0,1158444	-0,0678038
30/06/19	520,1000	5.538,9700		0,11621419	0,06362587
31/07/19	469,5000	5.518,9000		-0,097289	-0,0036234
31/08/19	440,4000	5.480,4800		-0,0619808	-0,0069615
30/09/19	467,5500	5.677,7900		0,0616485	0,03600232
31/10/19	510,2000	5.729,8600		0,09122019	0,00917082
30/11/19	546,7000	5.905,1700		0,07154057	0,03059586
31/12/19	585,2000	5.978,0600		0,07042254	0,01234342
31/01/20	555,0000	5.806,3400		-0,0516063	-0,028725
29/02/20	505,8000	5.309,9000		-0,0886486	-0,0854996
31/03/20	475,9000	4.396,1200		-0,0591143	-0,1720899
30/04/20	460,2000	4.572,1800		-0,0329901	0,04004895
31/05/20	469,6000	4.695,4400		0,0204259	0,02695869
30/06/20	484,2500	4.935,9900		0,03119676	0,05123056

31/07/20	481,7500	4.783,6900	-0,0051626	-0,030855
31/08/20	514,6000	4.947,2200	0,06818889	0,03418491
30/09/20	567,6000	4.803,4400	0,10299262	-0,0290628
31/10/20	518,5000	4.594,2400	-0,0865046	-0,0435521
30/11/20	605,0000	5.518,5500	0,16682739	0,20118888
31/12/20	594,4000	5.551,4100	-0,0175207	0,00595446
31/01/21	541,6000	5.399,2100	-0,0888291	-0,0274165
28/02/21	524,9000	5.703,2200	-0,0308346	0,05630639
31/03/21	588,6000	6.067,2300	0,12135645	0,06382535
30/04/21	666,5000	6.269,4800	0,13234794	0,03333482
31/05/21	748,3000	6.447,1700	0,12273068	0,02834206
30/06/21	737,0000	6.507,8300	-0,0151009	0,00940878
31/07/21	756,2000	6.612,7600	0,02605156	0,01612365
31/08/21	674,0000	6.680,1800	-0,1087014	0,01019544
30/09/21	616,0000	6.520,0100	-0,0860534	-0,0239769
31/10/21	648,2000	6.830,3400	0,05227273	0,04759655
30/11/21	681,4000	6.721,1600	0,05121876	-0,0159846
31/12/21	706,9000	7.153,0300	0,03742295	0,06425528

Figure 33: Source: excel analysis.

COVARIANCE	0,00243324
VARIANCE	0,00264999
Beta Raw	0,91820431
Kering Standard deviation	0,0799498
Market Standard deviation	0,05147808
Correlation	0,59121347
Beta Raw	0,91820431
Beta Adjusted	0,94546954

Figure 34: Source: excel analysis

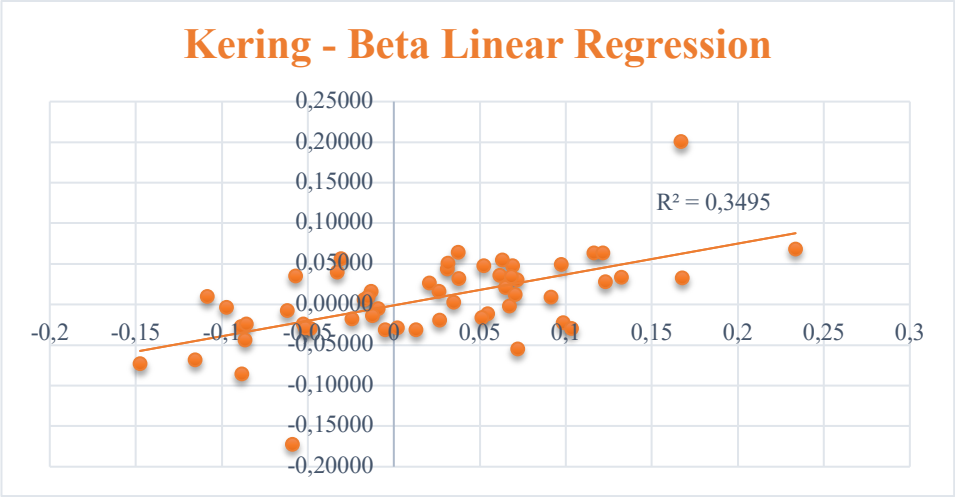

Figure 35: Source: excel analysis

Kering Wacc computation:

As explained in chapter 1, wacc is computed as the product of re*E/V+rd*D/V*(1-t).

At this first stage the focus is on **the cost of equity**:

Re formula is: risk free rate+ Beta equity * market risk premium.

Using the database provided by professor Damodaran it was possible to have values regarding the average equity risk premium by area (the same area used in the computation of the GDP);

the market risk premium was calculated by applying that same methodology and it is equal to 4,93%.

Geographical Area	Average of Equity Risk Premium	Net sales 2020	Net sales 2021	Average	% on total sales	Weighted average
Asia and Pacific	5,28%	4975,7	6695,4	5835,55	0,405367575	0,021403408
Europe	5,07%	3657,1	4045	3851,05	0,26751391	0,013562955
North america	4,24%	2742,4	4685,3	3713,85	0,257983287	0,010938491
Japan	4,94%	931,1	1059,4	995,25	0,069135228	0,00341528
Total		12306,3	16485,1	14395,7	100%	**4,93%**

Figure 36: Source: excel analysis.

Regarding the risk-free rate, the value chosen is that of a 10-year German bund (mature market), which is equal to 1%.

Using the re formula, the final result is equal to: rf + Beta equity*MRP = 1%+0,94 *4,93%= 5,42%.

Regarding the **cost of debt,** it was taken under analysis the Ebit value for F.Y 2021 divided by the interest expenses. The given result assumes the ICR (Interest coverage ratio) connotation, which value is used as indicator when computing rating and spread.

The table for High market cap firm is showed below:

Table 8.6: Interest Coverage Ratios and Ratings: High Market Cap Firms

Interest Coverage Ratio	*Rating*	*Spread*
> 8.5	AAA	0.75%
6.5-8.5	AA	1.00%
5.5 ⬚6.5	A+	1.50%
4.25- 5.5	A	1.80%
3- 4.25	A-	2.00%
2.5-3	BBB	2.25%
2- 2.5	BB	3.50%
1.75-2	B+	4.75%
1.5-1.75	B	6.50%
1.25-1.5	B-	8.00%
0.8-1.25	CCC	10.00%
0.65-0.8	CC	11.50%
0.2-0.65	C	12.70%
<0.2	D	14.00%

Figure 37: Source: Damodaran A.

Since the ICR is equal to 32, so a value higher than 8.5, the associated rating is equal to AAA, with a spread of 0,75%.

Then it is applied the common formula of rf+spread=rd. In numbers, 1%+0,75%=1,75%.

Given the market value of equity and debt of the company under evaluation and an average tax rate of 28,45% computed on the basis of the last effective tax rates within a 4 year period, the wacc is equal to 5,22%.

Cost of equity	5,663%
Equity Market value	88.145,42 €
Debt Market value	9.918,20 €
Equity and Debt total	98.063,62 €
E/V =	0,89886
D/V=	0,1011
WACC =	**5,22%**

Figure 38: Source: excel analysis.

As for the tax rate, since the average of the effective tax rate is not significantly different from the marginal imposed by the French government of 26,5 %, the chosen one is the effective tax rate value.

Forecasting and share price estimation:

To compute the share price, the EV and the EQ of Kering, it has been conducted an analysis based on the Discounted cash flow methodology, within a time horizon from 2021 to 2025 and 2026 as year to compute the Terminal Value.

The considered projections are the following:

Projections	**2021**	**2022**	**2023**	**2024**	**2025**
Revenues of the industry	283.000,00	302.810,00 €	324.006,70 €	346.687,17 €	370.955,27 €
Online	62.260,00 €	77.216,55 €	82.621,71 €	88.405,23 €	94.593,59 €
Web 3.0	4.245,00 €	6.367,50 €	9.551,25 €	14.326,88 €	21.490,31 €
Kering	212,25 €	318,38 €	477,56 €	716,34 €	1.074,52 €

Figure 39: Source: excel analysis.

According to Bain's report and also the last Kering one, the estimated revenues for the luxury industry are that of a growth between 6-8% p.a, , reaching a value between 360-380 billion euro by 2025 , coherent to the one computed in the analysis, equal to 370 billion euro.

The online segment is forecasted to represent the 26% by 2025, calculated as average between the best estimation of 29% of the shares and a worst that supposes that its level stays stable to the actual of 22%.

As for the value of the web 3.0 on the total ecommerce, Morgan Stanley estimated that it will be the 10% of the total industry by 2030, which is equal to an annual growth of 1,5% till 2030.

Since Kering market share on the total luxury industry is equal to 5% according to a Statista report, the associated revenues from Web 3.0 are equal to the one of the industry multiplied by 0,05.

They represent an average of 3% on total Kering sales, which makes increase the revenues growth rate from an average of 11% to 14%.

As said before, the developing of the web 3.0 helps companies in reducing raw materials cost and labor ones, so it is forecasted a decreasing in cogs by the same 3% amount, for a value of 23%.

To compute the other voices of the reclassified income statement, the used variables are represented by the average multiples calculated on the past year's trend.

