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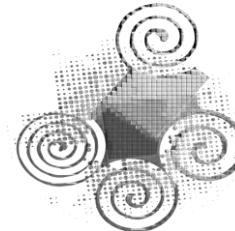
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FINANCIAL EDUCATION AT WORKPLACE EDUCAÇÃO FINANCEIRA NO LOCAL DE TRABALHO

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Abstract

The study seeks to explain the level of financial literacy of employees who participated in the company's financial education program, through socioeconomic and demographic variables. The sample is non-probabilistic, composed of 112 employees of a financial institution in São Paulo. Data analysis was performed using descriptive, inferential and multivariate analysis techniques. To measure financial literacy, three constructs were used: behavior, attitude and knowledge. The minority (38%) was classified with low level of financial literacy. An additional effort is suggested for employees under the age of 30, incomplete higher education, less than three years of professional experience, operational area, income of less than R\$ 4,000 and no habit to savings. The positive relationship between attitude and behavior suggests the development of activities that promote changes in attitude. Attention in math is required.

Keywords: financial education, financial institution, financial literacy, socioeconomic variable, demographic variable.

Resumo

O estudo busca explicar o nível de alfabetização financeira dos empregados que participaram do programa de educação financeira da empresa, por meio de variáveis socioeconômicas e demográficas. A amostra é não probabilística, composta por 112 funcionários de uma instituição financeira em São Paulo. A análise de dados foi realizada utilizando estatística descritiva, inferencial e técnicas de análise multivariada. Para medir a alfabetização financeira, foram utilizados três constructos: comportamento, atitude e conhecimento. A minoria (38%) foi classificada com baixo nível de alfabetização financeira. É sugerido esforço adicional para funcionários com idade inferior a 30 anos, ensino superior incompleto, menos de três anos de experiência profissional, área operacional, renda inferior a R\$4.000 e que não possua o hábito de poupar. A relação positiva entre atitude e comportamento, sugere o desenvolvimento de atividades que promovam mudanças na atitude. Atenção em matemática é necessária.

Palavras-chave: educação financeira, instituição financeira, alfabetização financeira, variáveis socioeconômicas, variáveis demográficas.

Introduction

After the international financial crisis of 2008, financial institutions adopted new market parameters, ensuring financial products according to the consumer profile, so that investors make conscious decisions, considering all the risks involved in each situation. For Loss (1986), the first public protection comes from the government, which assumes important role of educating the population financially. Another protection comes from private companies, which separated the concepts of ownership and control, bringing impartiality in the disclosure of information and results. These improvements aim to reach a more mature market, with several instruments for citizens to decide more consciously about the allocation of their resources.

If citizens are concerned about managing their money, they will be able to negotiate and wait for the best price of the products they wish to buy, and automatically contain price increases, affecting on inflation control. The companies themselves are concerned with this issue because the behavior of employees who go through an imbalance in their finances can affect the financial health of the company where these individuals work. In this way, financial education is no longer a concern only for the family; it is also a concern of government and business. (MARTINS, 2015).

According to Lusardi (2009), there are two ideal locations for the provision of financial education: school and workplace. Analyzing the financial knowledge of high school students, the author shows that not only the adult population, but also the young, do not have basic financial knowledge, and it is advantageous to introduce financial literacy in high school curricula. With regard to the financial education programs provided by the employer, the conclusions are mixed. Existing programs do not provide much learning on the subject, since they have very limited interventions in the work environment.

In addition to financial education, other factors can influence the development of individuals' abilities to cope with their financial lives. Shim et al (2009) state that one should not only focus on the acquisition of financial knowledge and the development of financial attitudes and behaviors. The influence of parental expectations and the individual's behavioral control (e.g. antecedents, personal values) should also be evaluated, since these elements can also interfere in order to achieve the financial well-being that, for in turn, is linked to the success of life in general.

Silva et al. (2017) offer a vision that encompasses not only the level of financial education but also aggregates individual, demographic and socialization characteristics as determinants of the creation of financially conscious individuals. According to the authors, depending on the characteristics of the individuals, the economic and social risks contribute to the worsening of the financial well-being and, consequently, the quality of life.

Fernandes et al (2014) share a similar view, where the authors state that people with certain psychometric profiles are more likely to engage in activities that contribute to raising financial literacy levels.

Considering this scenario, this study has as main axis to explain the level of financial literacy of employees who participated in the company's financial education program, through socioeconomic and demographic variables.

Theoretical reference

The following are the theoretical foundations that serve as reference for the study. The first point deals with the concepts of financial education, financial literacy and financial well-being. The second point concerns the influence of socioeconomic and demographic variables on financial education and financial literacy. The last point presents the results of studies that analyzed the results of financial education in the workplace.

Financial education, financial literacy and financial well-being

Lucci et al (2006) affirm that financial education refers to concepts geared to financial actions, ie, the set of activities, such as daily control of expenses, credit card, financing and loans. These activities improve personal well-being as they reduce wrong decisions that can financially disrupt both personal life and career. In this case, financial education is a tool for adopting the best money management strategy.

For Braunstein and Welch (2002), in addition to the personal benefit, financial education develops the financial market in a healthy way, since it stimulates it to offer better services. The authors state that:

[...] informed participants help create a more competitive and efficient market. Conscious consumers demand products that are consistent with their short- and long-term financial needs, requiring financial providers to create products with characteristics that best match those demands. (BRAUNSTEIN; WELCH, 2002, p. 445).

According to the Organization for Economic Co-operation and Development (OECD), the definition of financial literacy for PISA 2012 is as follows:

Financial Literacy is the knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply this knowledge and understanding, in order to make effective decisions across a range of contexts, improve the financial well-being of individuals and society and enable participation in economic life. (OECD, 2013, p.144).

Financial literacy goes beyond knowledge about finance issues, also involving how this knowledge affects the behavior and attitude of the citizen at the time of decision. In this sense, the individual starts to have a financially correct consumption. (QUINTINO, 2014).

Quintino (2014) defines a financial default in the act of buying a good or service, in order to avoid the commitment of family expenses or, even, of over-indebtedness.

The consumer performs this consideration in the light of his or her perception of risk. The perception of risk comes in two forms. The first way is by how the consumer recognizes risk, and the second way, how the consumer relates to risk. If, on the one hand, the consumer is willing to take more financial effort to obtain a greater benefit (acquisition of a good or service, such as housing, car and travel), on the other hand, his decision is not always sustainable when strictly economic. (FRADE; JESUS, 2011).

In this way, not only the consumer should pay special attention when buying credit, but also the credit entities, through the evaluation of relevant information that determine the level of indebtedness appropriate to the characteristics of the consumer. Thus, we come to the concept of "sustainable indebtedness", that is, the ability to contract credit without compromising the possibility of repayment. (QUINTINO, 2014).

Within this line of reasoning, Quintino (2014) understands that the increase in financial literacy leads the consumer to the financially correct consumption that promotes a progressive improvement of the social situation, since the financially correct consumption avoids the financial default and the over-indebtedness that can due to the unpredictability of the future and the current economic situation.

Financially correct consumption is part of a broader vision, namely financial well-being. According to the Consumer Financial Protection Bureau (CFPB, 2015, p.7), "Financial well-being is a state in which a person can fully meet current and continuing financial obligations, can feel secure in their financial future and is able to make choices that allow the use of life." The CFPB (2015) understands that financial well-being is the goal of financial literacy. Since financial literacy is composed of financial behavior, one of the factors influencing financial well-being is financial behavior. In general, people with a high level of financial well-being are people who control their money efficiently, research and seek financial

knowledge, use financial planning to establish strategies that lead to financial goals, and lastly, follow their financial decisions. (CFPB, 2015).

