Empowering GenZ in Portugal: Insights into financial literacy learning preferences and strategies to meet them

Luca Kraus

Dissertation written under the supervision of professor Rute Xavier

Dissertation submitted in partial fulfilment of requirements for the MSc in Management with specialization in Strategy, Entrepreneurship and Impact, at the Universidade Católica Portuguesa, 05.01.2025.

Abstract

Financial literacy is essential for informed decision-making and long-term financial well-being, yet levels are low in Portugal, especially when compared to other European countries. Different learning styles and behaviors of GenZ highlight the need for a tailored teaching approach. Organizations seeking to improve financial literacy levels need to understand not only GenZ's current levels and interest in financial topics, but also their preferred learning methods and channels. This study focuses on Portuguese GenZ and explores discrepancies between what they want and need to learn, their preferred learning styles and channels. A quantitative survey of 102 respondents, evenly split between GenZ and non-GenZ, was used to identify generational and gender differences. The results show a high level of financial literacy with a lack of knowledge about bonds. GenZ participants show strong interest in learning about savings, stocks and mortgages, favoring unimodal learning styles, particularly reading and visuals. YouTube and podcasts emerge as preferred channels for learning more about financial literacy, while social networks seem less attractive and trusted for this purpose. While interactive teaching approaches are generally attractive to GenZ, this is not the case for financial literacy. The results of the study make it possible to recommend Doutor Finanças to increase their efforts in teaching financial literacy on YouTube by adding videos with graphics and explanatory text. Content should be provided in thematic blocks and videos should also be used as podcasts and as the basis for blog posts.

Title: Empowering GenZ in Portugal: Insights into financial literacy learning preferences and strategies to meet them
Author: Luca Kraus
Keywords: financial literacy, learning preferences, GenZ, channel preferences, learning styles

Sumário

A literacia financeira é vital para decisões informadas e bem-estar financeiro a longo prazo, mas permanece baixa em Portugal em comparação com outros países europeus. A Geração Z apresenta estilos de aprendizagem e comportamentos distintos, exigindo uma abordagem pedagógica diferenciada. As organizações que pretendem melhorar a literacia financeira precisam de compreender os níveis atuais e o interesse da Geração Z em tópicos financeiros, bem como os métodos e canais de aprendizagem que preferem. Este estudo examinou 102 inquiridos, igualmente distribuídos entre Geração Z e não Geração Z, para identificar diferenças geracionais e de género. Os resultados demonstram um nível elevado de literacia financeira, mas revelam lacunas em obrigações. A Geração Z mostra grande interesse em poupanças, ações e hipotecas, favorecendo estilos unimodais, particularmente a leitura e materiais visuais. O YouTube e os podcasts surgem como plataformas preferenciais para aprofundar a literacia financeira, ao passo que as redes sociais são vistas como menos atrativas e fiáveis. Embora a Geração Z, em geral, se mostre recetiva a abordagens interativas, isso não se verifica tanto na literacia financeira. Com base nestes resultados, recomenda-se ao Doutor Finanças reforçar os esforços educativos no YouTube, com a criação de vídeos que incorporem gráficos e texto explicativo. Os conteúdos devem ser disponibilizados em blocos temáticos e utilizados igualmente como podcasts e base para artigos de blog.

Título: Capacitar a Geração Z em Portugal: Ideias sobre as preferências de aprendizagem da literacia financeira e estratégias para as satisfazer
Autor: Luca Kraus
Palavras-chave: literacia financeira, preferências de aprendizagem, GenZ, preferências de canal, estilos de aprendizagem

Table of contents

Abstract ..... **II**
Sumário ..... **III**
Table of contents ..... **IV**
Table of figures ..... **V**
1 Introduction **6**
2 Literature review **7**
2.1 Financial Literacy and its significance 7
2.1.1 Definition of financial literacy 7
2.1.2 The significance of financial literacy for GenZ and society 8
2.2 Level of financial literacy among GenZ in Portugal 9
2.2.1 PISA study 9
2.2.2 OECD study 10
2.3 Learning formats preferred by GenZ 11
2.3.1 Uniqueness of GenZ's learning behaviors 11
2.3.2 Efficiency of learning formats 12
3 Research methodology **14**
3.1 General overview of the research 14
3.2 The methodology of research question 1 15
3.3 The methodology of research question 2 16
3.4 The methodology of research question 3 17
4 Analysis **17**
4.1 Summary statistics 17
4.2 Analysis of objective and subjective financial levels of literacy and financial interest 18
4.3 Analysis of preferred learning styles in the context of financial literacy 22
4.4 Analysis of channel preferences for financial literacy content 23
5 Discussion and recommendations **27**
6 Conclusion **29**
Appendix **31**
References **36**

Table of figures

Figure 1: Age distribution in survey 18
Figure 2: Confidence-categories by gender and generation 20
Figure 3: Comparison of interest in learning more about financial topics 21
Figure 4: Correlation between interest in financial topics 21
Figure 5: GenZ vs. non-GenZ – Intensity of using channels to gain financial literacy in the past 24
Figure 6: GenZ vs. non-GenZ – preference of channels for gaining financial literacy in the future 26

1 Introduction

In a global survey from the Organisation for Economic Co-operation and Development (OECD), only 34% of adults reached the minimum target score for financial literacy, compared to 37% in Portugal (OECD, 2023). When compared to other European countries, Portugal ranks last in an overall financial literacy score (European Commission, 2023). In the most recent test of the Programme for International Student Assessment (PISA), Portuguese 15-year-olds performed at the OECD-average level in financial literacy. However, only 6.6% were top performers compared to the OECD average of 10.6% (OECD, 2024). Being financially literate is important for GenZ (1995-2010), as their financial decisions can have a significant impact on their future lives (Tang & Peter, 2015). Higher levels of financial literacy are associated with higher returns on money (Lusardi & Mitchell, 2014) and have a positive impact on personal wealth at the time of retirement (Lusardi & Mitchell, 2011). To be able to invest money, it is important to understand and apply the basics of financial literacy such as budgeting, saving, debt and interest. Failure in this area can have an impact not only on the individual's life, but also on a society, as wealth inequality can increase (Lusardi, 2019).

While existing research focuses on measuring current levels of financial literacy (Annabi & Müller, 2018; Lusardi, 2019; Lusardi & Mitchell, 2011) and examining its impact on financial behavior and wealth (Lusardi et al., 2021; Lusardi & Mitchell, 2023; Salas-Velasco et al., 2021), there is a lack of studies on effective methods to educate people on this topic. Furthermore, since the learning behaviors and habits of GenZ differ from those of previous generations, there is a need for a generation-specific approach to transferring financial knowledge. Moreover, addressing this issue requires the involvement of not only schools and governments but also households and the private sector.

Doutor Finanças is a Portugal-based FinTech, founded in 2014, with the mission to improve financial literacy in Portugal, empowering people to make informed and better financial decisions. The company is divided into two parts. In the educational part, Doutor Finanças offers its own academy that teaches employees, individuals or in schools different topics starting from reading the payroll to saving and investing. They also publish calculators/online-simulators and content on these topics through various channels. The second part of their business is a brokerage service that offers individual support in areas such as mortgages, personal loans and insurance, giving individuals the opportunity to compare different offers from banks or insurance companies, while at the same time receiving advice and help in these decision-making situations.

The research aims to provide Doutor Finanças with recommendations of how to support the increase of the financial literacy level in Portugal. It provides a specific approach to identify what, how and where GenZ wants to learn the basics of financial literacy, so that Doutor Finanças can use them to fulfil their mission of increasing the financial literacy of Portuguese GenZ.

In order to identify these recommendations, the following research questions will be analyzed:

1) What are the differences between what GenZ wants to learn and what they should learn about financial literacy, based on their current knowledge?
2) What forms of knowledge transfer do GenZ prefer when learning financial literacy?
3) What are the channels through which GenZ would like to learn about financial literacy?

To achieve the proposed goal of this project, after the introduction the work presents a literature review, followed by explanations of the research methodology of each research question and the results of the data analysis. Lastly the paper closes with recommendations for Doutor Finanças and the conclusion.

2 Literature review

2.1 Financial Literacy and its significance

2.1.1 Definition of financial literacy

Financial literacy lacks a universally accepted definition in academic literature. Lusardi and Mitchell (2023) define financial literacy as "people's knowledge of and ability to use fundamental financial concepts in their economic decision-making". Huston (2010) provides a similar perspective, articulating financial literacy through three dimensions to differentiate it from financial knowledge and financial education. According to Huston, financial literacy and financial knowledge are forms of human capital, while financial education serves as an input to that capital. The key distinction is that financial literacy involves not only knowledge, but also the ability and confidence to use that knowledge effectively. Thus, Huston emphasizes that financial knowledge is one component of financial literacy, which also requires practical application skills and confidence. The OECD (2023) offers the most comprehensive definition of financial literacy, which includes financial awareness and financial well-being as an outcome of financial literacy, in addition to financial knowledge and the ability to use that knowledge. While the OECD explicitly mentions financial awareness and well-being, these elements are implicit in other definitions, where financial awareness generally improves with increased education and frequent use of financial concepts in daily life. In summary, financial literacy is

not only about having financial knowledge, but also about having the confidence and ability to use that knowledge effectively in decision making.

All definitions of financial literacy center on core financial concepts, though there is no consensus on the specific concepts to include. According to the OECD (2023), individuals should have a foundational understanding of essential financial concepts without being an expert in those areas. For example, they emphasize understanding inflation, the time value of money, the benefits of long-term saving and investing, as well as basic knowledge of interest rates and risk management. Lusardi and Mitchell (2011) established a widely adopted framework for measuring financial literacy that initially focused on three fundamental concepts of financial literacy: understanding interest and compounding interest, inflation and risk diversification. Later, they argued that a lack of understanding of these concepts make it significant more difficult for individuals to comprehend more complex financial topics, such as the relationship between risk and return (Lusardi & Mitchell, 2023).

2.1.2 The significance of financial literacy for GenZ and society

The financial landscape facing GenZ is increasingly complex. Financial products and markets are evolving rapidly, creating a dynamic environment in which young individuals must navigate numerous complex financial choices (Lusardi, 2019). GenZ is at a stage where they are making significant financial decisions that have the potential to impact their entire lives, such as incurring credit card debt, managing student loans, and establishing retirement savings plans (Lusardi & Mitchell, 2023). Given the lasting consequences of these financial decisions, a solid understanding of financial concepts is essential (Tang & Peter, 2015).