Historical Income Statement	2021	2020	2019	2018	Average
Revenues	17.645,20 €	13.100,20 €	15.883,50 €	13.665,20 €	15.073,53 €
Revenues Growth rate	35%	-18%	16%		11%
REVENUES by E-COMMERCE		1.703,03 €	1.111,85 €	819,91 €	1.211,59 €
E-COMMERCE REVENUES/SALES	**15%**	**13%**	**7%**	**6%**	**17,00%**
COGS/Revenues	25,94%	27,41%	25,87%	25,37%	26,15%
Selling General and Administrative	2.444,10 €	2.070,00 €	2.290,80 €	2.080,40 €	2.221,33 €
EBIT/SALES	28,43%	26,80%	30,08%	28,86%	28,54%
TAX RATE	25,52%	21,63%	44,65%	22,00%	28,45%
Depr/PPE	20%	22%	18%	23%	20,58%
PPE/Sales	41,19%	50,59%	43,23%	16,31%	37,83%
NWC	2.591,90 €	2.991,50 €	3.137,60 €	2.509,80 €	2.807,70 €
NWC/Sales	15%	23%	20%	18%	18,91%
Capex	- €	794,70 €	1.487,80 €	- 4.134,50 €	- €

Figure 40: Source: excel analysis.

Forecasted Income Statement	2021	2022	2023	2024	2025	2026
Sales	17.645,20 €	20.115,53 €	22.931,70 €	26.142,14 €	29.802,04 €	30.745,69 €
Ecommerce		3.419,64 €	3.898,39 €	4.444,16 €	5.066,35 €	5.226,77 €
REVENUES by E-COMMERCE Web 3.0		***318,38 €***	***477,56 €***	***716,34 €***	***1.074,52 €***	***1.108,54 €***
COGS		4.626,57 €	5.274,29 €	6.012,69 €	6.854,47 €	7.071,51 €
EBIT		5.741,60 €	6.545,42 €	7.461,78 €	8.506,43 €	8.775,77 €
Taxes		1.633,54 €	1.862,24 €	2.122,95 €	2.420,17 €	***2.496,80 €***
NOPAT		4.108,05 €	4.683,18 €	5.338,82 €	6.086,26 €	6.278,97 €
PPE	7.268,40 €	7.609,40 €	8.674,72 €	9.889,18 €	11.273,67 €	11.630,64 €
Depreciation		1.566,38 €	1.785,68 €	2.035,67 €	2.320,67 €	2.394,15 €
NWC	2.591,90 €	3.804,08 €	4.336,65 €	4.943,79 €	5.635,92 €	
Δ NWC		1.212,18 €	532,57 €	607,13 €	692,13 €	0
CAPEX		1.907,39 €	2.850,99 €	3.250,13 €	3.705,15 €	2.394,15 €
FCFO		2.554,86 €	3.085,29 €	3.517,23 €	4.009,64 €	6.278,97 €
TV					306.207,66 €	
FCFO+TV		2.554,86 €	3.085,29 €	3.517,23 €	310.217,30 €	
ENTERPRISE VALUE	261.352,84 €					

Figure 41: Source: excel analysis.

The total Enterprise value is equal to 261.352,84.

ENTERPRISE VALUE	261.352,84 €
NET DEBT	4.647,3
EQUITY VALUE	256.705,5
Shares outstanding	124,1
Share price	2.069,04 €

Figure 42: Source: excel analysis.

By subtracting the Net financial position (Debt – Cash), it is computed the equity value, which divided by the number of shares outstanding, gives the share price.

If the projections should be wrong since the WEB 3.0 could not grow as expected, the result would be the following:

Forecasted Income Statement	2021	2022	2023	2024	2025	2026
Sales	17.645,20 €	19.586,17 €	21.740,65 €	24.132,12 €	26.786,66 €	27.634,82 €
Ecommerce		2.742,06 €	3.043,69 €	3.378,50 €	3.750,13 €	3.868,88 €
COGS		5.120,98 €	5.684,29 €	6.309,56 €	7.003,61 €	7.225,37 €
EBIT		5.590,50 €	6.205,46 €	6.888,06 €	7.645,74 €	7.887,84 €
Taxes		1.590,56 €	1.765,52 €	1.959,72 €	2.175,29 €	2.244,17 €
NOPAT		3.999,94 €	4.439,94 €	4.928,33 €	5.470,45 €	5.643,66 €
PPE	7.268,40 €	7.409,16 €	8.224,16 €	9.128,82 €	10.132,99 €	10.453,84 €
Depreciation		1.525,16 €	1.692,93 €	1.879,15 €	2.085,86 €	2.151,91 €
NWC	2.591,90 €	3.703,98 €	4.111,41 €	4.563,67 €	5.065,67 €	
Δ NWC		1.112,08 €	407,44 €	452,26 €	502,00 €	0
CAPEX		1.665,92 €	2.507,94 €	2.783,81 €	3.090,03 €	2.151,91 €
FCFO		2.747,11 €	3.217,49 €	3.571,42 €	3.964,27 €	5.643,66 €
TV					275.225,43 €	
FCFO+TV		2.747,11 €	3.217,49 €	3.571,42 €	279.189,71 €	
ENTERPRISE VALUE	***236.384,89 €***					

Figure 43: Source: excel analysis.

The sales growth rate stays stable to 11% and the COGS are equal to the past average of 26,15% on total sales.

ENTERPRISE VALUE	236.384,89 €
NET DEBT	4.647,3
EQUITY VALUE	231.737,6
Shares outstanding	124,1
Share price	1.867,80 €

Figure 44: Source: excel analysis.

By subtracting the Net financial position, it is computed the equity value, which divided by the number of shares outstanding, gives the share price which would be lower.
The delta is referred to the valued added by those investments.

Worst case scenario:

It could happen that those growth level will not come true since even though the market has a big potential, there are various controversies:
Starting by the fact there is not a regulation regarding the configuration of those asset on accounting standards, neither on the relationship between the author and the client, which do not have the right of withdrawal provided by the Consumer Code.

The payment method is that of crypto values, topic that still lack of regulation, although there are various proposals discussed since a while. For this reason, in this scenario, it has been maintained the average level of growth based on the past analysis.
Recently, according to what drawn up in a report of "Non fungible", which is the world largest Nft data source, sales of Nfts decreased about 50% during the first three months of 2022.
The guilty factor is the inflation, which is slowing down investments since Central banks are adapting a restrictive monetary policy and the war between Russia and Ukraine does not give a safe feeling to the market, above all if considering the speculative aim of Nft.

To conclude, Kering could be right now underpriced since it has high growth potential and its P/E is lower than the one of the luxury industry. 18.9 for Kering against 23 for the luxury industry according to the recent market reports.
Also, the P/E of the industry is so much lower than the one of 3 years ago equal to 32,5. It is forecasted to recovery within the next years.
However, if Kering continues to invest within the Web 3.0 it could have excellent growth forecast as computed in the analysis.

LVMH Case study:

General overview of the company:
Lvmh (Louis Vuitton Moët Hennessy) is the worldwide leader within the luxury industry, with a share of the total market equal to 15%. LVMH is born by a merger between Louis Vuitton and Moët Hennessy in 1987; the holding counts 75 brands in 2022.
Bernald Arnault is the president and the CEO of the company, who, in collaboration with Lazard bank acquired the control of the company with a minority of 4% in ten holdings. Nowadays, there are various members of the Arnault's family within the management of the group.
LVMH operates in various sector such as:

- Wine and Spirits
- Watches and Jewels
- Perfumes and Cosmetics
- Selective Retailing
- Fashion Leather and Goods

Some of the group's *maison* are: Moët et Chandon, Bulgari and Tiffany, Le Samaritane, Christian Dior, Hotel Bulgari, Belmond, Dior, Louis Vuitton, Céline, Fendi and so on.

LVMH Financial Analysis:

Lvmh, even though the macro economical condition did not be good during the last years, always reported less losses than the other groups and customer satisfaction.

Pandemic times were difficult to anyone, as reported when analyzing Kering; Lvmh only counted a 17% of losses on sales, thanks to Louis Vuitton and Christian Dior which stayed the "leaders" of the luxury industry; as a fact, the increase in online sales and customer affiliation is attributable for a majority to those two.

REVENUES BY SECTION	**2021**	**2020**
Wines and Spirits	5.965,00 €	4.744,00 €
Growth%	26%	
Fashion and Leather Goods	30.844,00 €	21.172,00 €
Growth%	46%	
Perfumes and Cosmetics	5.711,00 €	4.456,00 €
Growth%	28%	
Watches and Jewelry	8.872,00 €	3.315,00 €
Growth%	168%	
Selective Retailing	11.680,00 €	10.115,00 €
Growth%	15%	
Other & Holdings	1.142,00 €	849,00 €

Figure 45: Source: excel analysis.

In 2021 Lvmh expanded itself through the acquisition of Tiffany & Co, the acquisition of 60% stake in Off White, a majority participation in the Italian fashion *maison* Etro.

LVMH Long term Growth rate estimation:

to compute the growth rate applicable in the long run, the analysis has been developed considering the estimation of the GDP value in 2026 within the geographic area indicated as relevant by LVMH.

Areas	Real GDP growth in 2026	Net sales 2020	Net sales 2021	Average	% on total net sales	GDP divided for sales
Europe (France included)	1,66%	10.670,00 €	13.971,00 €	12.320,50 €	0,253618	0,004210056
United States	1,70%	10.647,00 €	16.591,00 €	13.619,00 €	0,28	0,004765907
Asia (Japan included)	4,52%	18.530,00 €	26.749,00 €	22.639,50 €	0,47	0,021064769
Total		39.847,00 €	57.311,00 €	48.579,00 €	100%	3,00%

Figure 46: Source: excel analysis.