Financial education provides financial knowledge to the individual; however, financial knowledge alone is not enough to change financial behavior. Attitude, personality, and decision context mediate the link between knowledge and behavior. The personal traits that can influence the financial well-being are four. The first refers to the internal frame of reference, that is, to compare to its own standards and not to those of others. The second personal trait is perseverance in the face of obstacles. The third trait is the tendency to plan the future, control the impulses, and be creative to face unexpected challenges. Lastly, the fourth personal trait is to believe in your ability to influence your bottom line. (CFPB, 2015).

These personal traits may explain why people with a similar situation are at different levels of financial well-being. Following this line of reasoning, people with high levels of financial well-being are those who have the habit of planning, questioning and acting. They seek trustworthy information and process it to make financial decisions more informed and informed. In other words, what determines the level of financial well-being that people have throughout life is the ability they have to put into practice what they have learned in their financial lives. (CFPB, 2015).

The influence of socioeconomic and demographic variables on the level of financial literacy

Studies on financial literacy were conducted (CHEN; VOLPE, 1998; LUSARDI; MITCHEL, 2011b; ROOIJ et al, 2011; ATKINSON; MESSY, 2012) with the objective of identifying the level of financial literacy and the relationship of this level with socioeconomic and demographic variables. With this information, it is possible to identify best practices and groups that need more attention, guiding effective financial education initiatives, as well as support for the definition of governmental regulatory measures to encourage savings, consumption and investment.

In general, the authors evaluate the following aspects: *age, gender, educational level, marital status, income, work, financial education, ethnicity, financial products and equity situation*. Table 1 summarizes the association between financial literacy level, financial education level and some socioeconomic and demographic variables.

Chen and Volpe (1998) analyzed the level of financial literacy in 924 college students and the results show that non-business students, women, low-income students, under 30s, and low work experience have low levels of knowledge, limiting their ability to make financial decisions, giving opinions and making wrong decisions.

Lusardi and Mitchel (2011b) studied financial literacy in the United States using the National Financial Capability Study. The authors concluded that the level of financial literacy is low among young people, the elderly, women, people with low level of schooling and African Americans. They also note that the low performance of these groups in assessing the level of financial literacy is not consistent with their perception of themselves as these groups consider themselves well informed. The fact that the groups have greater difficulty in dealing with financial matters ends up making it difficult to make financial decisions.

Rooij et al (2011) investigated the relationship between financial literacy and household equity based on knowledge measures designed for a Dutch Central Bank Research (DHS) module. Their results provide strong evidence that financial literacy can facilitate wealth accumulation. The authors present two forms.

Table 1 - Synthesis of the relationship between financial literacy or financial education and some socioeconomic and demographic variables

Variable	Linking to financial literacy	Authors
Age	a) the individual aged between 30 and 40 years has a higher financial education index;	Agarwal et al (2009); Lusardi & Mitchell (2011); Finke et al (2016); Atkinson & Messy (2012); Chen & Volpe (1998); Scheresberg (2013); ANZ (2015).
	b) financial education is low among the youngest and oldest;	
Education level	a) the individual with the highest level of financial education is the one with the highest level of education;	Chen & Volpe (1998); Lucci et al (2006); Amadeu (2009); Disney & Gathergood (2011), Lusardi e Mitchell (2011); Atkinson e Messy (2012); Norvilitis et al (2006); Lyons (2007); Scheresberg (2013); ANZ (2015).
	b) the individual with lower educational level is less likely to answer the questions correctly and more likely to say that he does not know the answer;	
	c) the importance of financial education is reinforced when analyzing the adverse effects of lack of knowledge about financial management.	
Income	a) the low income individual is associated with a low level of financial education;	Lusardi & Tuffano (2015); Monticone (2010); Bottazzi et al (2011); Atkinson & Messy (2012); Scheresberg (2013); ANZ (2015).
	b) financial education and wealth are jointly determined and correlated throughout the life cycle;	
Working time	a) individuals with longer periods of service are more financially literate due to their greater coexistence with economic and financial matters, while low-skilled or unemployed people have less desirable attitudes and behaviors.	Chen & Volpe (1998); Lusardi & Mitchell (2011).
Gender	a) the woman generally presents a lower index of financial literacy than the man;	Chen & Volpe (1998); Lusardi & Mitchell (2011); Atkinson & Messy (2012); Agarwalla et al (2009); Scheresberg (2013); ANZ (2015).
	b) the financial education of men is increasing faster than that of women;	
	c) the woman is less likely to answer the questions correctly and more likely to say she does not know the answer;	
Ethnic groups	a) the caucasian student presents a better level of financial responsibility;	Lusardi & Mitchell (2011), Grable & Joo (2006)
	b) Africans and the Hispanic are less likely to correctly answer questions on this subject.	
Parents	The parent-socialization component and the educational-socialization component were positively related to financial knowledge.	Shim et al (2009), Webley & Nyhus (2006), Clarke et al (2005), Jorgensen (2007), Mandell (2008), Pinto et al (2005)
Credit, investment and savings	a) Consumers with a greater level of financial knowledge have greater capacity to realize personal budget, savings and planning for the future.	Lusardi & Mitchell (2011), Matta (2007), Lusardi & Tuffano (2015), Disney & Gathergood (2011), Rooij et al (2011), Lucci et al (2011)
	b) Lack of financial knowledge of products involving credit, investment and savings can lead people to high levels of indebtedness.	

Source: Adapted from Potrich et al (2013) and Kühn et al (2016).

One is through financial knowledge, which increases the likelihood of investing in the stock market, allowing individuals to benefit from the equity premium. The other is by the positive relationship between financial literacy and retirement planning, increasing the economy and, consequently, the wealth of the individual.

The OECD International Network on Financial Education held a pilot on financial education in 14 countries. Atkinson and Messy (2012) analyzed the data and wrote their findings in an article published in 2012. According to the authors, the level of financial literacy increases with age. As people become more informed, their attitudes and behaviors change according to this new information. However, two factors may reduce the level of financial literacy of the elderly. The first is the possibility that the elderly may find it hard to keep up with the fast pace of changes in the financial market, including the new technologies that are incorporated. The second factor is cognitive impairment that can reduce how much these consumers can withhold and apply for financial knowledge.

Atkinson and Messy (2012) also studied the relationship between risk aversion and the level of financial literacy. The relationship between the two variables changes according to the country: a) or people who are risk averse are less likely to be financially literate; b) or risk-averse people have high levels of financial literacy. There is a need for further study on the subject.

Shim et al (2009) conducted a survey of 781 students from a university in the United States. They tested a conceptual model of the potential antecedents and consequences of financial well-being in adult life. The results suggest that self-fulfilling personal values, financial education at home and financial education at school can play an important role in the search for financial knowledge and its behavior based on this knowledge. This financial domain, coupled with parents' normative expectations and adult behavioral control, are related to financial well-being and overall life satisfaction.

It is possible to perceive, through previous studies, the growing social and academic interest in the subject and, with the increase of the demographic and socialization variables in financial education, one can offer important contributions for the political, economic and governmental reforms that are being discussed in the national congress.

Studies on financial education in the workplace

There is a vast literature on the subject confirming that financial education programs promoted by employers influence the management of the personal finances of their employees. Most of the articles cover studies related to the North American population and the relation of the employee to the social security plan.