Developing financial knowledge and making informed decisions based on that knowledge lays the foundation for lifelong financial well-being. Promoting financial literacy from an early age is therefore very important (Tang & Peter, 2015), as it is a strong predictor not only of better retirement planning but also of an individual's capacity to generate wealth over time (Lusardi & Mitchell, 2023). One of the reasons for this is that financial literacy enables individuals to live an affordable lifestyle, as they are able to manage their spending effectively and avoid common financial pitfalls (Nugraha et al., 2023). Although financial literacy alone does not guarantee financial success, applying its principles consistently over time can substantially improve long-term financial outcomes (Salas-Velasco et al., 2021).

A crucial factor in wealth accumulation is avoiding unnecessary and poorly informed debt decisions. For young individuals, particularly those with no or low income, the temptation to take out loans to purchase unaffordable items can be strong. In an era of credit expansion it is important to prevent unnecessary debt from becoming an integral part of GenZ's life (Salas-

Velasco et al., 2021). Higher levels of financial literacy are associated not only with a lower likelihood of having high-interest debts, such as credit card balances, but also with better debt management skills, including the ability to repay debts on time (Lusardi, 2019; Lusardi & Mitchell, 2023).

The significance of financial literacy extends beyond individual outcomes, with important societal implications. A lack of financial knowledge among a large segment of the population can contribute to macroeconomic instability, as demonstrated during crises such as the subprime mortgage meltdown (Lusardi & Mitchell, 2023). Financial literacy is also linked to wealth inequality, as individuals with higher financial literacy are more likely to build wealth, which can widen wealth inequalities if others are left behind (Lusardi, 2019). Financial literacy also contributes to broader economic stability. Financially literate individuals are more likely to save, invest, and make sound financial decisions, which collectively stimulate economic growth.

2.2 Level of financial literacy among GenZ in Portugal

2.2.1 PISA study

The most recent PISA study, conducted in 2022, is a comprehensive global survey of 15-year-old students, aimed at assessing the extent to which these students have acquired essential knowledge and skills. The financial literacy component, introduced in 2012, has been evaluated every three years since its introduction. Portugal has been participating in the two most recent iterations, starting in 2018. The sample size for Portugal is 4075 people (OECD, 2024).

A general conclusion of the PISA study is that student's performance in financial literacy is strongly correlated with their performance in mathematics and reading, which are other components of the PISA study. The aggregated data for all participating countries indicate that while students in OECD countries are generally taught on topics such as wages, budgeting and bank loan, they receive limited instruction in school in two of the core concepts of financial literacy, such as compound interest and diversification (OECD, 2024).

In the context of Portugal, the study found that Portuguese 15-year-olds perform slightly better than the OECD average in terms of financial literacy. However, a closer analysis of the lower performing students reveals a significant overestimation of their own abilities, particularly in areas related to personal money management. Notably, the discrepancy between self-assessed competence and actual test performance is greater in Portugal than in any other participating country. One possible explanation is the limited access to financial products among Portuguese students, with only 37% having access to a bank account (compared to the

OECD average of 63%), 25% having a payment or debit card (OECD: 62%) and similarly low access to mobile banking applications (OECD, 2024). Limited access to such financial products can hinder the development of practical financial knowledge and the confidence needed to manage finances effectively, as having an account or card correlates with higher scores in financial literacy assessments. However, the specific reasons why this trend is particularly pronounced in Portugal remain unclear. Despite these challenges, the relatively good performance of Portuguese students can be attributed to the fact that around 60% of them have been exposed to concepts such as budgeting, bank loans and debit cards and are able to remember their meaning. This exposure is reflected in their confidence in understanding bank statements, monitoring account balances and planning spending (OECD, 2024). However, when it comes to core financial concepts such as compound interest and diversification, Portugal, like the OECD as a whole, has significant knowledge gaps. Only 15% of Portuguese students recall the meaning of these concepts, while around 45-50% report never having learned about them in school (OECD, 2024).

As Portugal has only participated in the last two PISA financial literacy assessments, any trend analysis is limited. While the OECD average has shown a consistent improvement in financial literacy performance in every study since 2012, Portugal's results indicate a notable decline between 2018 and 2022. In addition, the study's ability to provide a comprehensive analysis of GenZ's financial literacy is limited by the survey sample, those born in 2006, who represent only a subset of GenZ. The data collection took part post COVID-19, during which educational behavior and school attendance differed significantly from previous periods.

2.2.2 OECD study

Unlike the PISA study, the OECD study provides an overview of adult's financial literacy level. Although the OECD study does not have the thematic depth of PISA, it provides an opportunity to look closely at the financial literacy of individuals aged 18-29, enriching the analysis of GenZ. The overall financial literacy score reported in this study is a combination of three different dimensions: financial knowledge, financial behavior and financial attitudes. The data for Portugal was collected in early 2023 and includes a sample of 1473 adults, 17% of whom were aged between 18 and 29 (OECD, 2023).

The financial literacy level of Portuguese adults aligns closely with the OECD average, however, the percentage of individuals achieving the minimum target score of 70 out of 100 points is slightly below the OECD average, with 37% of Portuguese adults meeting this benchmark compared to 39% across the OECD. Of particular concern is the significant number of adults who have credit products without a proper understanding of the implications of interest

rates, both simple and compound. Additional, 60% of those who have at least one financial product do not meet the minimum target of financial literacy level (OECD, 2023).

Although the study does not provide detailed information on the differences in financial literacy among specific age groups, the existing data indicates that Portuguese individuals aged 18 to 29 face even greater challenges. Their overall financial literacy score is not only below the average score of all Portuguese adults but also slightly lower than the OECD average for this age group. This difference is largely explained by their poor performance on the financial behavior dimension, where they are close to the bottom quartile. The study indicates that Portuguese participants, in general, perform relatively well compared to other countries in terms of financial knowledge and attitudes toward money management, particularly in their short- versus long-term financial preferences (OECD, 2023). However, given that financial behavior is the component that differentiates financial literacy from financial knowledge, it is important to build confidence and get people to act based on their financial knowledge. In particular as young Portuguese tend to overestimate their ability to meet current and future financial needs, in contrast to the OECD average, which underestimates this ability (OECD, 2023).

Limitations of the study include the relatively small sample size of 245 participants in the 18-29 age group in Portugal compared to the PISA dataset. In addition, the use of aggregate scores for each dimension, without providing detailed statistics for each question, limits the ability to identify specific areas in which young adults in Portugal lack of financial literacy.

2.3 Learning formats preferred by GenZ

2.3.1 Uniqueness of GenZ's learning behaviors

GenZ has unique learning behaviors that set them apart from previous generations. Motivation plays a crucial role in learning, influencing not only what is learning but also how and when individuals choose to learn (Szymkowiak et al., 2021). Technological advancements of the last years have led to a "flood" of information and resources, fundamentally changing the way people can learn and educate themselves (Szymkowiak et al., 2021). GenZ, in particular, has been shaped by these technological changes from an early age, being hyper-cognitive and having different student profiles than previous generations (Hernandez-de-Menendez et al., 2020).

One of the characteristics of GenZ is their shorter attention span, averaging just eight seconds, compared to Millennial's twelve seconds (Vizcaya-Moreno & Pérez-Cañaveras, 2020). This shorter attention span requires learning formats that can quickly capture and maintain their attention. GenZ learners favor interactive and digital methos over traditional, paper-based materials (Szymkowiak et al., 2021; Vizcaya-Moreno & Pérez-Cañaveras, 2020).

They prefer to engage with technology in education as they do in their daily lives, expecting to learn independently, collaboratively, and at their own pace (Hernandez-de-Menendez et al., 2020).

GenZ has been encouraged from an early age to use social networks, which shaped their expectations of how they interact with information and education (Murad et al., 2019). They are self-learners who rely heavily on the internet for information, using online courses, videos and other resources as primary sources of knowledge (Hernandez-de-Menendez et al., 2020). This preferences for digital learning also mean that GenZ prefers short pieces of information and quick feedback, mirroring their communication habits on social media (Vizcaya-Moreno & Pérez-Cañaveras, 2020).

Furthermore, GenZ is comfortable with complex visual information and has higher skills than other generations at learning through visual content (Vizcaya-Moreno & Pérez-Cañaveras, 2020). They prefer storytelling over traditional book-learning methods, which aligns with their preferences for learning through experience and observation rather than passive reading or listening. This is also reflected in their focus on quickness over accuracy, valuing the ability to acquire and apply knowledge quickly (Nicholas, 2020).

2.3.2 Efficiency of learning formats

There is a lack of academic research on efficient learning formats for financial literacy, especially for those that do not take place in school. However, there are studies on the general effectiveness of learning methods for GenZ. There is also specific work that has studied this in the context of the healthcare sector, such as a study conducted at a nursing school.

Consistent with their proficiency in processing complex visual information, GenZ prefers audio-visual learning methods, particularly video that can be access anywhere and at any time (Murad et al., 2019; Vizcaya-Moreno & Pérez-Cañaveras, 2020). Traditional teaching methods are less effective, as they favor experimental learning (Murad et al., 2019). Experimentation and practical experience are not only more relevant but also more engaging for GenZ (Vizcaya-Moreno & Pérez-Cañaveras, 2020). In the context of financial literacy education, interactive teaching methods have demonstrated significant positive impacts on understanding fundamental personal finance concepts (Salas-Velasco et al., 2021). Given these preferences, it is not surprising that GenZ shows interest in gamification and game-based learning approaches. They report that such methods are more enjoyable and seem more effective (Murad et al., 2019). A study involving nurses indicated that gamified learning enhances critical thinking abilities, involvement and motivation in learning (Vizcaya-Moreno & Pérez-Cañaveras, 2020). Moreover, integrating challenges and information into real-world

contexts, such as using examples like the subprime crisis, rather than fictional scenarios, improves student engagement (Salas-Velasco et al., 2021). While some members of GenZ struggle to enhance their financial literacy due to a lack of application opportunities, incorporating real-world contexts and examples facilitates the connection between acquired knowledge and practical tasks and behaviors.