Once computed the average value of the net sales in each country during 2020 and 2021 and how much each of them weights, it was possible to compute by multiplying the % on total net sales with the estimated GDP, the total value for the long run, which is equal to 3,00%.

LVMH Beta computation:

To compute the Beta of the company, the analysis was conducted with the top-down approach, choosing a timeline of 5 years with monthly data, and the CAC 40 as index since the company is listed in Europe, its head office is in Paris and, according to official data, the highest number of exchanged volumes is on the CAC 40. The R^2 between LVMH and CAC 40 is equal to 0,67 so it has been considered as eligible.

The beta adjusted has a value of 0,97 which is coherent with the one expressed by the market of 0,98.

Date	***LVMH***	***CAC 40***		***LVMH RETURN***	***CAC 40 RETURN***
31/05/17	227,1500	5.283,6300		0,002869757	0,00309
30/06/17	218,3000	5.120,6800		-0,03896104	-0,03084
31/07/17	212,7000	5.093,7700		-0,02565277	-0,00526
31/08/17	220,2500	5.085,5900		0,035496004	-0,00161
30/09/17	233,4500	5.329,8100		0,059931896	0,048022
31/10/17	256,1000	5.503,2900		0,097022917	0,032549
30/11/17	244,5000	5.372,7900		-0,04529481	-0,02371
31/12/17	245,4000	5.312,5600		0,003680982	-0,01121
31/01/18	252,6000	5.481,9300		0,029339853	0,031881
28/02/18	246,5000	5.320,4900		-0,02414885	-0,02945
31/03/18	250,2000	5.167,3000		0,015010142	-0,02879
30/04/18	289,3000	5.520,5000		0,15627498	0,068353
31/05/18	297,0500	5.398,4000		0,026788801	-0,02212
30/06/18	285,2000	5.323,5300		-0,03989227	-0,01387
31/07/18	298,8500	5.511,3000		0,04786115	0,035272
31/08/18	301,8500	5.406,8500		0,010038481	-0,01895
30/09/18	304,6000	5.493,4900		0,009110485	0,016024
31/10/18	268,8000	5.093,4400		-0,11753119	-0,07282
30/11/18	252,5500	5.003,9200		-0,06045387	-0,01758
31/12/18	258,2000	4.730,6900		0,022371808	-0,0546
31/01/19	279,7500	4.992,7200		0,083462432	0,055389
28/02/19	302,0000	5.240,5300		0,079535299	0,049634
31/03/19	327,9000	5.350,5300		0,085761589	0,02099
30/04/19	349,0500	5.586,4100		0,064501372	0,044085
31/05/19	338,6000	5.207,6300		-0,0299384	-0,0678
30/06/19	374,3000	5.538,9700		0,105434141	0,063626
31/07/19	375,3000	5.518,9000		0,002671654	-0,00362

31/08/19	362,4000	5.480,4800		-0,0343725	-0,00696
30/09/19	364,6500	5.677,7900		0,006208609	0,036002
31/10/19	382,5000	5.729,8600		0,048951049	0,009171
30/11/19	407,3000	5.905,1700		0,064836601	0,030596
31/12/19	414,2000	5.978,0600		0,01694083	0,012343
31/01/20	395,3000	5.806,3400		-0,04563013	-0,02873
29/02/20	370,8500	5.309,9000		-0,06185176	-0,0855
31/03/20	338,4500	4.396,1200		-0,08736686	-0,17209
30/04/20	352,4500	4.572,1800		0,041365047	0,040049
31/05/20	375,0000	4.695,4400		0,063980706	0,026959
30/06/20	390,5000	4.935,9900		0,041333333	0,051231
31/07/20	366,7500	4.783,6900		-0,06081946	-0,03086
31/08/20	392,8000	4.947,2200		0,071029312	0,034185
30/09/20	399,4000	4.803,4400		0,016802444	-0,02906
31/10/20	402,3000	4.594,2400		0,007260891	-0,04355
30/11/20	482,9000	5.518,5500		0,200347999	0,201189
31/12/20	510,9000	5.551,4100		0,057983019	0,005954
31/01/21	498,3000	5.399,2100		-0,02466236	-0,02742
28/02/21	525,0000	5.703,2200		0,053582179	0,056306
31/03/21	568,1000	6.067,2300		0,082095238	0,063825
30/04/21	626,2000	6.269,4800		0,102270727	0,033335
31/05/21	652,0000	6.447,1700		0,041200894	0,028342
30/06/21	661,3000	6.507,8300		0,014263804	0,009409
31/07/21	673,9000	6.612,7600		0,01905338	0,016124
31/08/21	626,8000	6.680,1800		-0,06989168	0,010195
30/09/21	620,1000	6.520,0100		-0,01068922	-0,02398
31/10/21	677,2000	6.830,3400		0,092081922	0,047597
30/11/21	686,6000	6.721,1600		0,013880685	-0,01598
31/12/21	727,0000	7.153,0300		0,058840664	0,064255

Figure 47: Source: excel analysis.

COVARIANCE	0,00253435
VARIANCE	0,00264999
Beta Raw	0,95636271
LVMH Standard deviation	0,05984889
Market Standard deviation	0,05147808
Correlation	0,82260035
Beta Raw	0,95636271
Beta Adjusted	0,97090847

Figure 48: Source: excel analysis.

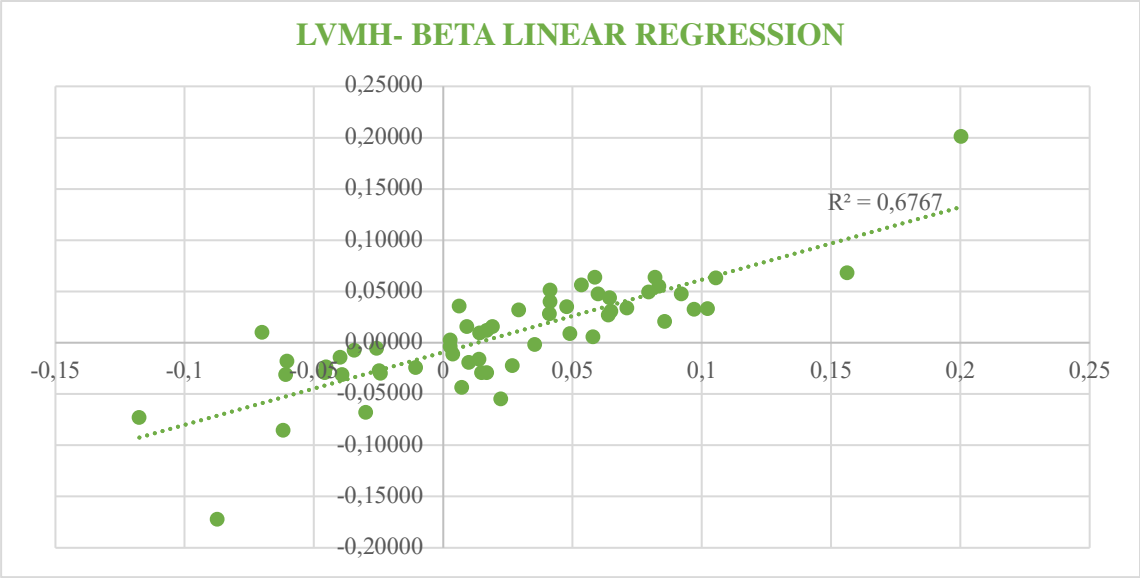

Figure 49: Source: excel analysis.

LVMH Wacc computation:

As explained in chapter 1, wacc is computed as the product of re*E/V+rd*D/V*(1-t).

At this first stage the focus is on **the cost of equity**:

Re formula is: risk free rate+ Beta equity * market risk premium.

Using the database provided by professor Damodaran it was possible to have values regarding the average equity risk premium by area (the same area used in the computation of the GDP);

the market risk premium was calculated by applying that same methodology and it is equal to 4,94%.

Geographical Area	Average of Equity Risk Premium	Net sales 2020	Net sales 2021	Average	% on total sales	Weighted average
Europe (France included)	5,07%	10.670,00 €	13.971,00 €	12.320,50 €	25%	0,012858423
United States	4,24%	3.657,10 €	16.591,00 €	13.619,00 €	28%	0,011886733
Asia (Japan included)	5,28%	2.742,40 €	26.749,00 €	22.639,50 €	47%	0,024606632
Total		17.069,50 €	57.311,00 €	48.579,00 €	100%	**4,94%**

Figure 50: Source: excel analysis.

Regarding the risk-free rate, the value chosen is that of a 10-year German bund (mature market), which is equal to 1%.

Using the re formula, it is equal to: rf + Beta equity*MRP= 1%+0,97*4,94%.

Regarding the **cost of debt,** it was taken under analysis the Ebit value for F.Y 2021 divided by the interest expenses. The given result assumes the ICR (Interest coverage ratio) connotation, which value is used as indicator when computing rating and spread.

The table for High market cap firm is showed below:

EBIT	17.121,00 €
Interest expenses	242,00 €
Interest covered ratio	70,75
Spread (rating:AAA)	0,75%
Cost of debt	**1,75%**

Figure 51: Source: excel analysis.