Bayer et al. (1996) state that during the 1990s individuals participated in financial education programs provided by their employers. In reviewing these programs, the authors concluded that both participation and contributions to voluntary savings plans were significantly higher when they held retirement seminars, with a greater influence on employees who did not have high salaries. There was no identification of effects arising from written materials, newsletters, regardless of frequency.

Bernheim and Garrett (2003) explored the cross-sectional relationships between the availability of employer-based financial education and household asset accumulation measures in the United States. The results demonstrate that financial education is spreading from the experience gained in the workplace and from the effect of programs established by employers, stimulating savings, both general and retirement.

Kim et al. (2005) examined the factors that contribute to American confidence in retirement using the 2004 Confidence-to-Retirement Survey. Confidence includes the opinions and attitudes toward retirement as well as its preparations. The results suggest that Americans who have calculated their retirement fund needs have had more savings, higher family income and better health. Those who

received financial education and job counseling had higher levels of confidence in retirement than others had.

Hira and Loibl (2005) examined the relationship between financial education in the workplace and satisfaction in the workplace. Analyzing data from an insurance company, they found that employees who participated in workplace financial education programs better understood personal finances and recognized how financial knowledge influenced their future financial expectations, increasing the likelihood of supporting the company in which they worked.

Dovin and Templeton (2006) conducted a clinical study at a company that restructured their retirement plan and simultaneously offered financial education seminars to their employees. The study indicated that participation in the seminar was associated with the increase and diversification of employees' portfolio, as well as improving risk management, which implied a greater understanding of the retirement planning process.

Holland et al. (2008) analyzed the history of the Employee Retirement Income Security Act (ERISA). The implementation of the act encouraged employers to transition from the defined benefit retirement plan to the defined contribution retirement plan. The article presents a pre-test and post-test project of a non-experimental group to analyze the effects of the literacy program in the workplace. The results indicate that participants were less stressed, less concerned with monthly expenses, more satisfied with their financial situation, and more confident in overcoming financial emergencies.

Krajnak et al (2008) state financial education in the workplace is a way to help employees cope with their increasingly complex financial choices. The authors state that employees participating in financial education seminars change their goals and saving behaviors in a positive way. Other forms of dissemination of this content have also begun to become popular, such as group meetings, workshops, and web-based tools.

Lusardi (2009) evaluates the financial education programs provided by the employer and concludes that one cannot learn much from existing programs, since programs in the workplace usually offer very limited interventions. The author concludes that a seminar can hardly be the adequate answer to the problem of the financial illiteracy of the collaborators. However, the author argues that there is evidence that programs offering multiple financial education sessions have been effective in stimulating saving among low-income workers, who are usually the least likely to economize. The author also shows that women are particularly receptive to financial education programs. Knowing that women have low levels of financial literacy, these findings suggest that educational programs can increase financial literacy for groups who need improved financial literacy.

Lusardi and Mitchell (2011a) present a relationship between financial literacy and retirement planning. According to the authors, the conventional economic structure postulates that the consumer has expectations regarding the probability of survival, investment returns, inflation, pensions and social security benefits. Moreover, in this model it is assumed that the consumer uses this information to formulate and execute optimal consumption, work and economy plans. Following this model, the authors explored the hypothesis that poor retirement planning could be the result of financial illiteracy. In other words, individuals who fail to realize their savings plans are those who are less aware of the fundamental economic concepts that drive economic well-being throughout the life cycle. Data are from the 2004 Health and Retirement Study, which provided nationally representative longitudinal data for Americans older than 50 years. There is evidence that workers who have more information on finances are more likely to plan and succeed in their planning. To be successful in their planning, these individuals rely on formal methods, such as retirement calculators, retirement seminars, and consultations with financial experts. These individuals do not rely on family or co-workers to carry out their financial planning.

Prawitz and Cohart (2014), based on the consumer lifecycle theory, conducted an experimental study of 995 employees to examine changes in financial behavior using financial education in the workplace. From two groups, they compared the results of participants and non-participants in the financial education program. In this study, we analyzed the savings indexes and the perception of financial well-being. Participants in the financial education program were 1.8 times more likely to budget, 1.9 times more likely to perform an asset allocation assessment, were 1.6 times more likely to increase retirement contributions. These results indicate that the implementation of financial education and retirement planning programs in the workplace bring positive results in the personal finances of its participants.

Bannon et al. (2014) argue that financial education programs in the workplace show significant success. Employees participating in these programs not only show higher levels of financial literacy, but also greater confidence in their financial situation, increasing their satisfaction in their workplace.

MacKenzie (2017) reports in his article that nearly 50% of American workers own less than \$ 10,000 for retirement. To try to change this situation, employers have implemented financial education programs designed to increase the participation rate in the retirement plan. Even so, only 32% of workers report having a good understanding of their retirement plan in the workplace. There is evidence that financial education alone does not prepare people for retirement, and this program must also address other issues such as budgeting, debt management and emergency fund. The author also examines the role of the counselor, who can add value, in addition to financial wellness programs.

As can be observed, research indicates that the implementation of financial education programs by employers promotes an increase in the level of financial literacy of its employees, bringing positive results in the personal finances of its participants. Increased understanding of personal finances influences future financial expectations of employees, increasing the level of satisfaction in their workplace, promoting greater support of employees with the company where they work. Increasing the perception of financial well-being also reduces employee stress by improving your health.

The promotion of financial education comes in several forms: seminars, explanatory bulletins, booklets, group meetings, workshops, expert consultations and web-based tools. In addition, the promotion of financial education is not restricted to teachings about retirement plans, preparing employees also for other relevant financial matters, such as debt management, budgeting and emergency fund formation.

From these results, it is possible to perceive the importance of financial education in the three dimensions: economic, social and personal. The growing social and academic interest in the subject offers important contributions to direct the efforts for political and economic reforms established by the governments, as well as to contribute to the development of financial education programs by the government, companies and non-governmental and non-profit institutions.

Methodology

This is a qualitative exploratory research, with survey application, in employees of a private banking institution located in the city of São Paulo. It is a non-probabilistic sample, selected for convenience due to the contact of one of the authors with the banking institution. Data collection took place from April to June 2017, structured through the application of an online questionnaire. As a return strategy, they made contacts by phone, email and message through social networks. In these contacts, the importance of employee collaboration for the development of the work was reinforced, highlighting the guarantee of privacy, and the respondents were not identified at any time, even when the results of the research were divulged. The questionnaire was prepared in accordance with the theoretical framework. In total, there were 121 valid questionnaires. Of this total, nine did not participate in the financial education program offered by the company; therefore, they were removed from the sample. Thus, the sample analyzed in this study is composed of 112 observations.

Taking into account the fact that financial literacy, according to the OECD (2013), focuses on the aspects of financial knowledge, financial attitude and financial behavior, the variable financial literacy was measured from the simple average of these aspects, according to equation 1.

$$FL_i = (\text{financial knowledge}_i + \text{financial behavior and financial attitudes}_i) / 2 \quad [\text{equation 1}]$$

In which FL_i is the *financial literacy* variable. The minimum score of financial literacy is zero, which represents the lowest level of financial literacy, and the maximum score is ten, which represents the highest level of financial literacy.

For the analysis of the data collected, we used descriptive statistics (mean, median and standard deviation), inferential and multivariate analysis techniques, which were applied through SPSS software version 25.