Since the demand for voluntary financial education decreases with age, incorporating financial literacy into school curricula appears to be a promising strategy (Kaiser & Menkhoff, 2020). Although numerous studies have demonstrated the effectiveness of education on levels of financial literacy (Kaiser et al., 2022; Lusardi & Mitchell, 2023), the literature presents various perspectives regarding whether and when school education actually enhances financial literacy levels. An Italian study involving 650 high school students compared the efficiency of digital and in-person financial education, finding that both approaches increased financial literacy levels, whereas the control group remained at their previous level (Sconti, 2022). Similar results are observed in a meta-analysis of 37 (quasi-) experiments, which concluded that financial literacy programs in schools improve financial knowledge and financial behavior, with a higher effect on knowledge (Kaiser & Menkhoff, 2020). In contrast to these findings, another study indicated that while school classes had a positive effect on financial education, the indirect effect on good financial behavior was negative when formal education classes were taken. This suggests that it is not the fact that financial literacy is taught in school that is crucial, but rather the style of teaching that is important. Interactions with a financial advisor or a website had a positive effect, while formal classroom teaching had a negative effect on the financial literacy level (Mountain et al., 2021).

Parents can serve as a primary source of financial literacy early in life, particularly when alternative educational opportunities are lacking. However, the influence of this connection decreases over time as children become young adults and take more responsibility for their own actions. To benefit from parental influence, the parents own education and financial literacy are crucial. Parents with higher levels of education are more likely to discuss financial topics with their children and support them in early decision-making process, thereby providing a foundation for long-term financial success (Zhao & Zhang, 2020).

Technology is not only perceived by GenZ as an integral part of their lives but also holds significant benefits when utilized for educational purposes (Hernandez-de-Menendez et al., 2020). Having grown up using apps, Google and YouTube, the way this generation lives, learns and interacts is deeply embedded in technology. Consequently, it is not surprising that mobile apps and online videos are preferred learning tools over traditional classroom settings or private

lessons involving passive listening to a teacher (Szymkowiak et al., 2021). Educators can more efficiently capture GenZ's attention by employing these technological aspects. Simulators, games and podcasts can be engaging tools to attract and maintain their attention in addition to apps and videos (Hernandez-de-Menendez et al., 2020). However, it is essential for digital teaching approaches to be interactive, not only because GenZ prefer to learn by doing, but also because learners are more likely to become disengaged if there is a lack of interactivity (Greenhow & Galvin, 2020; Szymkowiak et al., 2021).

Given that each individual has unique preferences and learning styles, it is important to offer a wide range of options from which members of GenZ can choose. The ability to learn where, how and when they prefer is crucial for enhancing their financial literacy. Therefore, while these findings represent the majority of GenZ, there is no all-in-one solution for teaching financial literacy.

3 Research methodology

3.1 General overview of the research

Given the objective of this study, the insights from prior research and the identified gap in literature regarding financial literacy for Portuguese GenZ outside formal education, a quantitative approach was conducted. This methodology was selected over a qualitative one because the intention was to generate recommendations that could be generalized to a wider population, rather than being limited to specific sub-groups. To achieve this, obtaining a larger dataset was prioritized over acquiring fewer, more detailed insights. The research targeted Portuguese individuals born between 1995 and 2010, who participated voluntarily without any monetary or other incentives. The survey was distributed via WhatsApp and Reddit, with data collection spanning three weeks in the last quarter of 2024.

The survey was structured around four pillars. The first pillar addresses demographic information, while the other pillars are each dedicated to one of the research questions. The questionnaire contains 24 questions: 5 related to demographics, 7 addressing educational gaps and topic preferences, 7 focusing on learning preferences and 5 exploring channel usage and trust. The influence of parental, educational and demographic backgrounds on financial literacy has been widely studied in previous research, including works by Kaiser et al. (2022) and Philippas & Avdoulas (2020), who found that higher levels of education are associated with higher financial literacy. Similarly, studies by Lusardi & Mitchell (2023) and Tang & Peter (2015) highlighted that women, compared to men, and Black and Hispanic individuals, compared to white individuals, tend to have lower levels of financial literacy. Since these topics have already been widely researched, they are not further analyzed in this study, but instead are

used to validate the inclusion of respondents within the target group of Portuguese GenZ, thus increasing the robustness of the models. Each research question compares GenZ with non-GenZ respondents and analyzes whether there are significant differences between GenZ and older generations. In addition, within GenZ, the analyses checked if there were significant differences between the genders.

3.2 The methodology of research question 1

The second pillar addressed the first research question, focusing on what financial literacy content GenZ both should and wants to learn. To assess the discrepancy between actual knowledge and self-assessment, the survey employs the widely recognized "Big Five" financial literacy measures. Originally developed by Lusardi and Mitchell, this measure began with three core questions concerning interest rates and compounding, inflation and risk diversification and was initially named the "Big Three" (Hastings et al., 2013). Later, the National Financial Capability study expanded in 2019 the measure by adding two questions on mortgage and bond prices, forming the "Big Five", which were later also adopted by Lusardi and Mitchell (Hastings et al., 2013). The "Big Five" were chosen for this survey due to their ability to provide more detailed insights, particularly regarding mortgage knowledge, compared to the "Big Three". Furthermore, they offer a more concise alternative to other extensive questionnaires, such as the Jump$tart Coalitions financial literacy survey, which includes over 50 questions. Hastings et al. (2013) reported strong positive correlation between performance across these measures. While the "Big Five" assess participants objective financial knowledge, an additional question measures subjective knowledge in the areas of interest rates and compounding, inflation, risk diversification, mortgages and bond prices. Participants rated their perceived knowledge in each dimension on a Likert scale from "not familiar at all" (1) to "extremely familiar" (5) (Xia et al., 2014). Another question explored participants' interest in learning more about areas, using similar Likert scale ranging from 1 "not interesting at all" to 5 "extremely interesting".

The data collected was analyzed in two steps. First, participants expressed interest in learning more about specific topics is analyzed using descriptive statistics as well as t-statistic to examine significancy in the different preferences. This is followed by an analysis of financial literacy needs, using both an overall financial literacy score and an individual score for each of the topic areas. Following with the methodology of Kim et al. (2020) and Xia et al. (2014), responses to the "Big Five" questions are coded as binary indicators with a score of 1 representing a correct response. The total score, ranging from 1 to 5, represents the objective financial literacy level. To evaluate overconfidence, participants were categorized into four groups based on combinations of high/low subjective and objective literacy, relative to the

median score. Category 1 reflected accurate high confidence (high objective and high subjective literacy), category 2 reflected underconfidence (high objective and low subjective literacy), category 3 reflected overconfidence (low objective and high subjective literacy) and category 4 reflected accurate low confidence (low objective and low subjective literacy) (Kim et al., 2020). The option to answer "I do not know" to the "Big Five" provided an additional measure of overconfidence. Choosing "I do not know" indicates a lack of confidence in the topic, whereas providing an incorrect answer suggests overconfidence (Xia et al., 2014). Although this method offered an overview of overconfidence, it did not quantify the degree of overconfidence.

3.3 The methodology of research question 2

The third pillar, focused on learning preferences and behaviors, provided insights into preferred learning formats of Portuguese GenZ in the context of financial literacy. Data was collected by providing brief scenarios related to financial literacy, each associated with one of the "Big Five" areas, with additional scenarios addressing budgeting and credit scores. For each question, respondents could select from four options, each representing a dimension of the Fleming and Mills (1992) VARK-model. The VARK-model categorizes learning preferences into four dimensions: visual, auditory, reading/writing and kinesthetic. Individuals' preferences are assessed by presenting scenarios and offering four choices, each representing one dimension of the model. In this survey, the model was adapted so that scenarios were tailored to specific financial topics, while the response options still represented each VARK dimension, adapted to the new context. To prevent any recognizable pattern in the answer options, the order was randomized. Respondents were also allowed to select multiple answers if more than one option reflected their preferred learning approach.

In the analysis, each dimension was coded as follows: 1 for visual, 2 for auditory, 3 for reading/writing and 4 for kinesthetic, with a binary value assigned 1 if the dimension was selected and 0 if not. This approach enabled not only an analysis of overall preference for learning financial literacy but also an examination of preferences for specific financial literacy subtopics and how they should be taught. Moreover, a dimension was not considered dominant if another dimension had the same value, suggesting a multimodal learning preference (Fleming & Mills, 1992). Statistical significance between generation and gender was conducted using t-statistics. Further analysis was conducted to determine whether preference for learning styles influences interest in financial topics or the objective financial literacy level, with learning style preferences as independent variables.

3.4 The methodology of research question 3

In the fourth pillar, data is collected to determine whether participants have previously used a specific channel for learning and their preferences for future financial literacy learning channels. Each channel was evaluated on a Likert scale from 1 to 5, where 1 indicates no prior experience and 5 indicates very frequent use. Additionally, respondents were asked about the trustworthiness of each channel with an option to indicate non-usage. The channels considered include WhatsApp, Facebook, Instagram, TikTok, X/Twitter, Podcasts, YouTube, Newsletter, Blogs, e-learning platform and in-person trainings. Respondents were also asked whether they prefer learning from and interacting with an influencer or a company profile, to determine whether they favor more personal or professional channels.

Initially the gathered data for research question three is analyzed with descriptive statistics. Means and preferences of the respondents are calculated for past experiences of gaining general and financial knowledge, as well as preferences for future knowledge acquisition, to identify favored channels. Significance in differences between subgroups were analyzed with t-statistics. To validate the findings, the values were compared to the trustworthiness data for each channel to identify potential inconsistencies. The most preferred channels have been further analyzed using regression analysis, incorporating financial literacy scores, subjective financial literacy level, gender, belonging to GenZ, preferred topics and learning styles, to develop a comprehensive communication and teaching strategy based on GenZs preferences. Lastly the preference of influencer profiles rather than company profiles was analyzed using descriptive statistics as well as t-statistics for controlling significance between subgroups of GenZ and non-GenZ as well as between genders within GenZ.

4 Analysis

4.1 Summary statistics

The questionnaire was started by 149 participants, with 104 completing it. Of these, 102 respondents answered all questions and answered the attention check question correctly. For the purpose of data integrity, analyses were conducted solely on these 102 responses, unless otherwise specified.

The sample consisted of 65 male and 37 female respondents. The majority identified as Portuguese nationals (94%), while six participants were non-Portuguese. The age distribution was evenly divided between GenZ respondents, defined as those under 30 years old, and older generations, with 51 individuals in each group. The mean age of the entire sample was 30.9, with an average of 24.2 years for GenZ and 37.4 for non-GenZ participants. Regarding

employment status, 76 participants were employed or self-employed, 21 were students, and 4 were retired or unemployed.

