

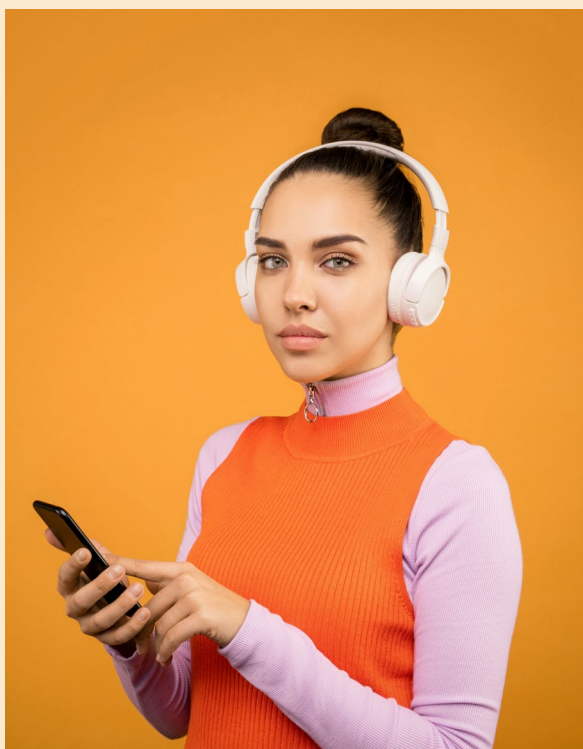


Image. Sound On in Pexels, 2019.

Money with a Purpose

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This problem situation was written by María Cristina Becker Valdez (cbecker@tec.mx), and translated by AI program (ChatGPT), with the purpose of serving as discussion material in classrooms, it is not intended to illustrate good or bad management practices. The story on this document is based on different people's experiences; some data has been modified at the request of the people and institutions involved.

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The Beginning

Cristina is a young woman who enjoys listening to podcasts while exercising. In recent months, the content that has captured most of her attention has been related to business and investing, particularly podcasts which explain how companies are investing heavily in technology because of the impact of artificial intelligence (AI) on business activities and people's daily lives.

Image. Cristina shared the podcast content with her father.



Source. Sound On in Pexels, 2019.

Motivated by these topics, Cristina has shared with her father her interest in understanding how companies that are publicly traded can increase their value based on expectations of future growth. She is especially interested in the companies known in the market as the “Magnificent Seven”: Google, Microsoft, Nvidia, Apple, Tesla, Amazon, and Meta. These technology companies have allocated large amounts of resources to the development of AI, which has significantly driven up their stock prices in recent years due to strong expectations of future growth.

Observing his daughter's enthusiasm and desire to learn, Cristina's father decides to entrust her with his savings so that she can invest them on the stock market. His goal is to motivate her while also giving her the responsibility of contributing to growing the family's wealth.

Cristina graduated a couple of years ago with a degree in Business Administration. Although her interest in the world of investing has grown thanks to the podcasts, she recognizes that she does not yet have the technical knowledge necessary to invest properly. Therefore, she decides to seek the advice of a professional from a brokerage firm to receive expert guidance on how to invest the family's savings.

Strategy Design

As a first step, the advisor asks Cristina to complete an investor profile questionnaire, the purpose of which is to identify her risk tolerance, investment horizon, and financial objectives. The results indicate that Cristina has a moderate risk profile, meaning she seeks a balance between security and growth. She is willing to accept moderate fluctuations in the value of her investments to achieve higher returns than those of a conservative investor, but without exposing herself to extreme risk.

Based on this profile, the advisor explains that it is not advisable to invest all the savings exclusively in technology companies, as this would increase unsystematic risk, which affects specific companies or sectors and can be reduced through diversification.

As a next step, the advisor prepares an Investment Policy Statement (IPS), which aims to guide Cristina's investment process in a structured and consistent manner. The IPS is designed considering her needs, objectives, and expectations, and includes the following elements:

1. *Investor Profile*: Identification of Cristina's financial objectives, investment horizon, and risk tolerance. Cristina seeks returns over a five-year period with a moderate level of risk tolerance.
2. *Investment Characteristics*: Definition of criteria such as liquidity, investment horizon, risk level, and expected return, aligned with the stated objectives.
3. *Asset Allocation*: Determination of how to allocate USD \$500,000 among different financial assets, as well as the selection of a benchmark or reference index (for example, the S&P 500, NASDAQ, or IPC) to evaluate the portfolio's performance.