In order to investigate the influence of socioeconomic and demographic variables on financial literacy, the median equality hypothesis tests were performed using the U - Mann-Whitney test for comparison of two medians and the Kruskal-Wallis test for comparison of three or more medians, at a confidence level of 95%. These tests use data from independent samples, which do not show normal distribution and have no homogeneity of variances. To verify the normality of the data and homogeneity of the variances, the Kolmogorov-Smirnov test and Levene test was used (based on the mean), at a 95% confidence level.

To test the independence of two variables, the Chi-square test for independence was used, at a confidence level of 95%. To use the Chi-square test, there can be no more than 25% of cells with an expected frequency of less than five.

To estimate the correlation between nominal and ordinal variables one should opt for the Spearman correlation coefficient. For Dancey and Reidy (2006), values up to 0.30 should be considered as weak, between 0.40 and 0.60 moderate and above 0.70 strong.

In order to investigate the influence of socioeconomic and demographic variables on financial literacy, a multiple linear regression analysis was performed using the Ordinary Least Squares (OLS) method. The regression aims to analyze the relationship between the financial literacy dependent variable and the independent variables, which are, in this study, participation in program variable and the following binary variables (dummy = D_i): *age, social class, gender, ethnicity, education, course, working time, income, workspace, savings, financial product, invested amount, and parent education*. Thus, to verify if the financial literacy variable is related to the independent variables, the equation 2 was elaborated:

$$FL_i = \alpha_0 + \beta_1 D_1 \text{Age}_i + \beta_2 D_2 \text{SocialClass}_i + \beta_3 D_3 \text{Gender}_i + \beta_4 D_4 \text{Ethnicity}_i + \beta_5 D_5 \text{Education}_i + \beta_6 D_6 \text{Course}_i + \beta_7 D_7 \text{WorkingTime}_i + \beta_8 D_8 \text{Income}_i + \beta_9 D_9 \text{Workspace}_i + \beta_{10} D_{10} \text{Savings}_i + \beta_{11} D_{11} \text{FinancialProduct}_i + \beta_{12} D_{12} \text{InvestedAmount}_i + \beta_{13} D_{13} \text{ParentEducation}_i + \beta_{14} \text{ParticipationInProgram}_i + \epsilon_i \quad [\text{equation 2}]$$

In which, α_0 is the angular coefficient of the regression, and ϵ_i is particle coefficient that represents the error.

To verify if the regression model is statistically significant, the ANOVA test is performed at a 95% confidence level. Hypothesis tests are also performed to verify that the intercept ($\alpha = \text{zero}$) and the

coefficient ($\beta = \text{zero}$) are statistically different from zero. In order to verify the assumptions of autocorrelation of residues, multicollinearity and homogeneity of variances, the Durbin Watson (DW), Variance Inflation Factor (VIF), and Levene tests were used. Regarding the normality of the data, Anderson et al (2007, p.252) say “The general practice of statistics is to assume that, for most applications, the sample distribution of x can be approximated by a normal distribution whenever the sample has size 30 or more”. As the sample has 112 observations, it can be concluded that the data are approximately normal.

The coefficient of determination (R^2) is used to measure the confidence deposited in the regression equation as a prediction instrument, and represents the percentage of the total variation that is explained by the model.

Analysis and discussion of results

The final sample consisted of 112 employees (table 2).

Table 2 - Socioeconomic and demographic profile of the sample

Variable		Absolute Frequency	Relative Frequency	Variable		Absolute Frequency	Relative Frequency
Age	Up to 30 years old	53	47%	Invested amount	No financial investments	13	12%
	From 31 to 40 years old	32	29%		Up to R\$25,000	42	38%
	From 41 to 50 years old	19	17%		From R\$25,001 to R\$50,000	23	21%
	From 51 to 60 years old	8	7%		From R\$50,001 to R\$75,000	17	15%
Gender	Female	37	33%		More than R\$75,000	17	15%
	Male	75	67%	Financial product	No financial investments	12	11%
Social class	A	43	38%		Fixed income securities, savings, dollar, retirement	48	43%
	B1	30	27%		Fixed income funds and society	29	26%
	B2	32	29%		Shares, stock fund and multimarket fund	23	21%
	C1	7	6%	Equity situation	My budget is in deficit	7	6%
Ethnicity	Caucasian and yellow	59	53%		Did not specify the equity situation	5	4%
	Black and brown	53	47%		My budget is balanced	12	11%
Parent education	Completed secondary school	18	16%		Balanced budget and contingency reserve	35	31%
	Incomplete Higher Education	23	21%		Balanced budget, contingency, retirement	25	22%
	Completed Higher Education	71	63%		Balanced budget, contingency reserve, retirement and life project	28	25%
Education	Incomplete Higher Education	19	17%	Type of course	Face-to-face course	101	90%
	Completed Higher Education	37	33%		E-learning course	93	83%
	Master's, Doctorate, etc.	56	50%		Seminars	80	71%
Course	Applied Social Sciences	101	90%		Others	13	12%
	Others	11	10%	Number of courses	one course	13	12%
Working time	Up to 3 years	11	10%		two courses	28	25%
	From 4 to 6 years	16	14%		three courses	58	52%
	Above 6 years	85	76%		four courses	8	7%
Workspace	Operational	70	63%		five courses	5	4%
	Administrative	42	38%	Degree of help	It did not help at all	0	0%
Income	Up to R\$4,000	21	19%		It helped a little	9	8%
	From R\$4,001 to R\$6,000	47	42%		Helped more or less	30	27%
	From R\$6,001 to R\$10,000	21	19%		Helped	65	58%
	Above R\$10,000	23	21%		It helped a lot	8	7%
Savings	Practically none	10	9%	Total		112	100%
	From 1% to 10% of income	84	75%				
	More than 10% of income	18	16%				

Source: Research data

Most respondents are between 21 and 40 years old (75%). They belong to social classes A, B1 and B2 (94%). More than half (52%) are Caucasian (53%) and males (67%). All of them have a higher education level, of which half have post-graduation *lato sensu* or *stricto sensu*, with completed higher education parents (63%). Most have their university courses in applied social sciences (90%), work in the operational area (63%) and have salaries above R\$ 4,000 (89%). They have worked for more than six years (76%)

and usually save up to 10% of income (75%), applying in fixed income, savings, dollar or private pension plans (43%). Its financial investments total up to R\$ 50,000 (59%). Almost all respondents (90%) have a balanced budget and plan their future reserves at different levels: contingency reserves, retirement and life project.

When questioned where they acquired their knowledge to manage their money, most (88%) reports occurred in the financial education program that the company promoted. It is possible that the highest percentage in the company program comes from being the most recent and focused on the subject, distorting the importance of other sources of information that have occurred in the past. Family relationships (8%) and conversations with friends (6%) had the lowest participation.

Of the total number of participants, the majority attended the face-to-face courses (90%), e-learning courses (83%) and seminars (71%). In this question, the respondent had the possibility to indicate more than one alternative. When asked about the intensity of participation in the financial education program, 52% participated in three activities and 58% report that participation in the financial education program has helped them improve their personal resource management.

The influence of socioeconomic and demographic variables on financial literacy

In order to understand if there is a difference in the median of the financial literacy variable, the U Mann-Whitney test (two groups) and Kruskal-Wallis test (more than two groups) were performed considering socioeconomic and demographic variables. Table 3 presents the results that are evaluated in the light of the theoretical reference set forth above.

When analyzing the level of financial literacy, significant differences were found in the variables *age*, *education*, *working time*, *income*, *parent education*, *workspace*, *savings*, *financial product*, *invested amount*, and *equity situation*. The relationship between the level of financial literacy and the socioeconomic and demographic variables are described below.