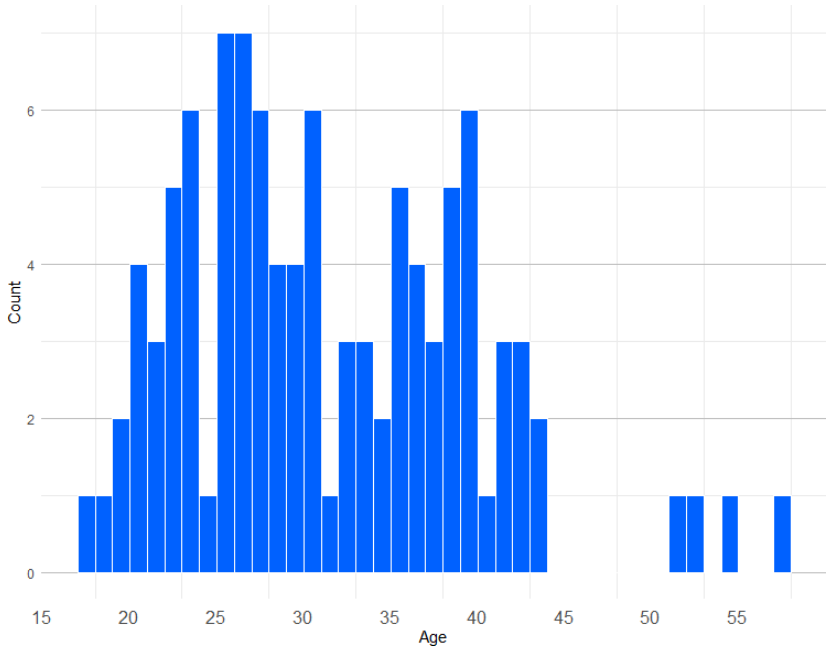

Figure 1: Age distribution in survey

Source: survey data

4.2 Analysis of objective and subjective financial levels of literacy and financial interest

To assess financial literacy, participants were asked five key questions covering interest rates, inflation, risk diversification, mortgages and bonds. Overall, 32% of respondents answered all questions correctly, while 78% answered at least four questions correctly, indicating a relatively high level of financial literacy within the sample. However, 4% of participants answered fewer than three questions correctly. Examining individual topics, respondents demonstrated strong understanding in areas of interest rates, inflation, risk diversification and mortgages, with 89-92% correctly answering these questions. In contrast, knowledge regarding bonds was substantially lower, with only 38% answering correctly.

Focusing on GenZ participants, the distribution of correct answers was similar to that of the entire sample, suggesting comparable levels of financial literacy between GenZ and older generations. This differs from previous studies that show on average more correct answers from non-GenZ in comparison to members of GenZ (European Commission, 2023; OECD, 2023). Statistical analysis using t-statistics confirmed that in the survey of this paper were no significant differences between the two groups in the average number of questions answered

correctly ($p = 0.561$). There were also no significant differences observed at the level of separate topics.

A gender comparison, however, revealed notable differences, in line with the findings of previous studies (European Commission, 2023; OECD, 2023). On average, men answered more questions correctly than women. Among male participants, 37% answered all five questions correctly, compared to 24% of females (GenZ: 34% vs. 26%). Additionally, 86% of males answered at least four questions correctly, whereas 65% of females performed at the same level (GenZ: 84% vs. 58%). This effect was statistically significant for the entire sample ($p = 0.039$) and showed less significance within GenZ ($p = 0.093$). Analyzing each topic individually, a statistically significant difference was found in knowledge of inflation, with men outperforming women. Significance was consistent across generations ($p = 0.047$) and within GenZ, although to a lesser extent ($p = 0.090$).

In addition to objective measures of financial literacy, respondents were also asked to assess their subjective financial literacy. No significant generational differences were found in self-assessed financial knowledge. However, significant differences emerged in specific areas: GenZ participants rated their knowledge of inflation higher ($p = 0.073$), whereas non-GenZ participants rated their mortgage knowledge higher ($p = 0.88$). Comparing both genders, men consistently rated their knowledge on each topic significantly higher than women, with differences being statistically significant at the 1% level ($p < 0.01$). This trend was also observed within GenZ men, except for bonds ($p = 0.063$) and mortgages, where no statistically significant differences were observed. That men rate their own financial literacy level higher than women is also shown by European Commission (2023).

Combining objective and subjective financial literacy allowed for an analysis of overconfidence. Using the first method, which categorizes respondents into four groups, results indicated that 54% were accurately confident, 25% were underconfident, 4% were overconfident and 18% were accurately underconfident. The distribution within GenZ was similar, with 45%, 29%, 4% and 22%, indicating that nearly two-thirds of GenZ respondents accurately assessed their own financial literacy level. Notably, no female respondents were classified as overconfident, aligning with previous finding that men are significantly more

confident.

categorie	gender	overall		GenZ		non-GenZ	
		quantity	percentage	quantity	percentage	quantity	percentage
accurate confident	overall	55	53,9%	23	45,1%	32	62,7%
	male	*44*	*67,7%*	*18*	*56,3%*	*26*	*78,8%*
	female	*11*	*29,7%*	*5*	*26,3%*	*6*	*33,3%*
underconfident	overall	25	24,5%	15	29,4%	10	19,6%
	male	*12*	*18,5%*	*9*	*28,1%*	*3*	*9,1%*
	female	*13*	*35,1%*	*6*	*31,6%*	*7*	*38,9%*
overconfident	overall	4	3,9%	2	3,9%	2	3,9%
	male	*4*	*6,2%*	*2*	*6,3%*	*2*	*6,1%*
	female	*0*	*0,0%*	*0*	*0,0%*	*0*	*0,0%*
accurate underconfident	overall	18	17,6%	11	21,6%	7	13,7%
	male	*5*	*7,7%*	*3*	*9,4%*	*2*	*6,1%*
	female	*13*	*35,1%*	*8*	*42,1%*	*5*	*27,8%*

Figure 2: Confidence-categories by gender and generation

Source: survey data

A second approach to measuring overconfidence involved assuming that respondents who did not choose the "I do not know" option were confident in their answers. If their answers were incorrect, they were considered overconfident in that topic. Using this method, data showed a low proportion of overconfident individuals in areas of interest, inflation, risk diversification and mortgages. However, in contrast, 27 respondents selected the "I do not know" option for the bonds question and among those who provided an answer, approximately half answered incorrectly. This resulted in 36 respondents being classified as overconfident in their knowledge of bonds.

Participants also rated their interest in learning more about various financial topics, from "not interesting at all" to "extremely interesting". The most attractive topics among GenZ were stocks, saving and mortgages, with approximately 70-80% finding them very or extremely interesting. These were followed by inflation (65%) and early retirement (51%). In contrast, topics such as crypto and bonds received lower interest with 37-53% indicating they were not at all or slightly interested in learning more about these subjects. This presents a problematic gap between low knowledge of bonds and low interest in improving their understanding of them, while the low interest in crypto is consistent with the only 1.5% of Portuguese holding crypto (OECD, 2023). Generational differences were significant only for mortgages, with GenZ expressing greater interest in learning more about mortgages ($p = 0.018$), possibly because they are still in the process of buying homes, whereas older generations may have already completed this step. Comparing GenZ respondents who answered four or more questions correctly with those who did not show that financially literate individuals showed a statistically significant

higher in learning more about stocks (p = 0.087), early retirement (p = 0.093) and credit scores (p = 0.094). A correlation analysis of financial topics revealed significant relationships at the 5% level, suggesting that interest in one topic correlated with interest in related subjects. High correlations were observed between saving, interest rates, budgeting and inflation. Moderate correlations were found between mortgages and insurance, as well as between early retirement and the topics of real estate, stocks and crypto. Lower correlations were found between budgeting and early retirement, suggesting that individuals interested in early retirement may be seeking to achieve this through investment rather than reducing expenditure through better budgeting, possibly aiming for a frugal lifestyle.

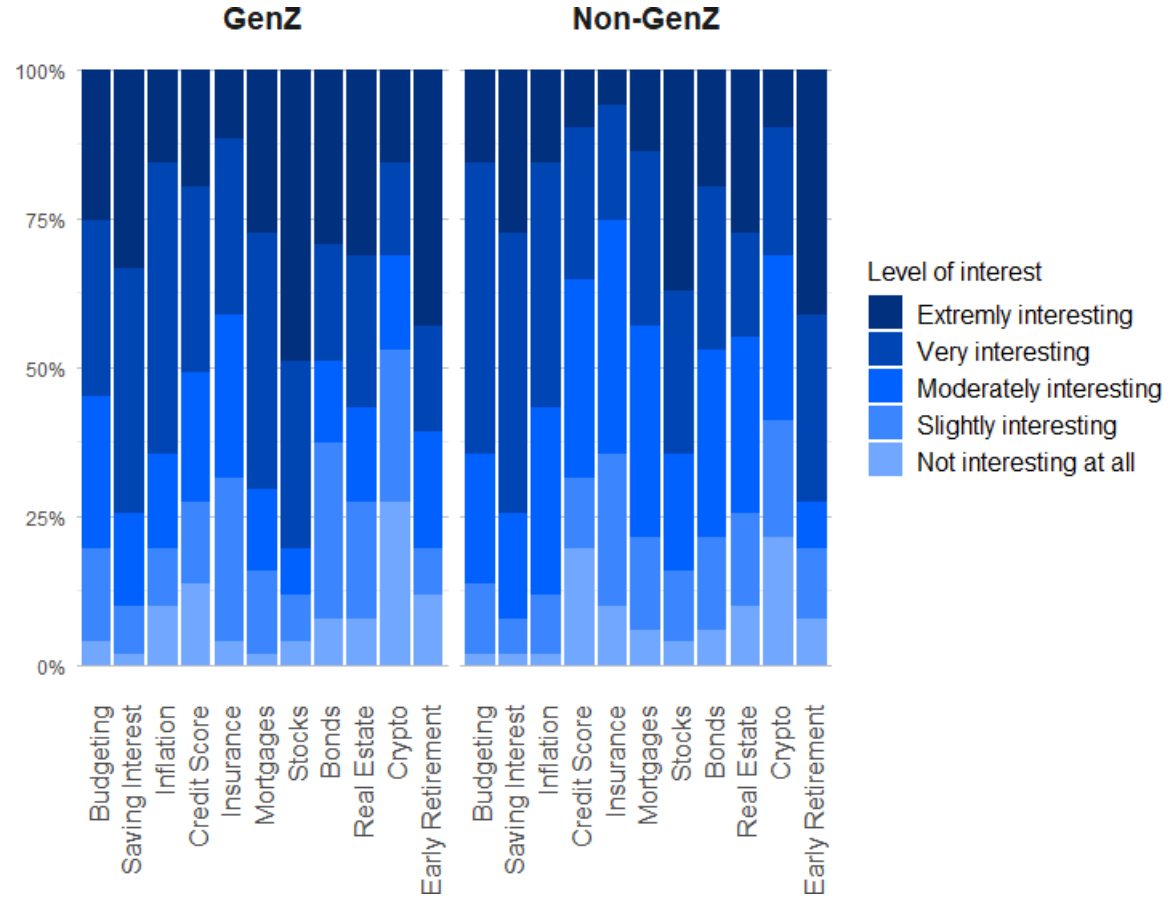

Figure 3: Comparison of interest in learning more about financial topics

Source: survey data

term	Saving.Interest	Inflation	Budgeting	Mortgages	Credit.Score	Insurance	Bonds	Stocks	Real.estate	Early.retirement	Crypto
Saving/Interest	1.000										
Inflation	.673	1.000									
Budgeting	.630	.647	1.000								
Mortgages	.397	.429	.342	1.000							
Credit Score	.380	.372	.376	.367	1.000						
Insurance	.212	.313	.252	.421	.349	1.000					
Bonds	.253	.308	.345	.162	.198	.338	1.000				
Stocks	.303	.293	.360	.338	.334	.217	.583	1.000			
Real estate	.162	.204	.257	.300	.341	.372	.305	.397	1.000		
Early retirement	.289	.240	.222	.185	.162	.271	.330	.400	.433	1.000	
Crypto	.101	.133	.159	.142	.306	.242	.306	.459	.385	.424	1.000