Table 8.6: Interest Coverage Ratios and Ratings: High Market Cap Firms

Interest Coverage Ratio	*Rating*	*Spread*
> 8.5	AAA	0.75%
6.5-8.5	AA	1.00%
5.5 ⬚6.5	A+	1.50%
4.25- 5.5	A	1.80%
3- 4.25	A-	2.00%
2.5-3	BBB	2.25%
2- 2.5	BB	3.50%
1.75-2	B+	4.75%
1.5-1.75	B	6.50%
1.25-1.5	B-	8.00%
0.8-1.25	CCC	10.00%
0.65-0.8	CC	11.50%
0.2-0.65	C	12.70%
<0.2	D	14.00%

Figure 52: Source: Damodaran A.

Since the ICR is equal to 70,75 so a value higher than 8.5, the associated rating is equal to AAA, with a spread of 0,75%.
Then it is applied the common formula of rf+spread=rd. In numbers, 1%+0,75%=1,75%.

Given the value of equity and debt from the consolidated financial statement of the company under evalutation and an average tax rate of 26,37% computed on the basis of the last effective tax rates within a 4 year period, the wacc is equal to 5,41%.

Cost of equity	5,792%
Equity Market value	366.958,59 €
Debt Market value	34.453,00 €
Equity and Debt total	401.411,59 €
E/V =	0,91417
D/V=	0,0858
WACC =	**5,41%**

Figure 53: Source: excel analysis.

As for the tax rate, since the average of the effective tax rate is not significantly different from the marginal imposed by the French government of 26,5 %, the chosen one is the effective tax rate value.

Forecasting and share price estimation:

To compute the share price, the EV and the EQ of Lvmh, it has been conducted an analysis based on the Discounted cash flow methodology, within the same time horizon considered for Kering 2021-2025 and 2026 as year to compute the Terminal Value.

The considered projections are the following:

Revenues industry	283.000,00	302.810,00 €	324.006,70 €	346.687,17 €	370.955,27 €
Online	62.260,00 €	77.216,55 €	82.621,71 €	88.405,23 €	94.593,59 €
Web 3.0	4.245,00 €	6.367,50 €	9.551,25 €	14.326,88 €	21.490,31 €
LVMH	636,75 €	955,13 €	1.432,69 €	2.149,03 €	3.223,55 €

Figure 54: Source: excel analysis.

The online segment is forecasted to represent the 26% by 2025, calculated as average between the best estimation of 29% of the shares and a worst that supposes that its level stays stable to the actual of 22%.

Lvmh market share of the total luxury industry is equal to 15%, so the associated revenues from web 3.0 are equal to the ones of the industry multiplied by 0,15.

They represent an average of 2% on total Lvmh sales, which is assumed that makes go up the revenues growth rate from an average of 14% to 16%.

As considered for Kering, the developing of the web 3.0 helps companies in reducing raw materials cost, labor ones, so it is forecasted a decreasing in COGS by the same 2% for a total value of 31%.

To compute the other voices of the reclassified income statement, the used variables are represented by the average calculated on the past year's trend.

Historical Income Statement	**2021**	**2020**	**2019**	**2018**	**Average**
Revenues	64.215,00 €	44.651,00 €	53.670,00 €	46.826,00 €	52.340,50 €
Revenues g	44%	-17%	15%		13,88%
COGS/Revenues	31,70%	35,54%	33,77%	33,37%	33,59%
Selling General and Administrative	26.722,00 €	20.433,00 €	24.071,00 €	21.221,00 €	
EBIT/SALES	26,66%	19,04%	21,19%	21,32%	22,05%
TAX RATE	26,34%	28,33%	25,78%	25,03%	26,37%
Depr/PPE	15%	16%	15%	14%	14,83%
PPE/Sales	51,81%	67,45%	56,38%	30,99%	51,66%
NWC	6.669,00 €	6.023,00 €	5.831,00 €	5.251,00 €	
NWC/Sales	10%	13%	11%	11%	11,49%
Capex	- €	1.902,00 €	4.905,00 €	- 11.269,00 €	

Figure 55: Source: excel analysis.

Forecasted Income Statement	2021	2022	2023	2024	2025	2026
Sales	64.215,00 €	74.489,40 €	86.407,70 €	100.232,94 €	116.270,21 €	119.763,05 €
Ecommerce revenues		12.663,20 €	14.689,31 €	17.039,60 €	19.765,94 €	20.359,72 €
E-COMMERCE REVENUES WEB 3.0		***636,75*** €	***955,13*** €	***1.432,69*** €	***2.149,03*** €	***3.223,55*** €
COGS		23.091,71 €	26.786,39 €	31.072,21 €	36.043,76 €	37.126,55 €
EBIT		16.428,12 €	19.056,62 €	22.105,68 €	25.642,59 €	26.412,91 €
Taxes		4.332,27 €	5.025,44 €	5.829,51 €	6.762,23 €	6.965,37 €
NOPAT		12.095,85 €	14.031,18 €	16.276,17 €	18.880,36 €	19.447,54 €
PPE	33.270,00 €	38.478,64 €	44.635,22 €	51.776,86 €	60.061,16 €	61.865,44 €
Depreciation		5.706,55 €	6.619,59 €	7.678,73 €	8.907,33 €	9.174,91 €
NWC	6.669,00 €	8.557,51 €	9.926,71 €	11.514,98 €	13.357,38 €	13.758,64 €
Δ NWC		1.888,51 €	1.369,20 €	1.588,27 €	1.842,40 €	- €
CAPEX		10.915,19 €	12.776,18 €	14.820,37 €	17.191,62 €	9.174,91 €
FCFO		4.998,70 €	6.505,40 €	7.546,26 €	8.753,67 €	19.447,54 €
TV					807.783,75 €	
FCFO+TV		4.998,70 €	6.505,40 €	7.546,26 €	816.537,41 €	
ENTERPRISE VALUE	678.376,04 €					

Figure 56: Source: excel analysis.

The total Enterprise value is equal to 678.376,04

ENTERPRISE VALUE	678.376,04 €
NET DEBT	23.888,00 €
EQUITY VALUE	654.488,04 €
NUMBER OF SHARES OUTSTANDING	252,0
SHARE PRICE	2.597,17 €

Figure 57: Source: excel analysis.

By subtracting the Net financial position, it is computed the equity value, which divided by the number of shares outstanding, gives the forecasted share price.

If the projections should be wrong since the WEB 3.0 could not grow as expected the result will be the following:

Forecasted Income Statement	2021	2022	2023	2024	2025	2026
Sales	64.215,00 €	73.125,18 €	83.271,70 €	94.826,10 €	107.983,74 €	111.227,65 €
COGS		24.566,12 €	27.974,80 €	31.856,46 €	36.276,72 €	37.366,49 €
EBIT		16.127,25 €	18.365,00 €	20.913,24 €	23.815,07 €	24.530,49 €
Taxes		4.252,93 €	4.843,05 €	5.515,05 €	6.280,29 €	6.468,96 €
NOPAT		11.874,32 €	13.521,95 €	15.398,19 €	17.534,78 €	18.061,53 €
PPE	33.270,00 €	37.773,93 €	43.015,27 €	48.983,88 €	55.780,66 €	57.456,35 €
Depreciation		5.602,04 €	6.379,35 €	7.264,52 €	8.272,51 €	8.521,02 €
NWC	6.669,00 €	8.400,78 €	9.566,44 €	10.893,83 €	12.405,41 €	12.778,08 €
Δ NWC		1.731,78 €	1.165,65 €	1.327,40 €	1.511,58 €	- €
CAPEX		10.105,97 €	11.620,69 €	13.233,12 €	15.069,29 €	8.521,02 €
FCFO		5.638,61 €	7.114,96 €	8.102,19 €	9.226,42 €	18.061,53 €
TV					750.213,75 €	
FCFO+TV		5.638,61 €	7.114,96 €	8.102,19 €	759.440,17 €	
ENTERPRISE VALUE	633.761,63 €					

Figure 58: Source: excel analysis.

The sales growth rate stays stable to 14% and the COGS are equal to the past average of 33,59% on total sales.

ENTERPRISE VALUE	633.761,63 €
NET DEBT	23.888,00 €
EQUITY VALUE	609.873,63 €
NUMBER OF SHARES OUTSTANDING	252,0
SHARE PRICE	2.420,13 €

Figure 59: Source: excel analysis.

By subtracting the Net financial position, it is computed the equity value, which divided by the number of shares outstanding, gives the share price which would be lower.
The delta is referred to the valued added by those investment.
To the worst-case scenario, the explanation follows the same logic of what expressed in the Kering case study.

To conclude, Lvmh P/E is in line with the one of the luxury industry since it is equal to 25,95 although luxury segment reached a lower P/E value compared with a past horizon of three years.
However, if Lvmh continues to invest within the Web 3.0 it could forecast to have an excellent growth as computed within the analysis.

CONCLUSIONS:

This dissertation wanted to demonstrate that revenues from investments in web 3.0 would lead companies to higher market values.

The case studies supporting the thesis are the ones of Lvmh and Kering group. The analysis was carried out by applying the discounted cash flow method.

A careful overview of the past values of the two companies, have been followed by the computation of multiples such as (Cogs on sales or Nwc on sales), which average was used to compute values that should have been considered within the forecasted statements.