According to Atkinson and Messy (2012), financial literacy can be expected to increase with age, as people become more informed and their behavior/attitude changes accordingly. In this study, the group of employees aged up to 25 years old had an average financial literacy level of 6.3 (behavior/attitude = 6.4 and knowledge = 6.3), while the group aged between 50 and 60 years old had an average literacy of 7.7 (behavior/attitude = 8.2 and knowledge = 7.2). These results confirm the conclusions indicated by Agarwal et al (2012), Lusardi & Mitchell (2011b), Finke et al (2016), Atkinson & Messy (2012), Chen & Volpe (1998), Scheresberg (2013) and ANZ (2015). With regard to the company's educational program, both groups have an average participation of 2.5 activities, but the group of older employees reported that their perception of improvement in the management of personal resources is higher (average of 4.0) than the perception of the youngest (average of 3.1).

Literacy increases as the age increases, however, the elderly have a lower level of literacy due to a decline in the cognitive processes associated with old age. This can be seen when comparing the mean rank of literacy of the group aged 40-50 (71.53) and the mean rank of the group between 51 and 60 (64.50).

Low level of income is associated with low level of financial literacy but the level of income itself does not affect one's ability to acquire knowledge and exhibit positive behavior/attitude that leads to financial well-being.

Table 3 - Financial literacy according to socioeconomic and demographic characteristics

Variable		Average	Median	Standard deviation	Test	Mean Rank	P-value	Conclusion
Age	Up to 30 years old	6,90	7,00	1,07	Kruskal-Wallis	3.75	0.001	influence
	From 31 to 40 years old	7,63	7.75	0.64		66.86		
	From 41 to 50 years old	7.82	7.75	0.87		71.53		
	From 51 to 60 years old	7.66	7.75	1.13		64.50		
Social class	A	7.64	7.75	1.01	Kruskal-Wallis	64.88	0.081	not influence
	B1	7.14	7.50	1.12		52.58		
	B2	7.30	7.50	0.77		53.59		
	C1	6.68	7.50	1.12		35.07		
Gender	Female	7.47	7.50	0.95	Mann-Whitney	59.57	0.478	not influence
	Male	7.29	7.50	1.04		54.99		
Ethnicity	Caucasian and yellow	7.40	7.50	1.08	Mann-Whitney	59.35	0.323	not influence
	Black and brown	7.29	7.50	0.92		53.33		
Parent education	Completed secondary school	6,86	7,00	0,76	Kruskal-Wallis	37,97	0,026	influence
	Incomplete Higher Education	7,35	7,50	0,90		60,46		
	Completed Higher Education	7,39	7,50	1,06		59,92		
Education	Incomplete Higher Education	6.36	6.50	1.36	Kruskal-Wallis	30.82	0.001	influence
	Completed Higher Education	7.49	7.50	0.94		59.45		
	Master's, Doctorate, etc.	7.59	7.50	0.67		63.27		
Course	Applied Social Sciences	7.38	7.50	0.67	Mann-Whitney	57.13	0.530	not influence
	Others	7.02	7.00	1.31		50.73		
Working time	Up to 3 years	5.55	5.50	1.04	Kruskal-Wallis	12.00	0.000	influence
	From 4 to 6 years	7.06	7.00	0.96		43.00		
	Above 6 years	7.64	7.50	0.73		64.80		
Income	Up to R\$4,000	6.31	6.50	1.37	Kruskal-Wallis	30.02	0,000	influence
	From R\$4,001 to R\$6,000	7.39	7.50	0.55		55.17		
	From R\$6,001 to R\$10,000	7.56	7.50	0.48		60.83		
	Above R\$10,000	8.01	8.25	1.02		79.43		
Workspace	Operational	7.15	7.50	0.95	Mann-Whitney	49.26	0.002	influence
	Administrative	7.68	7.75	1.03		68.56		
Savings	Practically none	5.35	5.00	1.00	Kruskal-Wallis	10.00	0.000	influence
	From 1% to 10% of income	7.47	7.50	0.70		57.67		
	More than 10% of income	7.88	8.13	1.00		76.86		
Financial product	No financial investments	5.46	5.25	0.94	Kruskal-Wallis	10.08	0.000	influence
	Fixed income securities, savings, dollar and private pension	7.63	7.75	0.73		65.88		
	Fixed income funds and society	7.40	7.50	0.66		53.43		
	Shares, stock fund and multimarket fund	7.70	7.75	0.86		65.02		
Invested amount	No financial investments	5.58	5.50	1.00	Kruskal-Wallis	11.96	0.000	influence
	Up to R\$25,000	7.48	7.50	0.68		59.01		
	From R\$25,001 to R\$50,000	7.45	7.50	0.53		56.48		
	From R\$50,001 to R\$75,000	7.72	7.50	0.81		63.88		
	More than R\$75.000	7.87	8.00	1.02		77.00		
Equity situation	My budget is in deficit	5.30	5.00	1.15	Kruskal-Wallis	9.10	0.002	influence
	My budget is balanced	6.67	7.00	1.29		39.63		
	My budget is balanced and contingency reserve	7.54	7.75	0.77		62.84		
	Balanced budget, contingency reserve and retirement	7.73	7.75	0.68		67.20		
	Balanced budget, contingency, retirement, life project	7.38	7.50	0.58		53.36		

Source: Research data

According to Atkinson and Messy (2012), a low level of income is seen as an explanation for a particular behavior, such as low level of saving. Analyzing the survey data, 21 (19%) have incomes up to R \$ 4,000 and, of these, eight ($8/21 * 100 = 38\%$) did not saving in the last 12 months. On the other hand, the

highest levels of income are associated with high levels of financial literacy. Of the 91 (81%) employees who have income above R \$ 4,000 only one ($1/91 * 100 = 1\%$) have not saving in the last 12 months. These results confirm the conclusions indicated by Lusardi & Tufano (2015); Monticone (2010); Bottazzi et al (2011); Atkinson & Messy (2012); Scheresberg (2013); and ANZ (2015). When the influence of participation in the education program on the improvement in the management of its resources is analyzed, employees with income above R \$ 4,000 participated more in the program (average of 2.7 vs. 2.4) and their perception of the degree of program assistance in managing their resources is higher too (average of 3.8 vs. 3.0).

People who are more likely to save tend to have higher levels of financial literacy. The group of employees that do not save money have a lower level of literacy (average of 5.4, behavior/attitude = 4.6 and knowledge = 6.1) than the group of employees who save money (average of 7.5, behavior/attitude = 7.9 and knowledge = 7.1). The savings group has a higher average participation in the company's educational events (2.7 vs. 2.3) and their perception of the degree of help programs bring to improve their resource management is also higher (average of 3.8 vs. 2.5). These results confirm the findings of Bayer et al (1996) and Bernheim & Garrett (2003).

Financial literacy has a causal effect on wealth accumulation, walking together and in the same direction throughout the life cycle of individuals. The group of employees that do not have financial product has a lower level of literacy (average of 5.5, behavior/attitude = 4.5 and knowledge = 6.4) than the group that has financial product (average of 7.5; behavior/attitude = 7.9 and knowledge = 7.1). The participation of the group that has financial product is higher (average of 2.7 vs. 2.3) and their perception of the degree of help that the program promoted to improve their personal financial management is higher (average of 3.8 vs. 2.6). These confirm the conclusions of Lusardi & Tufano (2015); Monticone (2010); Bottazzi et al (2011); Atkinson & Messy (2012); Scheresberg (2013); and ANZ (2015).