Figure 4: Correlation between interest in financial topics

Source: survey data

4.3 Analysis of preferred learning styles in the context of financial literacy

To address the second research question, this study investigated participants preferred learning styles, their relationship to financial literacy levels and interest in financial topics. The VARK questionnaire, tailored to financial topics, allowed participants to select one or more learning styles that they preferred for gaining knowledge on the subject. The data revealed that 75% of respondents favored a unimodal learning style, preferring only one learning style, whereas 25% preferred a combination of two or more learning styles. This distribution was found both when looking at the whole dataset and when focusing only on GenZ participants.

Among GenZ participants who preferred a unimodal learning style, the most favored methods were reading (39%) and visual learning (29%). Auditory and kinesthetic styles were less popular, at 21% and 11%, respectively. It is therefore not surprising that those who favored multimodal learning tended to favor a combination of reading and visual elements in their educational process. In comparison, non-GenZ participants who preferred a unimodal style also favored reading, but to an even greater extent (46%). In addition, kinesthetic learning was more common among non-GenZ's, with 29% choosing this style, more than double the proportion of GenZ. In contrast, visual (15%) and auditory (10%) learning were less preferred by non-GenZ participants. These findings were surprising, as previous studies have highlighted a preference among GenZ for visual and interactive learning methods (Szymkowiak et al., 2021; Vizcaya-Moreno & Pérez-Cañaveras, 2020). The low interest in learning financial literacy through interactive learning tools contrasts with the characteristic that typically differentiates GenZ from other generations.

A comparison of the frequency with which specific learning dimensions were chosen, without considering the dominant overall learning style, revealed notable differences in the preference for auditory learning methods. Across the entire dataset, GenZ's were significantly more likely to prefer auditory learning ($p = 0.018$). A similar trend was observed among women, although with a lower level of statistical significance ($p = 0.082$). However, this significant gender difference could not be confirmed within the GenZ subgroup ($p = 0.279$).

Preference for a particular learning style can influence individuals' interest in learning about specific financial topics. The analysis indicates that an auditory learning style was significantly positively associated with increased interest in learning more about saving/interest, credit scores, mortgages (all $p < 0.01$), as well as budgeting and insurance (all $p < 0.05$). Reading was positively associated with interest in saving/interest ($p < 0.01$), early retirement ($p < 0.05$) and stocks ($p < 0.1$), aligning the most favored unimodal learning style with some of the most attractive financial topics. Kinesthetic learning, however, showed no

significant effects, while visual learning was significantly positive associated with greater interest in learning more about stocks, credit scores, bonds (all $p < 0.05$) and insurance ($p < 0.1$) [Appendix 1]. Additionally, no significant effects of learning style preference were observed on overall financial literacy levels or the number of questions answered correctly [Appendix 2].

4.4 Analysis of channel preferences for financial literacy content

The third research question examined the channels through which participants have previously gained experience and their preferences for continuing financial literacy education. The data provided insights into whether there are significant differences in the intensity with which respondents use each platform for general versus financial knowledge acquisition.

The findings indicate minimal differences in the frequency with which GenZ has used different channels to learn general or financial content. The most popular channel for learning is YouTube, followed by podcasts. However, YouTube is used less frequently and podcasts more often for financial topics compared to general topics. Around 40% of respondents reported that they often or very often receive financial education through blogs or e-learning platforms. Facebook, WhatsApp and X/Twitter are the least used platforms for both general and financial education purposes. Surprisingly, TikTok has limited relevance, with 31% of GenZ respondents reporting that they do not use the platform at all. While GenZ uses Instagram ($p = 0.001$), podcasts ($p = 0.070$) and YouTube ($p = 0.0001$) significantly more intensively for general knowledge acquisition compared to non-GenZ, there are no statistical differences for channels like TikTok or e-learning platforms. For financial knowledge acquisition, only YouTube demonstrated significantly higher usage intensity by GenZ ($p = 0.016$), while non-GenZ participants reported significantly higher use of Facebook ($p = 0.019$). Gender differences within GenZ were not significant across all eleven channels when participants were asked about financial literacy. However, GenZ males showed significantly more engagement with YouTube for general knowledge than females ($p = 0.037$).

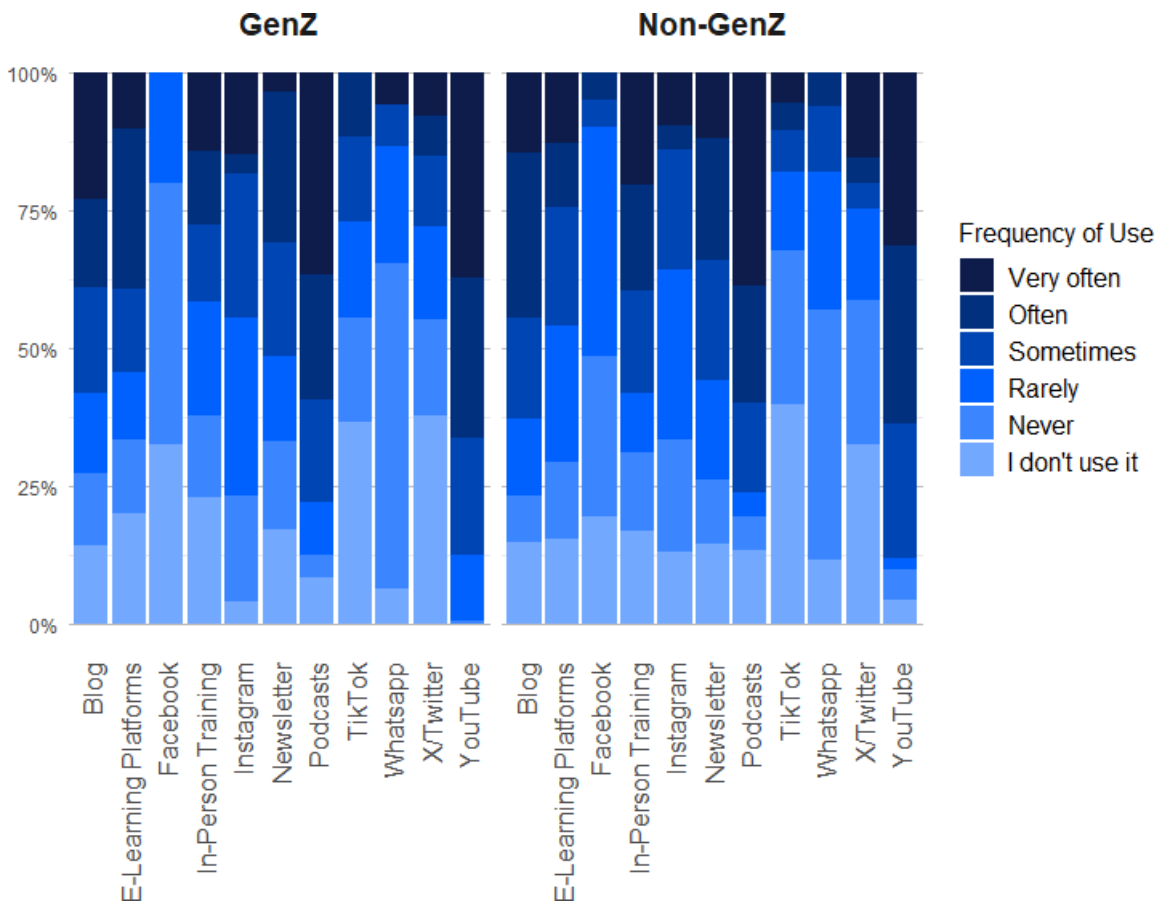

Figure 5: GenZ vs. non-GenZ – Intensity of using channels to gain financial literacy in the past
Source: survey data

Trust in the source of information is an essential factor in learning, particularly when using digital channels, as anyone can usually publish their own content and information without it being checked. Given that not using a channel may have different underlying reasons, including trust in information quality, the analysis of trust levels was limited to respondents who actively used the channel. Among GenZ participants, in-person training emerged as the most trusted source, with a high or very high trust level reported by 70% of respondents, followed by e-learning platforms (61%), podcasts (60%) and YouTube (48%). Meanwhile, information on channels like Facebook (79%), WhatsApp (69%) and TikTok (65%) was rated as very low or low in trustworthiness. The comparison of trust levels between GenZ and non-GenZ participants showed a statistically significant difference only for TikTok, where GenZ reported higher trust in the provided information ($p = 0.044$). When comparing both genders within GenZ, men reported significantly higher trust in Facebook ($p = 0.066$), while women

demonstrated significantly higher trust in blogs ($p = 0.014$) and Instagram ($p = 0.082$) in comparison to men.