As for the best-case scenario, given the total weight of the estimated revenues exclusively coming from the web 3.0, equal to 3% for Kering group and to 2% for lvmh , the average past growth rate of sales was enlarged by the same amount for forecasting.

Meanwhile, the worst scenario was considered as a stable stage for the firms, given by a "not investing decision", which is based on the application of the average multiples computed on past years trends for forecasting.

Through an analysis of the luxury industry's trend, it is previewed that it will count total revenues for 360-380 by 2025 and in this study, it was assumed a reached value given by their average equal to about 370 B euro.

According to the developed examination, decide to not invest in web 3.0 would imply a negative delta in Lvmh share price of 170 euro, while in Kering's of 201 euro. In a more detailed way, a negative delta in the Enterprise Value of Kering equal to 25 Billion euro and to 45 Billion euro for Lvmh.

The decision of not investing in this new segment would have as starting point the fact that the web 3.0 might decline. The reasons could be various, for example as anticipated within the dissertation, the lack of regulation, since from a legislative point of view, the only sure feature is that crypto currencies and Nft are considered into two different ways. There is not a unique framework since its country deals with the topic in various way:

some associate blockchain games with "casino games", others with tax regime or art.

Nft covers different segments at once, that is metaverse and art, collectable and DeFi and so on, leading people or companies to have difficulties in declaring sales or just their ownership.

There are countries that considers crypto as illegal and they are Nepal, Vietnam, Indonesia or China. This last for example, in September 2021 declared illegal each transaction paid in crypto values. If projecting that the Asian market has a relevant importance and weighting on the luxury market, we could not rely on Chinese customers when talking about revenues from web 3.0, since China's declaration about crypto includes each financial instrument related to it.

Crypto values have legal tender in El Salvador and in the Central African Republic.
Another issue that could impact negatively on this instrument is related to environmental issues, since the CO_2 emission linked to the use of the blockchain system are so high, especially as anticipated in Chapter 2, that of PoW (mining step) equal to 56,8 million tons. To compensate those values, it should be necessary to plant more than 284 million of trees. For this reason, most of the new blockchains are nowadays being developed on the PoS system, considered as more "ecological".
Recently, according to what drawn up in a report of "Non fungible", which is the world largest Nft data source, sales of Nfts decreased about 50% during the first three months of 2022.
The guilty factor is considered the inflation, which is slowing down investments considering that Central banks are adapting a restrictive monetary policy and the war between Russia and Ukraine does not give a safe feeling to the market; if considering the speculative aim of Nft, this is boosted and compared with September 2021, the total fall on sales is of 92%.
Only waiting could give us answers and explanation regarding the fate of the Web 3.0, that maybe is right now just ushering itself, leading to an alternative scenario in which the growth rates are a bit lower, but more regulated and not strive so much for having bubbles characters.
In a future with more regulation and awareness, they could count for sure of being part of a certain sale % of luxury companies.
However, today investment in web 3.0 are perceived by companies as a new potential, which could lead them to the creation of a new revenue stream and to the acquisition of a huge part of customers represented by the new generations.
As could be evinced by the financial analysis, investment in digital asset will contribute to company's growth in terms of revenues, awareness, market share and price of the share.
Furthermore, it is important for companies to be in line with the technological updates also due to what happened with the Covid 19 pandemic and be ready to face up inconvenient.
AI, crypto values, blockchain systems, Nft, are unknown topics for a huge part of the population, thus it should be appropriate to make sensibilization campaigns. In some universities this is already happening by toughing different courses on crypto and blockchain.
Nowadays, most of the companies which belongs to the luxury industry entered this new market segment, and if looking at the fashion industry, also sportwear brand such as Nike and Adidas did.
Recently, were born a multitude of projects regarding the virtual fittings or the possibility to shop virtual outfit and receiving them just by Nft.
The fact that people are willing to pay a huge amount of money for something that they will never have in real life is a bit scaring but make us understand how the market has changed and how it is evolving.

I will suggest companies to introduce the selling of Nft related to their most iconic items, for example when the customer shop them in store or online , by making them pay a premium price. This could help to increment the awareness about this new instrument making also revenues go up.
Also, for what concerns future studies, I will suggest to investigate more about regulation regarding those topics and what the accounting standard will preview.
The main relevant person of the luxury industry such as Chief operations from Gucci, Chief operations from Louis Vuitton or Researchers from Harvard Business school as Sandrine Crener, defined themselves as favorable and positive to these new market trends as they look at Web 3.0 as a new source of revenues that could expand itself and grow significantly soon.
In fact, according to Morgan Stanley, the Web 3.0 will be equal to the 10% of the total luxury industry and if reading the Luxury Monitor from Bain and Altagamma, the next keywords of the luxury industry will be Nft, Blockchain, Metaverse, virtual outfit and avatars.

BIBLIOGRAPHY:

- Armendáriz Lasso, Enrique. “Modelos de Valoración de Empresas Un Análisis Crítico.” Ciencia UNEMI revista de la Universidad Estatal de Milagro 5.7 (2015): 74–87.
- Bain e Company, Altagamma: “luxury monitor 2021”
- Berk, Jonathan B; DeMarzo, Peter M2020, “Corporate Finance” Fifth edition, Global edition.
- Binder, J. J. Beta, Firm Size, and Concentration. Economic Inquiry, [s. l.], v. 30, n. 3, p. 556–563, 1992
- Brealey, Myers, Allen “Principles of Corporate Finance”
- Contaldo A., Campara F. “Blockchain, Criptovalute, smart contract, industria 4.0”, 2019.
- Damodaran A. “Applied Corporate Finance”, Wiley, 2015.
- Damodaran, A. (2011) Damodaran on Valuation. 2nd edn. Wiley.
- Damodaran A. “Estimating Risk Parameters”
- Damodaran A. “Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2020 Edition Updated: March 2020”
- Deloitte, Global Power Of Luxury Goods. 2021
- Di Lazzaro F., Fabi T., Tezzon M. “Principi contabili internazionali: temi e applicazioni”
- Drew, M. E.; Veeraraghavan, M. “Beta, Firm Size, Book-to-Market Equity and Stock Returns.” Journal of the Asia Pacific Economy, [s. l.], v. 8, n. 3, p. 354, 2003
- Fernandez P., Eduardo de Apellaniz and Javier F. Acin “Market Risk Premium and Risk-Free Rate used for IESE Business School 81 countries in 2020”
- Goel, S. (2015) Financial Ratios. Business Expert Press.
- Kering 2021 Universal Registration Document Annual Financial Report - Integrated Report
- Kotarba, Marcin. "Measuring Digitalization – Key Metrics" Foundations of Management, vol.9, no.1, 2017, pp.123-138.
- LVMH annual report, 2021.
- LVMH INSIDE COURSE.
- Maglio R. “La valutazione d’azienda in settori specifici di attività”, SIDREA, 2018.
- Matt Fortnow, QuHarrison Terry “The NFT Handbook How to Create, Sell and Buy Non-Fungible Tokens
- Murray Z. Frank, Tao Shen, Investment and the weighted average cost of capital, Journal of Financial Economics,Volume 119, Issue 2,2016,
- Rosseau Simon. Slide on financial analysis. Audencia business school, Nantes.
- Mckinsey and Bof: “The state of fashion”

- Nadini, M., Alessandretti, L., Di Giacinto, F. et al. Mapping the NFT revolution: market trends, trade networks, and visual features. Sci Rep 11, 20902 (2021).
- Nft Market Report 2021. Non-Fungible website
- Palepu, Krishna G., Paul M. Healy, and Erik. Peek. Business Analysis and Valuation : IFRS Edition. Fifth edition. Andover: Cengage Learning, 2019.
- Statista Consumer Market Outlook: In depth- Luxury goods 2021.
- Statista Luxury Fashion – Worldwide. Retrieved May 30, 2022
- Statista Luxury Goods – Worldwide. Retrieved May 30, 2022

SITOGRAPHY:

https://altagamma.it/media/source/Altagamma%20-%20Bain%20Luxury%20Market%20Monitor%202021.pdf

https://auraluxuryblockchain.com/?cli_action=1646319605.152

www.bancobpm.it/

https://coinmarketcap.com/

https://corporatefinanceinstitute.com/

https://www.borsaitaliana.it/borsa/glossario/beta.html

https://www.businessoffashion.com/news/technology/metaverse-a-50-billion-revenue-opportunity-for-luxury/

https://www.cloudfinance.it/

https://www.foodserviceweb.it/2022/01/31/a-new-york-apre-il-primo-nft-restaurant-del-mondo/#:~:text=Il%20nome%20e%20la%20data,avr%C3%A0%20acquistato%20un%20suo%20NFT.