To continue structuring the investment portfolio, the advisor analyzes various stocks available on the financial market. The selection is based on the historical performance of highly liquid companies and reviewing their historical average monthly returns over the past five years. This approach seeks to identify solid and consistent assets that align with Cristina's risk profile and investment objectives.

Problem Statement

Based on the information above, the advisor considers the following questions:

Which stocks should be considered from among the alternatives offered by the financial market to build a portfolio that maximizes returns while minimizing risk?

Additionally, which financial and market factors should be considered to achieve a portfolio aligned with Cristina's moderate risk profile?

Asset Valuation

The advisor selected a set of 15 stocks listed on the stock exchange, using key criteria such as market liquidity, industry sector, historical profitability, and the Price-to-Earnings (P/E) ratio. To complement the analysis of individual assets, the advisor collected historical data on the market benchmark index and the risk-free rate, represented by five-year government bonds.

Using this information, the advisor conducted a detailed financial analysis aimed at building a solid and consistent portfolio aligned with Cristina's moderate risk profile. The process was structured as follows:

1. Methodology and Justification for Asset Selection

The assets that showed the greatest alignment with Cristina's objectives and risk tolerance were selected. The analysis considered a five-year study period using daily data to capture both market volatility and long-term trends.

2. Calculation of Key Financial Metrics

The following metrics were calculated to evaluate the performance and risk of each asset,:

- Historical returns and their annualized standard deviation, to measure the average behavior of the assets and their level of risk.
- Sharpe ratio for each stock, to assess the return obtained per unit of risk assumed, relative to the risk-free rate.
- Beta (β) of the assets, which measures the sensitivity of each stock to movements in the overall market, represented by the benchmark index.

3. *Portfolio Diversification*

To reduce the total risk of the portfolio, the advisor has constructed a correlation matrix between the selected assets. This analysis made it possible to identify combinations of stocks with low or negative correlation, thereby maximizing the benefits of diversification and reducing portfolio volatility without sacrificing expected returns.

**THE MORE VOLATILE A STOCK IS RELATIVE
TO THE MARKET INDEX, THE GREATER THE MARKET RISK**

Portfolio Construction

For construction of the portfolio, the advisor used advanced optimization tools in Excel with the objective of designing and comparing different investment alternatives that aligned with Cristina's financial goals and moderate risk profile. Based on the previous analysis, three experimental portfolios were developed, each with a specific focus:

1. *Portfolio 1: Stability Focus*

This portfolio was composed of assets with Betas close to 1, resulting in performance closely aligned with the overall market. The primary objective was to provide stability and reduce significant deviations relative to the benchmark index.

2. *Portfolio 2: Diversification Focus*

In this case, priority was given to selecting assets with low correlations between them to reduce the portfolio's overall risk. This approach allowed the advisor to take advantage of the benefits of diversification, lowering volatility without significantly compromising expected returns.

3. *Portfolio 3: Return Maximization Focus*

This portfolio was designed by selecting assets with the highest risk premiums, meaning those that offered greater compensation for the level of risk assumed. The objective was to maximize potential returns while accepting higher volatility.

For each portfolio, the advisor calculated key metrics such as expected return, risk measured through standard deviation, and the Sharpe ratio to evaluate risk-adjusted performance. The results were then compared to determine which alternative represented the best option for Cristina, considering her moderate risk profile, investment horizon, and financial goals.

Ethical Reflections

Once the analysis had been completed, the advisor presented Cristina with a proposal for an optimal investment portfolio. This portfolio was constructed from a master list of 10 stocks selected across different industries with allocation weights designed to achieve the best balance between expected return and level of risk.

Throughout the process, Cristina learned that risk and return are closely related in financial markets: achieving higher returns requires assuming a certain level of risk. She also understood that the total risk of an asset consists of two components: systematic risk, which cannot be eliminated and is associated with overall market factors, and unsystematic risk, which is specific to individual companies or sectors and can be reduced through diversification. This is why only systematic risk is rewarded in financial markets.

Furthermore, Cristina became aware that publicly traded companies are required to disclose quarterly and annual financial reports, providing relevant and transparent information about their operational and financial performance and enabling investors to make more informed decisions.

Finally, the advisor emphasized that all operations carried out by the brokerage firm are governed by ethical principles such as those established by the CFA Institute and the Mexican Association of Brokerage Firms (AMIB). He highlighted that values such as transparency, integrity, and responsibility are essential pillars for building trust and achieving sustained success in the field of investments.

This process allowed Cristina to gain practical knowledge and a comprehensive understanding of investing in financial markets, reinforcing the idea that successful investing depends on informed, responsible decisions aligned with strong ethical principles.

References

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