Regarding their interest in using different channels for learning more about financial literacy, YouTube was again the preferred choice among GenZ. Nearly three quarters of GenZ participants expressed a very or extremely high interest in using YouTube for financial education in the future. Moreover, almost all respondents reported either using YouTube or having an interest in doing so. In comparison, 53% of non-GenZ respondents expressed a very or extremely high interest in learning about finance through YouTube. Similarly to the past use, GenZ participants preferred continuing with podcasts, with 57% finding them very or extremely attractive as a learning channel. While information on e-learning platforms was highly trusted among GenZ, only 27% showed interest in using such platforms for learning financial topics. The data also shows that, in addition to a general disinterest in using these channels at all, there is a lack of interest in learning about financial literacy on platforms such as Facebook, TikTok, WhatsApp and X/Twitter, as reported by around 75% of the participants. GenZ respondents expressed significantly higher interest in using YouTube ($p = 0.050$) and Instagram ($p = 0.032$) compared to non-GenZ. Preferences for other channels did not significantly differ from those of older generations. Within GenZ, women showed more interest in using TikTok for financial education compared to men ($p = 0.099$), while men had a higher average interest in using X/Twitter than women ($p = 0.066$).

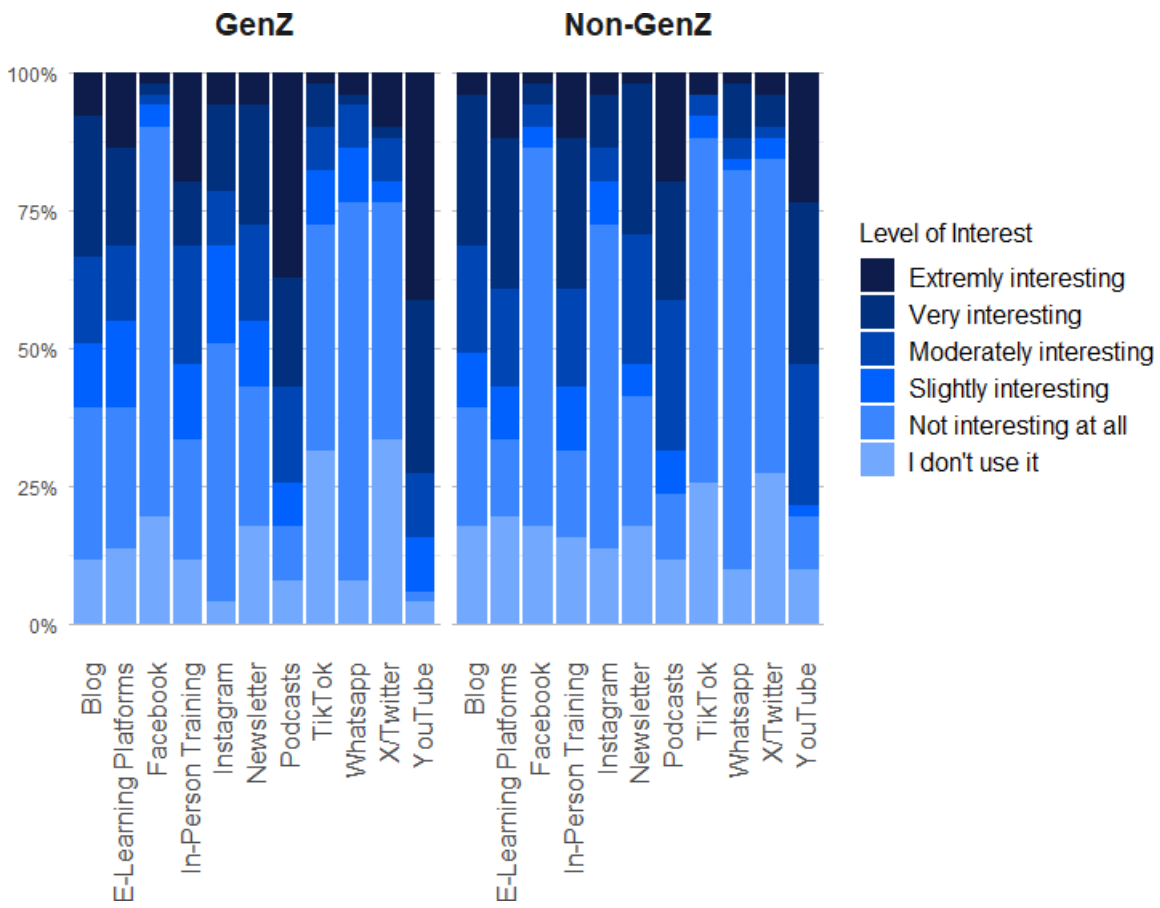

Figure 6: GenZ vs. non-GenZ – preference of channels for gaining financial literacy in the future

Source: survey data

Further analysis into the factors influencing channel preference indicated that gender and financial literacy levels can significantly affect preferences. Female respondents showed a negative association, corresponding to a reduction of one level of interest, in selecting YouTube as their preferred learning channel, with a statistical significance at the 5% level. In contrast, a higher level of objective financial literacy increased the interest in YouTube as a preferred channel for financial literacy by 0.6 interest levels ($p < 0.01$). Preferences for visual or auditory learning styles showed no significant influence on YouTube selection. Similar results were found for podcast usage. However, participants with a higher level of objective financial literacy also demonstrated a positive association of 0.7 interest levels for learning financial literacy through podcasts ($p < 0.01$). Respondents expressing a higher interest in learning about savings and interest rates found in-person training sessions ($p < 0.05$) and e-learning platforms ($p < 0.1$) less appealing by 0.6 points. Each additional correct answer to the financial literacy question

increased the interest level for e-learning platforms by 0.5 ($p < 0.05$). In contrast, a higher subjective financial literacy level was linked to a decrease of 0.1 levels of interest on e-learning ($p < 0.1$), suggesting that individuals with greater confidence in their financial literacy level are less likely to use e-learning platforms. Interestingly, although women tend to be less confident than men on their financial literacy level, they also showed an interest level in e-learning platforms that was reduced by 1.0 points ($p < 0.1$). Unsurprisingly respondents preferring learning through reading and writing showed a significant positive effect of 0.2 interest levels with learning about financial literacy via blogs ($p < 0.05$). Gender, generations and interest in specific financial topics had no significant effect on blog preferences [Appendix 3].

When asked about their degree of agreement to the statement "I prefer to interact and learn from influencers who show their face on social media rather than a company profile" 31% of GenZ participant (overall 27%) stated the somewhat or strongly agree with that statement while 43% (overall 42%) stated the somewhat or strongly disagree with it. Differences in preferences between generations, genders and genders within GenZ showed no significance. The data provides an unclear picture, with no clear trend as to whether the communication approach on channels should be more personal or more professional.

5 Discussion and recommendations

In order to develop well-founded conclusions and recommendations for Doutor Finanças, it is essential to combine the results of all three research questions. The recommendations resulting from this study focus on optimizing engagement with GenZ in terms of financial literacy.

The study shows that YouTube is currently the most used channel utilized for financial education among GenZ and is going to maintain this status. Consequently, it is necessary for Doutor Finanças to leverage this channel to enhance the financial literacy of Portuguese GenZ. While learning style preferences do not directly influence the usage intensity of YouTube, it is important, based on the overall preference of learning styles, to add explanatory graphics and text annotations alongside spoken information in the YouTube content.

In addition to YouTube, it is important to make effective use of podcasts and blog channels. It is recommended that the audio content of YouTube videos be reused as podcasts and distributed through the main podcast platforms. In the podcast, the YouTube video should be referred to in advance, with the note that content is also supported by graphics there. Moreover, both the podcast and YouTube content should be referenced with a blog, that provides a written articulation of the discussed topics, giving GenZ the opportunity to search

for specific keywords. This not only supports the revisitation of information but also aligns with GenZ's preference for learning about financial literacy through reading.

The content of these channels should be arranged in blocks and separated from each other by color or by a person explaining it. Since thematic interest does not significantly impact the channel preferences, it is important that each content block is on each channel. Based on the findings from the correlation analysis in this study, three blocks are recommended, formed by grouping topics that show a high correlation of interest among them. The first block is about money. How can I budget my income so that I can save some money? What kind of bank accounts should I invest in and how does interest work? How does compound interest work and what role does inflation play when talking about money? The second block focuses on impactful financial decisions, such as mortgages, property insurance and other insurances to ensure financial stability in an event of an emergency. The third block is about early retirement and topics on how to achieve it. However, this should not be about a frugal lifestyle, but about how you can create this opportunity for yourself by investing your assets. Topics such as investing in stocks and real estate are of particular interest. In addition, the topic of crypto should also be addressed in this block, as interest in this area is not particularly high in general but is increasing significantly in connection with the other investment opportunities. The research was unable to reach a conclusion on whether communication should be personal, for example through influencers, or at a professional level through an impersonal corporate profile.

The mechanics of bonds, their role within the financial system and the influence of external factors on their pricing is largely unfamiliar to GenZ, combined with a general disinterest in acquiring this knowledge. However, comprehensive financial literacy must not only build on strengths and interest, but also reduce gaps in understanding, making bonds particularly relevant. It is important to explain the basic functions and implications of bonds without teaching advanced knowledge. An approach is to integrate bond education with more familiar topics, such presenting bonds at a lower-risk investment alternative in the context of saving or as a component of a diversified portfolio when talking about stocks.

Given that women on average have lower financial literacy and confidence compared to men, one opportunity is to give them access to content specifically tailored to women. They typically face other economic conditions, including lower participation in full-time employment and an on average lower income (Oliveira, 2024). This may result in different financial priorities and interests. Addressing these through financial literacy content and channels targeting especially women, can help them to bridge the gaps and foster their financial empowerment.

Another finding of the study is that social media channels such as TikTok, Instagram and Facebook are less effective for delivering financial literacy education to GenZ. As a result, these channels should be used only in part for direct educational content purposes, but rather as an acquisition channel to make people aware of the financial education content on YouTube and in blogs or podcasts and to drive them into it.

6 Conclusion

The objective of this study is to provide recommendations for non-state organizations, such as Doutor Finanças, regarding the financial literacy needs and preferences of Portuguese GenZ and how they can address them. In particular, the study aims to identify the financial topics that GenZ should and wants to learn, as well as their preferred methods and channels for acquiring this knowledge. To achieve this, data were collected from a sample of 102 Portuguese individuals, with an even split between GenZ and non-GenZ participants, allowing for comparative analysis between generations.

This study contributes to the existing literature by providing new insights specifically tailored to Portuguese GenZ. Consistent with prior research, the findings indicates that men, on average, have higher levels of financial literacy compared to women (European Commission, 2023; OECD, 2024). Furthermore, this study provides new evidence of significantly higher overconfidence among men in relation to financial literacy. While participants showed limited knowledge regarding bonds, there was notable interest in learning more about financial topics such as stocks, savings, mortgages, inflation in early retirement. Interest in different financial topics revealed thematic clusters, with significant correlations between interests in particular topics. Key thematic categories included money, impactful financial decisions and early retirement.