https://www.forbes.com/sites/bernardmarr/2022/01/19/how-luxury-brands-are-making-money-in-the-metaverse/?sh=2ad104f25714

https://www.forbes.com/sites/josephdeacetis/2022/02/08/the-rise-of-the-metaverse-where-crypto-nft-and-luxury-brands-merge/?sh=456b18aa454d

https://www.forbes.it

https://www.fortuneita.com/2022/05/03/nft-il-metaverso-bored-ape-paralizza-ethereum/

https://www.ibm.com/

https://www.investopedia.com/terms/b/business-valuation.asp

https://www.linkedin.com/feed/update/urn:li:activity:6897585199639527425/

https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/state%20of%20fashion/2022/the-state-of-fashion-2022.pdf

https://www.mffashion.com/news/livestage/dolce-gabbana-inaugura-la-prima-community-nft-202202211137463238?utm_source=dlvr.it&utm_medium=linkedin

https://www.mffashion.com/news/livestage/dressx-debutta-con-capi-phygital-202202041231236919

https://www.mffashion.com/news/livestage/dressx-lancia-gli-nft-dei-capi-peter-dundas-del-super-bowl-202202141934455686?utm_source=dlvr.it&utm_medium=linkedin

https://www.mffashion.com/news/backstage/mff-voices-guia-ricci-boston-consulting-le-new-gen-saranno-la-quota-principale-degli-acquisti-moda202112141224109321?utm_source=dlvr.it&utm_medium=linkedin

https://nonfungible.com/

https://www.statista.com/outlook/cmo/luxury-goods/luxury-fashion/worldwide?currency=EUR

https://soldoutservice.com/p/anche-fendi-esplora-il-mondo-crypto

https://www.spglobal.com/

https://simplywall.st/

https://www.voguebusiness.com/technology/louis-vuitton-to-release-new-nfts?utm_medium=social&utm_source=linkedin.company&utm_campaign=postfity&utm_content=postfity9adbf#intcid=_voguebusiness-uk-right-rail_616fad3c-b0a2-4b3a-8fd8-824cae1e465f_popular4-1

GREETINGS:

Ringrazio mia sorella Martina per il giorno in cui mi ha detto “guarda, questa università è la Luiss, secondo me ti piacerebbe andarci”.
È stata la scelta migliore che potessi fare. In questi anni sono cresciuta sotto tantissimi punti di vista, ho incontrato persone per me importanti e senza le quali oggi non sarei la persona che sono.
Grazie alla mia famiglia, che c’è sempre stata e mi ha sempre ascoltata e sostenuta.
A mamma, papà e i miei nonni.
A tutte le persone che ho incontrato in questi anni di Luiss e sono rimaste con me.
Giorgia e Serena, le mie sorelline di “Via Trip”, per essere cresciute con me.
Le mie nuove coinquiline che mi hanno fatto passare degli ultimi mesi bellissimi.
Le mie amiche e i miei amici che ci sono sempre stati.

Grazie alla Luiss, per avermi dato tutto questo, lo rifarei altre mille volte.

Grazie per ogni cosa, non vi dimenticherò mai.

Sono stati gli anni più belli, conserverò ogni ricordo con tanta cura e amore.

Verso nuovi orizzonti!

Enrica

SUMMARY:

Corporations have the obligation of drawing up their financial statement.
It consists in four 4 main documents: balance sheet, income statement, cash flow statement and the notes to financial statements, which must be written in compliance with the principles of "fair presentation."
The goal in conducting a financial analysis of a firm is that of "assessing the performance in the context of its stated goals and strategy". There is a great number of financial tools that can be used in the computation of index used by readers for better understanding the financial value of the firm or its performance
They can be divided into six categories and the difference between them is found in the objective of the analysis: Profitability ratios, which show how well a company is using its asset to produce value and profits and examples are the gross profit margin and the operating margin.
Activity/Efficiency ratios, indicate how efficiently a company is using its assets to generate revenues and cash, e.g., receivables turnover and the inventory one.
Liquidity ratios, which show the ability of the firm to cover its financial obligations, meeting its cash needs and the going concern principle. Some of them are current ratio or super quick ratio.
Solvency ratios, such as debt ratio or debt to equity ratio, which show the capability of the company to repay debt and interests related to it and last, Market ratios which indicate that the value of a firm is estimated by looking at other values (of similar firms to the one under analysis) expressed by the market. Examples are Enterprise value on sales or Price on earnings.

A firm value is given by its market capitalization, which is computed by multiplying the price of the company stock by its number of shares outstanding. Cash flows can be classified according to the approach used when determine them and the result to the one they lead the user; the classification is between asset side and equity side.
Asset side: this side is also called unlevered side. The result for using a methodology like this one is the computation of the Enterprise value which is a representation of the market value of the total asset of the firm.
Equity side: this is also called levered side which, on the contrary leads the analyst to determine the equity value defined as the market value of equity.
Another difference is between the analytical and synthetic methodology: it is defined as analytical the one that allows to directly analyze the value drivers of the company to estimate year by year the Cash Flows, while as synthetic the value of a firm is estimated by looking at values of similar firms expressed by the market.

The Dividend discount model belongs to the analytical methodology jointly to the Discounted Cash Flow and the Free cash flow from equity.

The DDM model is used to evaluate firms likely to have payout dividends. An investor can have interest in buying a firm's stocks and detaining them for a specific period (one year or more). By doing so, he/she will expect from this operation two types of cash flows: dividends during the period and their expected price at the end of the time. It is difficult to evaluate dividends for the distant future, so it is assumed that they grow at a constant rate, which is going to be lower in the "perpetuity time" than the "g rate" used in the short run. The stock price will be represented by the sum of the dividends, divided by (1+interest rate) raised to the time the allowance is referred to, plus the (Dividend(t_{+1})/ (r-$g_{\text{long run}}$)). "r" stands for the cost of equity, that is the rate the stockholders will demand for holding the stock based on their assessment of risk. One scenario to take under consideration is that a firm could find itself already in its steady stage, growing at a stable rate, so the stock price would be equal to its expected dividends divided by the difference between r-g, this assumes the connotation of Gordon model.

The most correct growth rate that should be considered to compute the terminal value is the inflation rate or the expected consumer price index; if the company is going to grow, that level is going to be maintained.

There are other two sub-models for valuing growth within the dividend discount methodology, the H model and the three stage one. The H model refers to a non-constant growth, higher first and then declined.

The value of the stock in this specific scenario is given by the sum of its value in the stable moment and its own given by its extraordinary growth. The three-stage model instead counts a middle phase known as "transition", which is characterized by a drop in "g" from the highest moment to the lower, reaching then a stable growth.

As conclusion, using the Dividend discount model there is not a direct approach with the financial debt or the debt cost of capital since the starting point is the dividend.

To apply the Dividend discount model, it is just needed to estimate the payout or the eventual repurchase plan of the company, since the formula to compute the dividend level is equal to earnings per share *payout rate.

Advantages in using this model can be evidenced by its clarity and easiness logic, while limitations can be evidenced by the tremendous amount of uncertainty associated with forecasting a firm's dividend growth rate and future dividends.

The Discounted cash flow method uses the cash flows of the firm under analysis, estimated year by year, discounted at a rate that reflects their riskiness, to estimate its enterprise value. It is "*en*

ensamble" of effective and actual flows discounted at a specific rate. As evidence, the value mentioned is given by the present value of all the future cash flow. Given the enterprise value amount, the stock price is equal to this last adjusted by cash and debt also divided by the number of the firm's shares outstanding. A difference to the dividend discount model is that the cash flows are based on EBIT, not computing interests' expenses and earnings and an advantage in using this model is that it helps in clarifying the information, making a better use of them in investment decisions.

The rate used to discount the cash flow is not anymore the equity cost of capital since the stakeholder in this case are not just the equity holders but also the debt one. It is the Wacc (weighted average cost of capital) and its equation is: r_e * E/E+D + r_d * D/D+E* (1-tax rate). "re" stands for equity cost of capital, "rd" as debt cost of capital "E" to equity and "D" to debt. The cost of debt also known as interest rate on debt, is the present value in asset valuation or the value debt capital; it could be computed as net outstanding debt* interest expense, using the yield already applied as rd if the company has just issued a bond, or as rf+spread. The spread could be measured taking under analysis the Interest Coverage ratio = Ebit/ Interest expenses, the result given by this calculus will be collocated within a range of a specific rating, the associated value is the spread.

The free cash flow from equity are generated by all the assets invested in the firms, after this one has paid and repaid the financial debt. So, they are generated by the firm, and they are available to the shareholders after adjusting for interest payments, debt issuance and debt repayments.

The starting point is not the NOPAT as in the Discounted Cash Flow, but the EBIT which less interest expense (calculated as rd*outstanding debt), then less taxes on that result, produce the net income.

This one, is the starting line that must be adjusted with (plus depreciation, less capex, less (delta nwc), plus net borrowing (total amount of financial debt of that year- total amount of financial debt of the year before).

The equity cost of capital equation is given by the CAPM model (Capital Asset Pricing Model) which focuses on the systematic risk expressed by the beta which measures the volatility of a security (or of a portfolio) compared against the market as a whole.

In formula: $r_i = r_f + b_i * (E[R_{Mkt}] - r_f)$ Risk premium for security i

To estimate the risk free rate there are two major issues that must be considered, the first relates to the definition of a risk-free security and the characteristics a security needs to possess. The second applies when there are no risk-free assets and examines how to estimate a risk free rate under these conditions. A security is risk less when the expected return is equal to the actual return, this is a condition non reliable in in real world due to the impossibility in deleting the systematic risk.

The only securities that have a chance of being risk free are government securities, not because governments are better run than corporations, but because they control the printing of currency and it

is difficult for a wellness government to have bankruptcy. At least in nominal terms, they should be able to fulfil their promises (no default risk). From a theorical point of view the best fit approximation is to consider a 10Y Government bond.

The ERP (Equity *Risk Premium*) is the premium required by the investors as "average risk investment", representing the excess return of the market portfolio over the risk-free rate.