The same idea can be put in relation to the employee's equity situation, that is, financial literacy has a causal effect on the accumulation of wealth, walking along and in the same direction throughout the life cycle of individuals. When comparing the average level of financial literacy of the two groups, deficit budget (average of 5.3, behavior/attitude = 4.2 and knowledge = 6.4) and balanced budget with three types of reserves (average of 7.3; behavior/attitude = 7.8 and knowledge = 6.8), it can be seen that the level of financial literacy of the group with budget equilibrium is higher. The participation of the balanced budget group is also larger (2.9 vs. 2.4) and their perception of the degree of aid the program promotes over their way of managing their resources is higher too (3.9 vs. 2.6).

The individual with the highest level of financial literacy is the one with the highest level of education. On the other hand, the less educated worker is, less likely to answer the questions correctly and presenting adequate financial behavior. The group of employees with incomplete higher education has an average level of literacy of 6.3 (behavior/attitude = 6.2 and knowledge = 6.5), which is lower than the average level of literacy in the postgraduate group, 7.5 (behavior/attitude = 7.9 and knowledge = 7.2). The postgraduate group had the highest average participation in the company's financial education program (2.8 vs. 2.4) and their average perception of the degree of program assistance on their resource management is higher too (3.8 vs. 2.9). This result confirm the conclusions indicated by Chen & Volpe (1998); Lucci et al (2006); Amadeu (2009); Disney & Gathergood (2011), Lusardi & Mitchell (2011b); Atkinson & Messy (2012); Norvilitis et al (2006); Lyons (2007); Scheresberg (2013); and ANZ (2015).

According to the results, as parent education increases, the level of financial literacy of the employees increases. The higher level of knowledge can lead to strong parenting practices, such as explicit teaching and demonstration of financial concepts, influencing financial literacy from the earliest age through adult life. Based on the data collected, the level of financial literacy of employees with higher parent education (average of 7.4, behavior = 7.7 and knowledge = 7.1) is higher than the level of literacy of employees with secondary school parent (average of 6.9, behavior = 7.3 and knowledge = 6.5). The average amount of participation in the events promoted by the company is the same (2.7), but the degree of help from

the employees with higher education parent is higher (average of 3.8 vs. 3.4). The relationship between the family and the level of financial literacy is confirmed in studies by Shim et al (2009), Webley & Nyhus (2006), Clarke et al (2005), Jorgensen (2007), Mandell (2008) and Pinto et al (2005).

Employees with longer working time are more financially literate due to the greater coexistence with economic and financial issues. The group with up to 3 years of professional experience has an average literacy level of 5.5 (behavior/attitude = 4.8 and knowledge = 6.3), which is lower than the average literacy level of the group with more than 6 years of professional experience, 7.5 (behavior/attitude = 7.9 and knowledge = 7.2). The group with more than 6 years of experience participated in more events promoted by the company's program (average of 2.8 vs. 2.3) and presents a higher level in the perception of the program's degree of help to improve its ability to manage (average of 3.8 vs. 2.7). These results confirm the conclusions indicated by Chen & Volpe (1998) and Lusardi & Mitchell (2011b).

People working in the administrative area have a higher average level of financial literacy (7.6; behavior/attitude = 7.6 and knowledge = 7.4) than people working in the operational area (7.1; behavior/attitude = 7.4 and knowledge = 6.8). This is due to their exposure to financial issues more often. This result is in line with the idea proposed by Chen & Volpe (1998) and Lusardi & Mitchell (2011b) that employees with low qualifications have less financial literacy. Although the two groups participate in the same average number of events in the company program (2.7), the average perception of the program's degree of help in its management of resources is greater for the administrative group (3.9 vs. 3.5).

According to studies developed by Lusardi & Mitchell (2011b), Chen & Volpe (1998), Atkinson & Messy (2012), Agarwalla et al (2009), Scheresberg (2013), and ANZ (2015) women have a lower level of financial literacy than men do, since they do not have basic financial concepts. However, there is no statistically significant difference between the averages of the two groups. Besides that, both groups also have the same average participation in financial education programs (2.7) and have the same perception about the degree of assistance of the programs in the management of their resources (3.7). One explanation is that women work in a financial institution, becoming more exposed to finance issues, developing the ability to perform financial calculations, and mastering concepts related to the financial market.

It was not possible to observe that the employees who study courses that promote disciplines related to finance (Applied Social Sciences) present a greater degree of financial literacy. This means that regardless of the area to which they belong, the fact that they are working in a financial institution improves access to economic and financial issues, improving understanding about such matters. It is also observed that both groups had the same average number of participations in the events promoted by the company (2.7) and have the same perception regarding the help that the program gives to the management of its personal resources (3.7).

The variable *ethnicity* did not present statistically significant differences among the medians, so the level of financial literacy does not change with these variables. When assessing the participation of groups in the financial education program, both groups had an average participation of 2.6 activities, and both understood that the program helped them to improve the management of personal resources at the same average level (3.6).

The variable *social class* did not present statistically significant differences among the medians too, so the level of financial literacy does not change with this variable. The average participation of both groups is the same in the financial education program (2.7), but the social class A group understands that its participation in the program provided a greater degree of help to improve the management of its resources (3.9 vs. 3.1).

Therefore, studies indicate an association between levels of financial literacy and socioeconomic and demographic variables. Such aspects should be evaluated to provide financial education efficiently. Atkinson and Messy (2012) argue that it is possible that the differences pointed out are motivated in whole or in part by the mediation of variables such as age or education level. For example, income varies both by age and by education level, however, this does not reduce the importance of results.

The conclusion is that financial literacy is associated with several characteristics, however, these characteristics are not observed in isolation. Therefore, it is useful to perform a multivariate analysis to understand the whole picture. In order to verify the influence of socioeconomic and demographic variables on the financial literacy, a multiple linear regression was performed, according to equation 2.

The following variables were withdrawn because the p-value was greater than the significance level (0.05), not rejecting the null hypothesis ($\beta = 0$): *age* (0,442), *social class* (0,559), *gender* (0,593), *ethnicity* (0,911), *education* (0,098), *course* (0,793), *income* (0,467), *workspace* (0,940), *invested amount* (0,250), *parent education* (0,769) and *participation in program* (0,470).

The best model has only three statistically significant independent variables, with R^2 of 0.467. It means that the variables *working time*, *savings* and *financial product* account for 46.7% of the variations in employees' financial literacy levels. The p-value of the ANOVA test is 0.00%, being considered the model significant. The data do not have autocorrelation of the residuals, since the DW is 1.758, being between the upper limit of 1.74 ($n = 100$ and $k = 3$). There is no multicollinearity among the independent variables, since the VIF is less than five (*savings* = 2,832; *financial product* = 3,102; *working time* = 1,438). There is homogeneity of variances, since the p-value is higher than the significance level of 0.05: *savings* (0,143), *financial product* (0,114), and *working time* (0,132). These statistics indicate suitability of the model. Equation 3 presents the final regression model.

$$\text{Average level of literacy} = 5,198 + 0,883 * \text{savings} + 1,047 * \text{financial product} + 0,471 * \text{working time}$$

[equation 3]

By analyzing the coefficients that express the magnitude and direction of the relationship between the variables, it was found that *working time* (p-value = 0,018) exerts a positive influence on the level of financial literacy. This conclusion is in line with the findings of Chen & Volpe (1998) and Lusardi & Mitchell (2011b), where the work environment allows the individual greater access to economic and financial issues, improving their understanding of such issues. The *savings* variable (p-value = 0,034) and *financial product* variable (p-value = 0,010) have a positive influence on the level of financial literacy. These results are in line with the conclusions of Lusardi & Tufano (2015) and Rooij et al (2011) who affirm that low level of financial education is related to unsatisfactory levels of savings and investment. Thus, individuals who have worked longer, who have the habit of saving and have financial product, is more likely to have higher levels of financial literacy.