Regarding preferred learning styles, 75% of respondents reported favoring a unimodal approach, with reading being the most preferred method, followed by visual and auditory learning. Contrary to existing research on general learning preferences among GenZ, which suggests a learning by doing and interactive learning style (Szymkowiak et al., 2021), this study found that such methods were least favored when it came to financial literacy. Despite a preference for learning through reading, this did not fully align with the most favored channel for obtaining financial literacy content, which includes YouTube, podcast and blogs. The study also revealed that GenZ does not prefer to access financial education through social media networks, such as TikTok, Instagram, Facebook and X/Twitter, but rather seeks such information through other separate channels. The level of trust expressed by GenZ participants

towards the information on these channels was consistent with these findings. Although e-learning platforms and in-person training are rated as the most trustworthy.

While the overall financial literacy level of the respondents was higher than in other studies, with 31% of GenZ answering all five questions correctly and 75% answering four or more questions correctly, this higher financial literacy level may limit the findings. One possible explanation for this limitation is the relatively high drop-out rate of 11% after the demographic questions, as some participants may have found the questions measuring objective financial literacy too challenging and decided to drop out of the survey. In particular, those who dropped out later in the survey tended to answer fewer questions correctly on average, although the difference was marginally non-significant ($p = 0.109$). Additionally, only one respondent under the age of 18 completed the survey, resulting in an underrepresentation of the youngest segment of GenZ. These factors, combined with the limited overall sample size, limit the ability to detect significant between subgroups. Future research could address these limitations by extending the data collection period and working with educational institutions to increase the participation of younger people.

Appendix

Appendix 1: Influence of learning style preferences on interest in financial topics

Source: survey data

	Dependent variable:			
	Budgeting	Saving/Interest	Inflation	Credit Score
4+ right answers	0.381	0.054	0.367	0.383
	(0.297)	(0.253)	(0.312)	(0.358)
5 right answers	0.035	0.236	0.193	0.161
	(0.248)	(0.211)	(0.260)	(0.298)
Auditory learning style	0.120**	0.140***	0.064	0.254***
	(0.057)	(0.049)	(0.060)	(0.069)
Visual learning style	0.061	0.062	0.069	0.150**
	(0.062)	(0.053)	(0.065)	(0.075)
Reading learning style	0.049	0.089*	0.024	-0.022
	(0.059)	(0.050)	(0.062)	(0.071)
Kinesthetic learning style	0.013	0.036	0.004	0.024
	(0.076)	(0.064)	(0.079)	(0.091)
GenZ	-0.103	0.096	0.060	0.140
	(0.243)	(0.206)	(0.255)	(0.292)
Female	-0.208	0.195	0.178	0.064
	(0.233)	(0.198)	(0.245)	(0.281)
Bachelor	0.619**	0.517*	0.056	0.210
	(0.309)	(0.262)	(0.324)	(0.372)
Master	0.286	0.260	0.069	0.222
	(0.309)	(0.263)	(0.325)	(0.373)
Employed	0.243	0.557**	0.547*	0.154
	(0.313)	(0.266)	(0.329)	(0.377)
Self-employed	0.001	-0.127	0.062	0.281
	(0.421)	(0.358)	(0.442)	(0.507)
Retired	-0.579	0.341	0.683	0.345
	(1.129)	(0.960)	(1.185)	(1.360)
Without work	-0.090	0.083	0.485	0.903
	(0.661)	(0.562)	(0.694)	(0.796)
Other occupation	0.065	0.088	0.809	0.942
	(1.075)	(0.914)	(1.129)	(1.295)
Constant	2.160***	1.996***	2.154***	1.175**
	(0.464)	(0.395)	(0.488)	(0.559)
Observations	102	102	102	102
R2	0.210	0.315	0.137	0.236
Adjusted R2	0.072	0.196	-0.014	0.103
Residual Std. Error (df = 86)	1.016	0.864	1.066	1.223
F Statistic (df = 15; 86)	1.524	2.638***	0.906	1.775*
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:			
	Insurance	Mortgages	Stocks	Bonds
4+ right answers	0.059	0.173	0.286	0.054
	(0.303)	(0.299)	(0.313)	(0.335)
5 right answers	0.272	0.079	0.084	0.844***
	(0.252)	(0.249)	(0.261)	(0.279)
Auditory learning style	0.151**	0.171***	-0.020	0.028
	(0.058)	(0.057)	(0.060)	(0.064)
Visual learning style	0.124*	-0.009	0.148**	0.159**
	(0.063)	(0.062)	(0.065)	(0.070)
Reading learning style	-0.042	0.074	0.123*	0.033
	(0.060)	(0.059)	(0.062)	(0.066)
Kinesthetic learning style	0.054	-0.017	-0.009	0.087
	(0.077)	(0.076)	(0.080)	(0.085)
GenZ	0.096	0.348	0.154	-0.126
	(0.247)	(0.244)	(0.255)	(0.273)
Female	-0.086	-0.323	-0.395	-0.313
	(0.237)	(0.234)	(0.245)	(0.263)
Bachelor	-0.273	0.267	0.437	-0.070
	(0.314)	(0.310)	(0.325)	(0.348)
Master	0.240	0.531*	0.659**	0.456
	(0.315)	(0.311)	(0.325)	(0.349)
Employed	-0.120	0.244	-0.175	0.032
	(0.319)	(0.315)	(0.330)	(0.353)
Self-employed	-0.244	-0.241	-0.510	-0.081
	(0.428)	(0.423)	(0.443)	(0.474)
Retired	-0.285	-1.365	-1.184	-0.828
	(1.149)	(1.135)	(1.187)	(1.272)
Without work	0.816	0.840	-0.493	-0.408
	(0.673)	(0.665)	(0.696)	(0.745)
Other occupation	0.265	1.138	0.429	0.110
	(1.094)	(1.081)	(1.131)	(1.212)
Constant	2.117***	2.197***	2.600***	2.008***
	(0.473)	(0.467)	(0.489)	(0.523)
Observations	102	102	102	102
R2	0.207	0.260	0.267	0.303
Adjusted R2	0.069	0.131	0.139	0.181
Residual Std. Error (df = 86)	1.034	1.021	1.068	1.145
F Statistic (df = 15; 86)	1.499	2.019**	2.089**	2.488***
Note:		*p<0.1; **p<0.05; ***p<0.01		

	Dependent variable:		
	Real estate	Crypto	Early retirement
4+ right answers	0.402	0.421	0.615
	(0.393)	(0.394)	(0.389)
5 right answers	0.085	-0.125	0.243
	(0.327)	(0.328)	(0.324)
Auditory learning style	0.116	0.041	0.049
	(0.075)	(0.076)	(0.075)
Visual learning style	0.011	0.126	-0.026
	(0.082)	(0.082)	(0.081)
Reading learning style	0.096	0.103	0.200**
	(0.078)	(0.078)	(0.077)
Kinesthetic learning style	0.033	-0.041	0.058
	(0.100)	(0.100)	(0.099)
GenZ	-0.009	-0.421	-0.300
	(0.321)	(0.322)	(0.318)
Female	-0.237	-0.232	0.107
	(0.308)	(0.309)	(0.305)
Bachelor	-0.272	0.541	0.073
	(0.408)	(0.409)	(0.404)
Master	-0.172	0.161	0.134
	(0.409)	(0.410)	(0.405)
Employed	0.018	-0.333	-0.152
	(0.414)	(0.415)	(0.410)
Self-employed	0.248	0.176	-0.036
	(0.556)	(0.558)	(0.551)
Retired	-0.686	-1.419	-0.887
	(1.491)	(1.496)	(1.477)
Without work	1.111	0.709	0.068
	(0.874)	(0.876)	(0.865)
Other occupation	1.342	1.647	0.833
	(1.420)	(1.425)	(1.407)
Constant	2.483***	1.818***	2.336***
	(0.614)	(0.615)	(0.608)
Observations	102	102	102
R2	0.116	0.164	0.168
Adjusted R2	-0.038	0.018	0.023
Residual Std. Error (df = 86)	1.342	1.346	1.329
F Statistic (df = 15; 86)	0.754	1.124	1.158
Note:			*p<0.1; **p<0.05; ***p<0.01

Appendix 2: Influence of learning style preferences on financial literacy level

Source: survey data

	Dependent variable:		
	logistic	logistic	OLS
	4+ right answers	5 right answers	number of correct answers
Auditory learning style	0.060	0.008	-0.015
	(0.176)	(0.163)	(0.048)
Visual learning style	0.123	0.243	0.036
	(0.198)	(0.173)	(0.051)
Reading learning style	0.071	0.199	0.072
	(0.188)	(0.165)	(0.049)
Kinesthetic learning style	-0.113	-0.338	0.027
	(0.228)	(0.210)	(0.063)
GenZ	0.094	-0.875	0.022
	(0.788)	(0.694)	(0.203)
Female	-0.391	0.949	0.096
	(0.753)	(0.686)	(0.216)
Bachelor	0.929	0.722	0.388
	(0.875)	(0.876)	(0.259)
Master	1.195	0.439	0.379
	(0.872)	(0.897)	(0.258)
Employed	2.053**	-1.325	0.456*
	(0.894)	(0.823)	(0.252)
Self-employed	1.122	-1.029	0.038
	(1.142)	(1.122)	(0.350)
Retired	13.098	14.286	0.065
	(2,399.545)	(3,956.181)	(0.950)
Without work	-2.184	-19.047	-0.547
	(1.731)	(1,839.431)	(0.544)
Other occupation	16.156	-16.553	0.348
	(2,399.545)	(3,956.180)	(0.897)
Subjective financial literacy score	0.297***	0.372***	0.107***
	(0.095)	(0.093)	(0.023)
Constant	-5.415***	-6.993***	1.167**
	(2.003)	(1.943)	(0.504)
Observations	102	102	102
R2			0.392
Adjusted R2			0.294
Log Likelihood	-34.185	-43.502	
Akaike Inf. Crit.	98.371	117.005	
Residual Std. Error			0.852 (df = 87)
F Statistic			4.010*** (df = 14; 87)
Note:			*p<0.1; **p<0.05; ***p<0.01