There are three approaches to estimate the Equity risk premium and they are respectively: Survey, Historical prices and the Implied equity risk premium. The survey consists in sending a survey to investors, managers or just to people who are engaged with corporate finance like academies, asking them for expectations and the implied equity risk premium are forward looking.

The historical method takes in consideration historical prices, replicating the top-down beta computation.

The Implied equity risk premium method is based on the assumption that the equity risk premium is computed as the difference between re-rf.

Country risk premium= Total equity risk premium - MRP (mature market). The country risk premium or CRP is the performance of excess return required by the investors concerned and related to the higher risk associated within their investment in a foreign market.

If within the analysis the total equity risk premium is represented by the value of the MRP, the risk-free rate must be 0% since it has been already considered in the Total equity risk premium.

The beta measures the expected variation of a title's return considered each variation (1 point %) of the market return.

Generally, it is assumed that firms with strict and aggressive policies or the ones with high debt level have the highest beta.

On the other hand, stocks with beta between 0 and 1 go in the same direction of the market (activity less risky than the market).

i.e., a stock with a beta equal to 1,5 refers to the possibility of price variation equal to 1,5 times the market.

It is important to highlight that the beta measures the covariation, not the volatility of the stock prices.

Beta (i, mkt) = Cov (Ri;Rmkt) = SD (Ri)*Corr (Ri; Rmkt) Var (rmkt) SD (Rmkt).

The value of the beta could be computed following two different approaches: one is the top down and the other is the bottom up one.

The beta top-down approach supposes the past principle, that is what happened in the past will be reflected in the future; as evidence what already happened, will happen again and the

return of the security will be equal to (price t+1)/ (price t -1).

The choice of market index affects Beta estimation and it is better to analyze an index with a lower number of securities, but market weighted.

An issue in computing beta value is linked to Time period and Internal Return, that is how many years to look backward for having a good esteem of the beta and how many observations must be taken under evaluation. The best solution according to Damodaran is that of choosing weekly data over the last 2 years or monthly data over the last 5 years. As for the internal return, for a security which is not traded for 7/10 days, it is impossible to look at daily or weekly prices since the opening price will be equal to the closing one; this would involve an internal return which strives for 0.

The solution is that of looking at more reliable data: if weekly ones are not available, then looks for monthly and so on. To avoid different estimates of beta for the same firm, A. Damodaran in its paper called "Estimating risk parameters" affirms that the beta must be adjusted by doing the following:

Beta Adj= 2/3*B+1/3*bM.

Regarding the bottom-up approach, the beta of the firm is computed looking at its peer's data:

It is necessary to build a panel of companies that can be considered like the one under evaluation. The mainly theoretical requirements to be considered as said, are: Risk level, Growth rate, Size and Competitive arena.

By slope function between peers and market index, the beta is computed as follows:

$B_{equity}/(1+(1-t) *(D/E)$: this is also called Hamada Formula.

Another kind of methodology opposed to the analytical mentioned before, is *the relative valuation,* and as anticipated an example is the multiple method. A multiple is a ratio between the Enterprise Value or Equity Value of the company within a panel of comparable divided by a financial measure considered for an amount times firm's financial measure. In formula, the value of the firm is expressed by the following relationship= M* firm's financial measure.

The multiples methodology directly takes the expected growth of the company and its risk through values expressed by the market. If the analysis is well-conducted and structured, the results provided by the analytical and relative valuation e.g., Discounted cash flows and Multiples will coincide.

Multiples could belong whether to the asset or equity side: Examples are: EV/SALES, EV/EBIT for the asset side, while as for equity side multiples, P/E, P/BOOK VALUE.

Multiples are easy to compute because they are a shortcut of the value of the company and after having analyzed the panel of comparable, the last thing to do is to apply the formula mentioned before. Also, multiples valuation does not require detailed factors such as cost of capital, profitability or growth data.

A possible issue of using this method is referred to the fact that market prices are real, but not always: e.g., speculative bubbles: all the value of the firms were overpriced; macroeconomic condition ex. Covid / Russia war.

In this dissertation it is applied the business valuation to the investment in web 3.0 within the luxury industry.

Web 3.0 is a new market segment which includes Nft (Non fungible tokens), gaming, metaverse and implies the use of the blockchain technology.

The blockchain system is born in 2008 (thanks to Satoshi Nakamoto) with Bitcoin, the first Blockchain ever created. Thanks to this technology, the transaction process and the asset traceability are clear, easy and the risk of the so called "double spending" is lower. Blockchain collects information together in groups also known as blocks, which hold sets of information.

Blocks have certain storage capacities and when filled are chained into the previously filled block, forming a chain of data known as the blockchain. Blockchain's speedy and security are strongly correlated with its validation protocols and they are many as Proof of Work (PoW) or Proof of Stake (PoS).

Because of the decentralized nature of Bitcoin's blockchain, all transactions can be transparently viewed, so anyone can see transactions occurring live.

Blockchains could be public, private, authorized (both public or private may need authorizations when have to operate) or joint to a consortium.

The blockchain database works 24/24 every day with an accounting time of a few hours, differently from banks which are open usually from Monday to Friday and an operation takes days to be accounted.

The Aura Blockchain Consortium is the world's first global luxury blockchain created by LVMH (Louis Vuitton Moët Hennessy), Prada Group, Cartier, part of Richemont on April 2021 and in October 2021 the OTB Group[85] (Only the brave group) joined. Recently also entered the consortium the luxury jewerly and accessory brand Chopard and Mercedes Benz. The main aim of the Aura blockchain is that of accelerating and guaranteeing to the costumers the transition to a circular business model, based on trust and transparency.

Recently, Bulgari launched the new watch "Octo Finissimo Ultra", a limited edition made up by only 10 pieces, which collection marries the digital and the real world.

It contains a "Qr-code" which could be used by the owner to learn more about that specific product and its history. The intrinsic Nft is a concrete representation of what has been explained about the benefits and the role of the blockchain, since it guarantees authenticity and unicity.

To what concerns metaverse, it is a virtual reality in which is possible to access by using an internet connection and some devices such as computer and a special pair of sunglasses.
Some boutiques already opened in Metaverse such as the one of Balenciaga, Concept store of Gucci and Louis Vuitton using The Sandbox, a videogame in which it is possible to build ecosystems thanks to the blockchain technology.
Balenciaga is the first luxury collection to enter Metaverse trough Fortnite Videogame, launching a collection in September 2021 divided in two lines, one purely virtual which can be bought by playing to Fortnite and paying with Fortnite's virtual money called V-Bucks; the most expensive item is paid 1500 V-Bucks, equivalent to 12 $. That of Balenciaga signed the beginning of "luxury" in virtual world, since Metaverse is nowadays in the luxury *maison* crosshairs. This year the Decentraland (MANA) platform hosted the first virtual fashion week.
Non fungible tokens are *smart contract,* in the practice defined as unique pieces of "digital art", verified and secured by the blockchain technology. As evidence, their main characters are authenticity of origin, ownership, uniqueness (scarcity).
By digital art is meant whatever form of art: digital art, digital collectibles , images, videos, gif, audio, 3D model, text or poems, digital real estate, domain names and so on.
The most famous creator of Nft nowadays is The Bored Ape Club, who launched 10,000 Bored Ape NFTs which allow the owners to enter into the Internet Yacht Club, a "digital bathroom where is it possible to take a "pen" for drawing, writing, or creating graffiti on walls every 15 minutes. A while ago a project born, called "Fly Fish Club", which will provide access to the owners of its Nft to the first Nft Restaurant (Private dining club) that will open in New York in 2023.
A lot of luxury brands in these last months developed an Nft, most of the time in collaboration with other fashion *maison*/artists. As digital assets, Nft are offering a new way for customers to shop and exchange authenticated goods thanks to the blockchain technology. The launch of Nft's collection is correlated 99% of the time to the presentation of a new physical or digital collection of the brand. Example could be those of Givenchy x Chito, Prada with its "Time capsule" and so on.
Nowadays, the total addressable market for digital fashion has a value of 31 billion with more than 100 brands collaborating. The first Italian Fashion community of Nft was launched by Dolce and Gabbana, in collaboration with the marketplace "Unxd". Domenico Dolce and Stefano Gabbana created an Nft collection called "Genesi – D&GFamily", made up of nine unique pieces of digital couture, inspired to the Venetian tradition and some of these items have been produced for real. The D&G Nft collection have been sold for 1.185.719 ETH (5,65 million $).
Gucci is showing worldwide its digital innovation and power through collaboration with various artists of Nft creations. Examples of project already realized are: Nft Aria Fashion show,

SUPERGUCCI with a partnership with SUPERPLASTIC, 10KTF Gucci Grail and Gucci Town, a new space in Metaverse which is accessible to users through the Roblox platform. The digital town is made up by different "areas", starting from coffee shops, mini-games, art galleries and boutiques as the Vault shop.

"Louis the game" is a videogame launched by the Louis Vuitton *maison* in August 2021 to celebrate the 200 birthdays of the house.

It consists in a mascotte called "Vivienne" who looks for "candles" which possess, gives the user the possibility of unlocking anecdotes regarding Louis Vuitton's story (both brand and stylist).

While learning about them, it is possible for the user to be able of being chosen by the creators of the platform to collect Nft for free. It is not the first time this *maison* works and collaborates with the videogame industry, since in 2019 it worked close with League of Legends, creating digital outfits for the avatars and a new collection which was available in stores.

