Titolo

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# Summary

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# Introduction

The level of financial literacy among adult individuals is of great importance in regards with the wellbeing of a population. On a macroeconomic point of view it allows for economical security, lowering the risks of widespread personal bankruptcy events while empowering good investment decisions and commercial opportunities. On the other hand, on a microeconomic point of view and specifically considering a customer-provider interaction, a good financial literacy background ensures that both parties involved are economically able to fulfill their mutual duties.

Given the dangers that a financially uneducated population represent for their overall economic stability, countries of the OECD (Organization for Economic Cooperation and Development) annually collect and provide specific data, with the intent to measure and describe how countries perform in economic knowledge and what specificities could be addressed in terms of better economic education.

This research takes into consideration the dataset provided by Banca D’Italia – Eurosistema, which dwells into the statistical approach adopted for the comparability between the Italian results and those of other OECD countries. The main point discussed by Banca D'Italia (which pertains to an issue of representativity of the population when comparing different countries) will not be addressed in this paper.

The dataset from Banca D’Italia will be useful nonetheless in understanding if some of the dataset features may be useful in understanding if there is some correlation between socio-demographic factors and the answers from the financial literacy questionnaire, that aims to study the three main components internationally adopted in evaluating financial literacy: *knowledge* (understanding concepts such as inflation, interest rates and diversification), *behaviour* (factual activities such as preparing a household budget or a payment plan) and *attitudes* (such as the tendency to be risk-seeking or adverse in regards with credit plans).

# Preprocessing

The most important piece of preprocessing for this dataset consists in **elaborating the scoring** for each individual and for each of the three categories: **knowledge**, **behaviour** and **attitude**. To do so we have followed the official guidelines for scoring from the OECD-INFE Toolkit published in 2022 [1] and assigned each question to its related score as per instructions provided by the OECD.

By doing so, we have compiled the scores for each single or multiple choice question in binary form and obtained the scoring for each category previously defined.

The dataset is composed of **2,376 records and 106 attributes**, distinguishable in the **4 main categories** previously defined:

1. **Socio-demographic**: aside from the Id variable of the respondent, these include socio-demographic characteristics such as: gender, geographical area, number of household members, age, educational qualification, employment status, country of birth, the interview mode and the sample weight (no score is to be imputed to these categories).
2. **Knowledge**: questions that assess whether or not the respondent has familiarity with concepts such as simple and compound interest rates, price inflation and investment portfolio diversification. The score ranges from 0 to 7.
3. **Behaviour**: questions that assess whether or not the respondent actively makes financial decisions more or less profound, such as developing a household budget. The score ranges from 0 to 5.
4. **Attitudes**: questions that assess, independently from Knowledge and Behaviour, the personal attitudes of the respondent in making financial decisions, such as its level of perception in risk-seeking decisions or leaning towards precaution. The score ranges from 0 to 12.

The final recoded score obtainable for each individual, therefore, ranges from 0 to 24.

# Dataset Exploration and Visualization

A preliminary, visual exploration of the dataset has therefore been conducted, specifically by searching for any apparent bivariate relationship between socio-demographic factors and relevant questions about knowledge, behavior and attitudes.

First, we have computed the scores obtained for each category and the overall score in financial literacy against Gender, Geographical area of residency, Age and Educational qualification.

As depicted in the figures below, **Gender** does not seem to be a good predictor for any of the score category. The only apparent interesting difference between the two classes is the difference in variability when comparing the two populations with respect to financial attitudes (Figure 2)

Immagine che contiene schermata, diagramma, Rettangolo, linea

Descrizione generata automaticamente

Figure 1. Gender differences in Behaviour Score

Immagine che contiene schermata, testo, diagramma, Rettangolo

Descrizione generata automaticamente

Figure 2. Gender differences in Attitude Score

Immagine che contiene schermata, testo, Rettangolo, diagramma

Descrizione generata automaticamente

Figure 3. Gender differences in Knowledge Score

Immagine che contiene schermata, Rettangolo, linea, diagramma

Descrizione generata automaticamente

Figure 4. Gender differences in Total Score

Almost the same can be concluded as per the **Geographical Area** of residence. Aside from a lower score in Behavior for individuals residing in the islands (Figure 4), no notable differences occur between these individuals. It is especially noticeable how the Knowledge score is basically equivalent across the whole Country (Figure 6).

Immagine che contiene diagramma, Rettangolo, linea, quadrato

Descrizione generata automaticamente

Figure 5. Geographical differences in Behaviour Score

Immagine che contiene diagramma, schermata, Rettangolo, quadrato

Descrizione generata automaticamente

Figure 6. Geographical differences in Attitude Score

Immagine che contiene diagramma, Rettangolo, quadrato, schermata

Descrizione generata automaticamente

Figure 7. Geographical differences in Knowledge Score

Immagine che contiene diagramma, schermata, Rettangolo, quadrato

Descrizione generata automaticamente

Figure 8. Geographical differences in Total Score

Some differences arise more clearly when comparing for different **Education levels**. In particular, education seems to play an important role in the Knowledge score (Figure 11).

Immagine che contiene diagramma, Rettangolo, linea, quadrato

Descrizione generata automaticamente

Figure 9. Educational differences in Behaviour Score

Immagine che contiene diagramma, Rettangolo, schermata, linea

Descrizione generata automaticamente

Figure 10. Educational differences in Attitude Score

Immagine che contiene diagramma, Rettangolo, quadrato, Piano

Descrizione generata automaticamente

Figure 11. Educational differences in Knowledge Score

Immagine che contiene diagramma, Rettangolo, schermata, Piano

Descrizione generata automaticamente

Figure 12. Educational differences in Total Score

The last socio-demographic variable considered is **Age**. In this case, younger individuals seem to perform worse on the Behaviour score (Figure 13), probably for the reduced opportunities of investment and savings that correlate with their average salaries. On the contrary, Age seem to penalize more older adults on the Knowledge score (Figure 15).

Immagine che contiene quadrato, Rettangolo, diagramma, schermata

Descrizione generata automaticamente

Figure 13. Age differences in Behaviour Score

Immagine che contiene diagramma, Rettangolo, schermata, quadrato

Descrizione generata automaticamente

Figure 14. Age differences in Attitude Score

Immagine che contiene quadrato, diagramma, Rettangolo, schermata

Descrizione generata automaticamente

Figure 13. Age differences in Knowledge Score

Immagine che contiene diagramma, quadrato, Rettangolo, schermata

Descrizione generata automaticamente

Figure 13. Age differences in Total Score

# Modelling

# Performance Evaluation

# Conclusions and Future Research

# References

[1] OECD-INFE Toolkit, 2022. Retrieved online from https://www.oecd.org/financial/education/2022-INFE-Toolkit-Measuring-Finlit-Financial-Inclusion.pdf