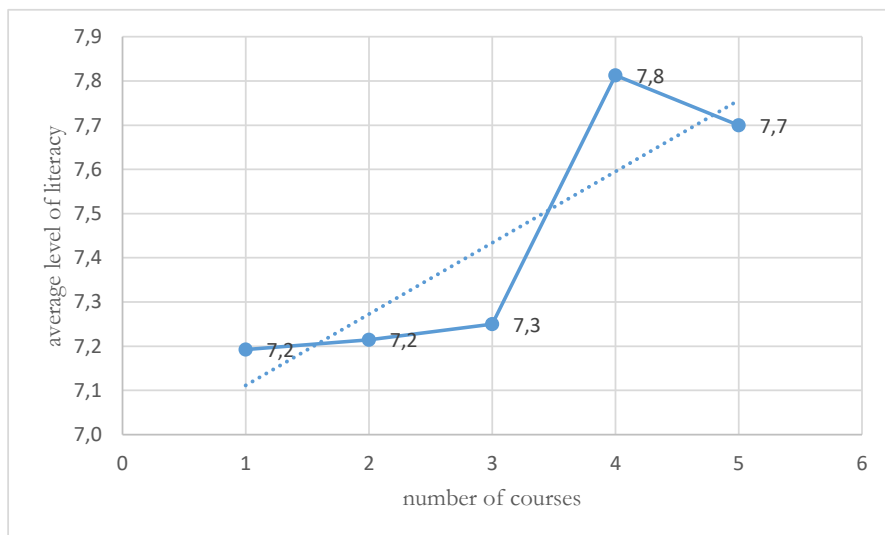
Another point to note is that, employees who had a higher average level of financial literacy also had a higher participation in the financial education events promoted by the company. As can be seen in figure 1, a positive relation is confirmed between the variables.

Using the simple linear regression method, we obtained equation 4 which relates the two variables ($R^2 = 0.7343$). The intercept of the equation indicates that 6.9497 of the average level of literacy does not depend on the number of courses. For each course the employee participates, his average level of literacy increases by 0.1614. In this way, the maximum variation of five courses provides a maximum increase of 0.81 in financial literacy. This corresponds to an increase of approximately 12% in the average level of literacy.

$$\text{Average literacy level} = 6.9497 + 0.1614 * \text{number of courses}$$

[equation 4]

Figure 1 - Average level of literacy and number of courses



Source: Research data

Another point observed was the relation to the average perception of the employee about the degree of help of the program in its financial management, and the number of courses that it participated. The greater the number of courses attended by the employee, the greater his perception of the help that the program promotes in managing his personal finances (figure 2).

Figure 2 – Perception of the degree of help (average) and number of courses



Source: Research data

To measure this relationship, the simple linear regression method was used, obtaining equation 5. For each course the employee attends, there is an increase in the average level of perceived help in the

program by 0.3207. The maximum of five courses will increase the perception of help by 1.60. This represents an approximately 56% increase in the perception of improved personal management.

$$\text{Average perception degree of help} = 2.837 + 0.3207 * \text{number of courses} \quad [\text{equation 5}]$$

These findings indicate participation in the financial education program can generate a greater understanding of financial issues by raising awareness of the importance of the subject to achieve higher levels of financial well-being.

Financial knowledge and financial behavior/attitude

The questions of financial knowledge had the objective of measuring the workers' understanding of aspects such as asset liquidity, value of money in time, financial cost, consumption anticipation, financial planning, risk propensity, inflation, financial math and compound interest. The result is available in table 4.

Financial behavior/attitude issues seek to measure employee behavior/attitude in relation to risk propensity, savings propensity, indebtedness propensity, financial planning, and the perception of financial costs. The result is available in table 5.

Analyzing the results of financial knowledge issues, the issue with the least number of hits was the one related to the financial cost of credit card debt (Q44, table 4). The respondent should understand that not paying the balance due on the due date implies financial costs. Only 14 employees answered the question correctly, representing 13% of the sample. Although most employees do not demonstrate adequate understanding of the credit card debt rollover concept, the practical application is adequate, given that 97% (Q45, table 5) of employees report that they pay the total balance of the card credit at maturity.

Question 42 (table 4), which works with the asset liquidity concept, presented the highest number of correct answers (106, 95%). Of the six employees who did not answer this question correctly, five have postgraduate degrees and feel very secure, believing they have a very broad knowledge of finance. This indicates that the level of understanding of financial concepts is not always associated with the education level, and that the employee's perception of his knowledge does not always reflect reality.

Interestingly, when crossing the profile of financial product with the question about the financial advantage of the anticipation in the formation of savings for retirement purposes (Q43, table 4), six of the nine respondents who erred the question, have some type of financial product, demonstrating that, although it does not have adequate knowledge about the subject, presents appropriate behavior/attitude. Of the 103 who have settled on the issue of retirement, 10 do not have any financial investments, either because they have a deficit budget (2) or because they plan to start saving (8). These data indicate that the dominance of the concept makes a difference in the intention of initiating a saving for retirement. However, this does not necessarily lead to the practice.

Particularly worrisome is the relatively large proportion of people who failed to identify the impact of compound interest on the composition of a savings account in five years (Q53, 17%, table 4). Although this happens, most (Q52, 83%, table 4) have notions of compound interest because they understand that the bank will deposit more money into their savings account in the second year than in the first year.

Table 4 – Absolute frequency and relative frequency of financial knowledge issues

Subject	Questions	Number of hits	%
Asset liquidity	Q42. Many people save money for unexpected expenses. If Susana and Julius Caesar have saved some money for emergencies, which of the following would be the least efficient in case they urgently need recourse?	106	95%
Money value in time	Q43. Ronaldo and Daniela are the same age. At age 25, she began to apply R\$ 1,000 per year, while Ronaldo did not keep anything. At age 50, Ronaldo realized that he needed money for his retirement and began to apply R\$ 2,000 per year, while Daniela continued to save his R\$ 1,000. Now they are 75 years old. Who has the most money for your retirement if they both made the same kind of investment?	103	92%
Financial cost	Q44. Which of the people would pay more in financial expenses per year if they spent the same amount per year on their credit cards, but paid the balance in full or in part?	14	13%
Consumption anticipation	Q46. Dirceu and Roberto are young people who have the same salary. Both want to buy a car worth R\$ 40,000. Who pays more for the good if one pays the amount financed for 24 months and the other prefers to save for 15 months and buy the car in sight?	93	83%
Financial planning	Q48. José earns R\$ 1,000 per month. It pays R\$ 300 of rent and plus R\$ 200 of feeding every month. It still spends R\$ 100 in transportation, R\$ 50 in clothing, R\$ 50 in drugs and R\$ 100 in extra small expenses. José wants to buy a TV that costs R\$ 800. How long will it take to save resources to buy the TV?	85	76%
Risk propensity	Q49. Suppose you have some money. Is it safer to put it in a single financial application or put it in different financial applications?	85	76%
Inflation	Q50. Suppose in the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you buy today, the same as you buy today or more than you buy today?	101	90%
Financial math	Q51. Suppose you need to borrow from a friend R\$ 100. The moment you pay your friend, you have to pay an extra amount. Your friend offers two alternatives: R\$ 105 or R\$ 100 + 3%. What is the alternative that you will pay less?	65	58%
Compound interest	Q52. Suppose you earned a R\$ 100 anniversary from your parents and decided to put in the savings account you have at the bank. You did not take any money from the account for two years. The bank has agreed to pay 15% per annum on this application. Will the bank add more money to your account in the second year than in the first year, or will it add the same amount in the two years?	93	83%
Financial math	Q53. Suppose you earned a R\$ 100 anniversary from your parents and decided to put in the savings account you have at the bank. The bank has agreed to pay 10% per annum in this application. How much will you have after five years if you do not take any money out of the account?	19	17%

Source: Research data

There was also a worrisome low level of accuracy in the question of repayment alternatives for a loan, where 42% of the employees did not respond to a basic simple interest calculation (Q51, table 4).