Looking at the regulation side, unfortunately there are not a clear and specific rules regarding those topics, both from a legal and tax point of view and from a standard setter to accounting purpose too. For this reason, within the next financial analysis, revenues from Web 3.0 will be considered as revenues from ecommerce.

The forecasted trends for the online segment as shown by Bain are those of reaching by 2025 the 28-30% of the total market, huge volumes if compared with the ones of 2019 equal to 12% or those of 2017/2018 which were about 9-10%.

Trusting the digital revolution, companies might think of revenues not just in term of money, but also focusing on less measurable benefits such as brand awareness and marketing impact. By entering the video game industry and the one of digital art, they are acquiring a new target of consumers, that is that of Z Gen. As a market study made up by Bain & company in collaboration with Altagamma affirms, by 2025 the Gen. Z will be more than the 50% of the total luxury population, trend justified by old Gen whose leaving the luxury market. benefit of the collaborations between videogame firms and the luxury *maison* is that of a new segment of revenues

Robert Triefus, in its interview published by BOF and Mckinsey also affirmed that right now the revenues of investing in the online segment and entering the web 3.0 might be represented by a combination of a new revenue stream and branding, since people are willing to pay a huge amount of money for NFt, digital collectibles and a second life in the metaverse. There, is where the potential revenues reside.

The financial analysis has been conducted looking at Kering Group and LVMH group.

Kering is one of the leaders of the luxury industry jointly to LVMH, whose groups, according to the last Deloitte luxury monitor, are the first two in a top 10 chart for volumes of sales within the luxury

industry. It counts *maison* as: Gucci, Balenciaga, Yves Saint Laurent, Alexander McQueen, Bottega Veneta, Boucheron, Brioni, Pomellato, DoDo, Queelin and Kering Eyewear.

As almost of the companies the four years period 2018-2021 is characterized by ups and downs in revenues due to the Covid 19 pandemic; revenues by e-commerce for Kering were equal to 15% on total net sales, percentage that increased compared with the past years.

To estimate the effect on Kering market value of the investment in Web 3.0, it has been considered the revenues for the luxury industry which are forecasted to grow at a CAGR of 6-8% p.a , reaching a value between 360-380 billion euro by 2025 , coherent to the one computed in the analysis, equal to 370 billion euro.

As for the value of the web 3.0 on the total ecommerce, Morgan Stanley estimated that it will be the 10% of the total industry by 2030, which is equal to an annual growth of 1,5% till 2030.

Since Kering market share on the total luxury industry is equal to 5% according to a Statista report, the associated revenues from Web 3.0 are equal to the one of the industry multiplied by 0,05.

They represent an average of 3% on total Kering sales, which makes increase the revenues growth rate from an average of 11% to 14%. The developing of the web 3.0 helps companies in reducing raw materials cost, so it is forecasted a decreasing in cogs by the same 3% amount, for a value of 23%.

To compute the other voices of the reclassified income statement, the used variables are represented by the average multiples calculated on the past year's trend.

The total Enterprise value is equal to 261.352,84 B euro and by subtracting the Net financial position (Debt – Cash), it is computed the equity value which divided by the number of shares outstanding, gives the share price.

If the projections should be wrong since the WEB 3.0 could not grow as expected, (Worst case scenario) the result would be that of an enterprise value equal to 236.384,89 euro B euro.

It could happen that those growth level will not come true since even though the market has a big potential, there are various controversies:

Starting by the fact there is not a regulation regarding the configuration of those asset on accounting standards, neither on the relationship between the author and the client, which do not have the right of withdrawal provided by the Consumer Code.

The payment method is by crypto values, topic that still lack of regulation, although there are various proposals discussed since a while. For this reason, in this scenario, it has been maintained the average level of growth based on the past analysis.

Recently, according to what drawn up in a report of "Non fungible", which is the world largest Nft data source, sales of Nfts decreased about 50% during the first three months of 2022.

The guilty factor is the inflation, which is slowing down investments since Central banks are adapting a restrictive monetary policy and the war between Russia and Ukraine does not give a safe feeling to the market, above all if considering the speculative aim of Nft.

To have the Enterprise value, the parameters within the analysis have been computed as follows: to the growth rate applicable in the long run, the analysis has been developed considering the estimation of the GDP value in 2026 within the geographic area indicated as relevant by Kering. Once computed the average value of the net sales in each country during 2020 and 2021 and how much each of them weights, it was possible to compute by multiplying the % on total net sales with the estimated GDP, the total value for the long run, which is equal to 3,17%.

To compute the Beta of the company, the analysis was conducted with the top-down approach, choosing a timeline of 5 years with monthly data, and the CAC 40 as index. The choice of the CAC 40 is strictly correlated to the fact that the company is listed in Europe, its head office is in Paris and, according to official data, the highest number of exchanged volumes is on the CAC 40. The R^2 between Kering and CAC 40 is equal to 0,34, so it has been considered as eligible.

The beta adjusted has a value of 0,95 by approximation, which is coherent with the one expressed by the market of 0,96.

Using the database provided by professor Damodaran it was possible to have values regarding the average equity risk premium by area (the same area used in the computation of the GDP);

the market risk premium was calculated by applying that same methodology and it is equal to 4,93%.

Regarding the risk-free rate, the value chosen is that of a 10-year German bund (mature market), which is equal to 1%.

Using the re formula, the final result is equal to: rf + Beta equity*MRP = 1%+0,94 *4,93%= 5,42%.

Regarding the cost of debt, since the ICR is equal to 32, so a value higher than 8.5, the associated rating is equal to AAA, with a spread of 0,75%.

Then it is applied the common formula of rf+spread=rd. In numbers, 1%+0,75%=1,75%.

Given the market value of equity and debt of the company under evaluation and an average tax rate of 28,45% computed on the basis of the last effective tax rates within a 4 year period, the wacc is equal to 5,22%. As for the tax rate, since the average of the effective tax rate is not significantly different from the marginal imposed by the French government of 26,5 %, the chosen one is the effective tax rate value.

To conclude, Kering could be right now underpriced since it has high growth potential and its P/E is lower than the one of the luxury industry. 18.9 for Kering against 23 for the luxury industry according to the recent market reports.

Also, the P/E of the industry is so much lower than the one of 3 years ago equal to 32,5. It is forecasted to recovery within the next years.
However, if Kering continues to invest within the Web 3.0 it could forecast to have an excellent growth as computed within the analysis.

Lvmh (Louis Vuitton Moët Hennessy) is the worldwide leader within the luxury industry, with a share of the total market equal to 15%. LVMH is born by a merger between Louis Vuitton and Moët Hennessy in 1987; the holding counts 75 brands in 2022.
Lvmh market share of the total luxury industry is equal to 15%, so the associated revenues from web 3.0 are equal to the ones of the industry multiplied by 0,15.
They represent an average of 2% on total Lvmh sales, which is assumed that makes go up the revenues growth rate from an average of 14% to 16%.
As considered for Kering, the developing of the web 3.0 helps companies in reducing raw materials cost, so it is forecasted a decreasing in COGS by the same 2% for a total value of 31%.
The total Enterprise value is equal to 678.376,04.
If the projections should be wrong since the WEB 3.0 could not grow as expected, (Worst case scenario) the result would be that of an enterprise value equal to 633.761,63 euro B euro. To the worst case scenario, the explanation follows the same logic of what expressed in the Kering case study.
To have the Enterprise value, the parameters within the analysis have been computed as follows: to the growth rate applicable in the long run, the analysis has been developed considering the estimation of the GDP value in 2026 within the geographic area indicated as relevant by LVMH.
Once computed the average value of the net sales in each country during 2020 and 2021 and how much each of them weights, it was possible to compute by multiplying the % on total net sales with the estimated GDP, the total value for the long run, which is equal to 3,00%. To compute the Beta of the company, the analysis was conducted with the top-down approach, choosing a timeline of 5 years with monthly data, and the CAC 40 as index since the company is listed in Europe, its head office is in Paris and, according to official data, the highest number of exchanged volumes is on the CAC 40.
The R^2 between LVMH and CAC 40 is equal to 0,67 so it has been considered as eligible.
The beta adjusted has a value of 0,97 which is coherent with the one expressed by the market of 0,98.
Using the database provided by professor Damodaran it was possible to have values regarding the average equity risk premium by area (the same area used in the computation of the GDP);
the market risk premium was calculated by applying that same methodology and it is equal to 4,94%.

Regarding the risk-free rate, the value chosen is that of a 10-year German bund (mature market), which is equal to 1%.
Using the re formula, it is equal to: rf + Beta equity*MRP= 1%+0,97*4,94%.
Regarding the cost of debt, since the ICR is equal to 70,75 so a value higher than 8.5, the associated rating is equal to AAA, with a spread of 0,75%.
Then it is applied the common formula of rf+spread=rd. In numbers, 1%+0,75%=1,75%. Given the value of equity and debt from the consolidated financial statement of the company under evaluation and an average tax rate of 26,37% computed on the basis of the last effective tax rates within a 4 year period, the wacc is equal to 5,41%. As for the tax rate, since the average of the effective tax rate is not significantly different from the marginal imposed by the French government of 26,5 %, the chosen one is the effective tax rate value.

To conclude, Lvmh P/E is in line with the one of the luxury industry since it is equal to 25,95 although luxury segment reached a lower P/E value compared with a past horizon of three years.
However, if Lvmh continues to invest within the Web 3.0 it could forecast to have an excellent growth as computed within the analysis.