Appendix 3: Influences on channel preferences

Source: survey data

	Dependent variable:				
	YouTube (1)	Podcast (2)	In-person training (3)	E-learning platform (4)	Blog (5)
Female	-1.008**	-0.746	-0.412	-1.079*	-0.210
	(0.481)	(0.536)	(0.558)	(0.573)	(0.569)
Bachelor	0.404	0.576	0.651	0.719	0.586
	(0.461)	(0.514)	(0.535)	(0.550)	(0.545)
Master	0.092	0.331	1.010*	0.775	0.274
	(0.438)	(0.488)	(0.508)	(0.522)	(0.518)
Employed	0.145	0.675	0.783	0.010	0.131
	(0.428)	(0.477)	(0.497)	(0.511)	(0.506)
Self-employed	0.316	0.738	0.177	-0.303	0.176
	(0.581)	(0.647)	(0.674)	(0.692)	(0.687)
Retired	0.866	-2.769	-1.709	-3.290*	1.878
	(1.581)	(1.761)	(1.833)	(1.884)	(1.868)
Without work	-0.097	-0.170	-0.955	-0.877	-1.188
	(0.919)	(1.023)	(1.065)	(1.095)	(1.086)
Other occupation	1.055	1.719	1.679	2.425	-0.950
	(1.486)	(1.655)	(1.723)	(1.771)	(1.756)
GenZ	0.051	0.153	-0.215	-0.458	-0.113
	(0.405)	(0.451)	(0.469)	(0.482)	(0.478)
Auditory learning style	0.071	0.067	0.119	0.075	-0.094
	(0.092)	(0.102)	(0.106)	(0.109)	(0.108)
Visual learning style	-0.065	-0.052	-0.057	0.001	0.138
	(0.092)	(0.103)	(0.107)	(0.110)	(0.109)
Reading learning style	-0.017	0.021	0.087	-0.007	0.232**
	(0.086)	(0.096)	(0.100)	(0.103)	(0.102)
Kinesthetic learning style	-0.123	-0.010	0.136	0.183	-0.111
	(0.102)	(0.113)	(0.118)	(0.121)	(0.120)
Objective financial literacy score	0.638***	0.738***	0.223	0.542**	0.226
	(0.185)	(0.206)	(0.214)	(0.220)	(0.218)
Subjective financial literacy score	-0.056	-0.054	-0.079	-0.087*	0.0001
	(0.044)	(0.049)	(0.051)	(0.052)	(0.052)
Budgeting	-0.188	-0.119	0.303	0.245	0.036
	(0.202)	(0.225)	(0.234)	(0.241)	(0.239)
Saving/Interest	0.306	0.176	-0.652**	-0.552*	-0.240
	(0.239)	(0.266)	(0.277)	(0.285)	(0.282)
Inflation	-0.146	0.069	0.251	0.251	0.027
	(0.213)	(0.237)	(0.247)	(0.254)	(0.252)
Credit score	0.084	-0.105	0.087	0.062	0.088
	(0.139)	(0.155)	(0.162)	(0.166)	(0.165)
Insurance	0.206	0.268	0.043	-0.141	-0.047
	(0.176)	(0.196)	(0.204)	(0.210)	(0.208)
Mortgages	0.108	-0.002	0.111	-0.052	0.203
	(0.177)	(0.197)	(0.205)	(0.211)	(0.209)
Stocks	0.169	0.112	0.014	-0.075	-0.273
	(0.189)	(0.210)	(0.219)	(0.225)	(0.223)
Bonds	0.098	0.003	-0.037	0.245	0.118
	(0.155)	(0.172)	(0.179)	(0.184)	(0.183)
Real estate	-0.062	0.094	0.117	-0.043	0.053
	(0.134)	(0.149)	(0.155)	(0.160)	(0.158)
Crypto	-0.062	0.046	0.186	-0.062	-0.026
	(0.134)	(0.149)	(0.155)	(0.159)	(0.158)
Early retirement	-0.057	-0.201	-0.060	0.050	0.053
	(0.133)	(0.148)	(0.155)	(0.159)	(0.158)
Female:GenZ	1.097*	1.080	0.804	1.084	0.673
	(0.629)	(0.700)	(0.729)	(0.749)	(0.743)
Constant	0.553	-0.920	0.171	1.198	0.473
	(0.923)	(1.028)	(1.070)	(1.100)	(1.091)
Observations	102	102	102	102	102
R2	0.381	0.378	0.343	0.327	0.238
Adjusted R2	0.155	0.151	0.103	0.081	-0.040
Residual Std. Error (df = 74)	1.366	1.522	1.584	1.628	1.614
F Statistic (df = 27; 74)	1.685**	1.666**	1.430	1.331	0.855
Note:					*p<0.1; **p<0.05; ***p<0.01

References

Annabi, A., & Müller, F. (2018). What determines financial knowledge among college students? *Journal of Financial Education*, *44*(2), 344–366.

European Commission. (2023). Monitoring the level of financial literacy in the EU. *Publications Office of the European Union*. https://doi.org/https://doi.org/10.2874/956514

Fleming, N. D., & Mills, C. (1992). Not Another Inventory, Rather a Catalyst for Reflection. *To Improve the Academy*, *11*(1), 137–155. https://doi.org/10.1002/j.2334-4822.1992.tb00213.x

Greenhow, C., & Galvin, S. (2020). Teaching with social media: evidence-based strategies for making remote higher education less remote. *Information and Learning Science*, *121*(7/8), 513–524. https://doi.org/10.1108/ILS-04-2020-0138

Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial literacy, financial education, and economic outcomes. *Annual Review of Economics*, *5*, 347–373. https://doi.org/10.1146/annurev-economics-082312-125807

Hernandez-de-Menendez, M., Escobar Díaz, C. A., & Morales-Menendez, R. (2020). Educational experiences with Generation Z. *International Journal on Interactive Design and Manufacturing*, *14*(3), 847–859. https://doi.org/10.1007/s12008-020-00674-9

Huston, S. J. (2010). Measuring Financial Literacy. *Journal of Consumer Affairs*, *44*(2), 296–316. https://doi.org/10.1111/j.1745-6606.2010.01170.x

Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*, *145*(2), 255–272. https://doi.org/10.1016/j.jfineco.2021.09.022

Kaiser, T., & Menkhoff, L. (2020). Financial education in schools: A meta-analysis of experimental studies. *Economics of Education Review*, *78*. https://doi.org/10.1016/j.econedurev.2019.101930

Kim, K. T., Lee, J., & Hanna, S. D. (2020). The Effects of Financial Literacy Overconfidence on the Mortgage Delinquency of US Households. *Journal of Consumer Affairs*, *54*(2), 517–540. https://doi.org/10.1111/joca.12287

Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss Journal of Economics and Statistics*, *155*(1), 1–8. https://doi.org/10.1186/s41937-019-0027-5

Lusardi, A., Hasler, A., & Yakoboski, P. J. (2021). Building up financial literacy and financial resilience. *Mind and Society*, *20*(2), 181–187. https://doi.org/10.1007/s11299-020-00246-0

Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: an overview. *Journal of Pension Economics and Finance*, *10*(4), 497–508. https://doi.org/10.1017/S1474747211000448

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, *52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5

Lusardi, A., & Mitchell, O. S. (2023). The Importance of Financial Literacy: Opening a New Field. *Journal of Economic Perspectives*, *37*(4), 137–154. https://doi.org/10.1257/jep.37.4.137

Mountain, T. P., Kim, N., Serido, J., & Shim, S. (2021). Does Type of Financial Learning Matter for Young Adults' Objective Financial Knowledge and Financial Behaviors? A Longitudinal and Mediation Analysis. *Journal of Family and Economic Issues*, *42*(1), 113–132. https://doi.org/10.1007/s10834-020-09689-6

Murad, R., Hussin, S., Yusof, R., Miserom, S. F., & Yaacob, M. H. (2019). A Conceptual Foundation for Smart Education Driven by Gen Z. *International Journal of Academic Research in Business and Social Sciences*, *9*(5), 1022–1029.

Nicholas, A. J. (2020). Preferred learning methods of generation Z. *Faculty and Staff - Articles & Papers*, *74*.

Nugraha, M. A. P., Violin, V., Anantadjaya, S. P., Nurlia, N., & Lahiya, A. (2023). Improving Financial Literacy Through Teaching Materials on Managing Finance for Millenials. *Jurnal Ekonomi*, *12*(01), 1028–1032.

OECD. (2023). OECD/INFE 2023 International Survey of Adult Financial Literacy. *OECD Business and Finance Policy Papers*, *39*. https://doi.org/https://doi.org/10.1787/56003a32-en

OECD. (2024). PISA 2022 Results (Volume IV): How Financially Smart Are Students? *PISA, OECD Publishing*. https://doi.org/10.1787/5a849c2a-en

Oliveira, C. (2024). Income and wage inequality in democratic Portugal, 1974–2020. *Fiscal Studies*, *45*(3), 393–414. https://doi.org/https://doi.org/10.1111/1475-5890.12391

Philippas, N. D., & Avdoulas, C. (2020). Financial literacy and financial well-being among generation-Z university students: Evidence from Greece. *European Journal of Finance*, *26*(4–5), 360–381. https://doi.org/10.1080/1351847X.2019.1701512

Salas-Velasco, M., Moreno-Herrero, D., & Sánchez-Campillo, J. (2021). Teaching financial education in schools and students' financial literacy: A cross-country analysis with PISA data. *International Journal of Finance and Economics*, *26*(3), 4077–4103. https://doi.org/10.1002/ijfe.2005

Sconti, A. (2022). Digital vs. in-person financial education: What works best for Generation Z? *Journal of Economic Behavior and Organization*, *194*, 300–318. https://doi.org/10.1016/j.jebo.2021.12.001

Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., & Kundi, G. S. (2021). Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technology in Society*, *65*. https://doi.org/10.1016/j.techsoc.2021.101565

Tang, N., & Peter, P. J. (2015). Financial knowledge acquisition among the young: The role of financial education, financial experience, and parents' financial experience. *Financial Services Review*, *24*(2), 110–137. https://doi.org/https://doi.org/10.61190/fsr.v24i2.3237

Vizcaya-Moreno, M. F., & Pérez-Cañaveras, R. M. (2020). Social Media Used and Teaching Methods Preferred by Generation Z Students in the Nursing Clinical Learning Environment: A Cross-Sectional Research Study. *International Journal of Environmental Research and Public Health*, *17*(21), 8267–8277. https://doi.org/10.3390/ijerph17218267

Xia, T., Wang, Z., & Li, K. (2014). Financial Literacy Overconfidence and Stock Market Participation. *Social Indicators Research*, *119*, 1233–1245. https://doi.org/10.1007/s11205-013-0555-9

Zhao, H., & Zhang, L. (2020). Talking money at home: The value of family financial socialization. *International Journal of Bank Marketing*, *38*(7), 1617–1634. https://doi.org/10.1108/IJBM-04-2020-0174