Undoubtedly, the biggest problem at the level of financial knowledge is related to mathematics. In question 48 (table 4), the employee must make a plan to acquire a good and 25% of the respondents do not hit the calculation. Considering this information, the company could design a course focusing on financial mathematics.

Table 5 - Absolute frequency and relative frequency of financial behavior/attitude issues

Subject	Questions	Number of hits	%
Risk propensity	Q12. What financial application do you have?	76	68%
Savings propensity	Q13. If you have financial application, what is the total amount of all applications?	99	88%
Indebtedness propensity	Q22. In the last 12 months have you used your credit card?	105	94%
Savings propensity	Q33. In the last 12 months have you saved money?	101	90%
Indebtedness propensity	Q37. In the last 12 months have you borrowed money?	97	87%
Indebtedness propensity	Q38. In the last 12 months have you borrowed money for what reasons?	15	13%
Financial planning	Q40. Imagine that you have an emergency and you need to pay R\$1,500 next month. What is the possibility of you obtaining this value?	109	97%
Financial planning	Q41. Imagine that you have an emergency and you need to pay R\$1,500 next month. What would be the main source of money you would use?	107	96%
Perception of financial costs.	Q45. Do you always pay your entire credit card balance at maturity?	109	97%
Indebtedness propensity	Q47. You want to buy a car worth \$ 40,000. Would you buy the car immediately and pay for 24 months, save for 15 months and buy cash or stay in the middle, saving money for 8 months and financing the rest in 8 installments?	34	30%

Source: Research data

In the question 46 (table 4), consumption anticipation, it is sought to analyze if the employee has knowledge about the financial benefit of saving to buy in the future. In the question 47 (table 5) is analyzed if the employee uses this knowledge to define his effective behavior/attitude against the consumption financed. The research indicate that, in the question 46, of the 93 employees who answered correctly the question, 25 ($25/93 = 27\%$) understand that in his life (Q47, table 5) the best alternative is to save in full before purchasing the good. The others 65 ($65/93 = 70\%$) find the middle ground reasonable, save for a while to reduce funding, but without delaying consumption too much.

When comparing the results of the question about anticipation of purchase (Q47, table 5) and the question about loan (Q38, table 5), of the 34 (Q47, table 5) employees who indicated that saving would be the best alternative to buying a car, 29 ($29/34 = 85\%$) did not actually borrow money in the last 12 months (Q38, table 5). The others 5 ($5/34 = 15\%$) have some type of indebtedness, even if planned or long term (purchase of vehicle or property, remodeling of the house), which indicates that the awareness regarding the cost of buying financing does not necessarily lead to an attitude averse to indebtedness.

The issue related to the benefits of diversification showed a good level of success, where 75% of the employees (Q42, table 5) were able to respond satisfactorily. However, knowing that 25% of the employees do not have notions of risk diversification, this would be a guideline to be focused on the company's financial education program.

Analyzing the results of financial behavior/attitude issues, 97 (87%), employees report that they have not borrowed money in the past 12 months (Q37, table 5). However, 105 (94%) employees use a credit card (Q22, table 5), demonstrating that it is not a loan but a facility. This perception is because it can fully pay the invoice (Q45, 97%, table 5), not considering it as a financial problem. Of the 15 employees who took out a loan (Q38, 13%, table 5), 12 used the funds to buy or renovate the property, buy a vehicle, pay for school or travel. Only 3 employees used the funds for debt or closed the month.

Regarding the risk profile, 68% (Q12, table 5) is conservative and prioritizes safety at the expense of profitability. The other 32% accept some rises in exchange for a higher return, applying the funds in stock funds and multimarket fund. The Chi-square test for independence was performed at a 95% confidence level, in order to confirm the relationship between the perception employee's financial management and degree of risk acceptance. In other words, it seeks to verify whether the more secure the employee feels about the management of his personal assets, the more he assumes risk in his financial investments. The p-value (1.6%) confirmed that there is no independence between the two variables. The Spearman correlation coefficient is 0.228. According to Dancey and Reidy (2006), values up to 0.300 considered weak the correlation between the two variables.

Questions 13 and 33 (table 5) deal with the propensity to save. In the last 12 months, 90% of sample employees saved (Q33, table 5) and 88% have financial product at the time of the survey (Q13, table 5). When asked about the possibility of obtaining \$ 1,500 to pay next month, 97% of respondents (Q40, table 5) confirm the possibility, stating that payment is very likely. This is due to the financial applications indicated in question 13 (table 5) or resources deriving from the salary.

Data analysis indicates that the level of financial knowledge influences the quality of financial decisions made by employees. In some cases, the mastery of the concept does not necessarily imply its practical application but, at least, an awareness of the need for greater planning for action. At other times, there is quality in making financial decisions, even without adequate knowledge about the subject.

Relationship between literacy, behavior and attitude

In this section, we tried to evaluate the level of knowledge and financial behavior/attitude of employees. For this, an index was constructed based on the answers to the multiple-choice questions. Atkinson and Messy (2012) use a scoring scale from zero to eight to measure the level of financial knowledge of individuals. A score of six or more indicates an appropriate level of knowledge to achieve financial well-being throughout the life of the individual. In this article, we use the same concept of Atkinson and Messy (2012), but on a scale of zero to ten. A score of 7.5 or higher indicates an adequate level of literacy to achieve financial well-being. The same goes for financial behavior/attitude and knowledge.

According to table 6, the behavior/attitude level has a higher percentage (73%), with the best behaviors/attitudes related to savings, availability of resources for contingencies, low level of indebtedness and full payment of the credit card bill. Therefore, it was observed that employees show a positive financial behavior/attitude, but not very satisfactory, since they anticipate their intentions of purchases of partial form, and frequently use their credit card.

Table 6 - Punctuation for behavior, knowledge and financial literacy

Variables	Score less than 7.5		Score equal to or greater than 7.5		Total	
	Amount	%	Amount	%	Amount	%
Financial literacy	43	38%	69	62%	112	100%
Financial Knowledge	69	62%	43	38%	112	100%
Financial Behavior and attitude	30	27%	82	73%	112	100%

Source: Research data

The worst score occurs with the level of financial knowledge. The low level of financial knowledge is not exclusive to this research. According to Potrich et al (2013), in recent years, researchers have been getting very worrying results, given the unsatisfactory level of knowledge, in personal financial management

issues (ROOIJ, 2011, MATTA, 2007, LUSARDI & TUFANO, 2015). In this study, of the total number of respondents, only 5 (4.5%) answered correctly all questions of financial knowledge.

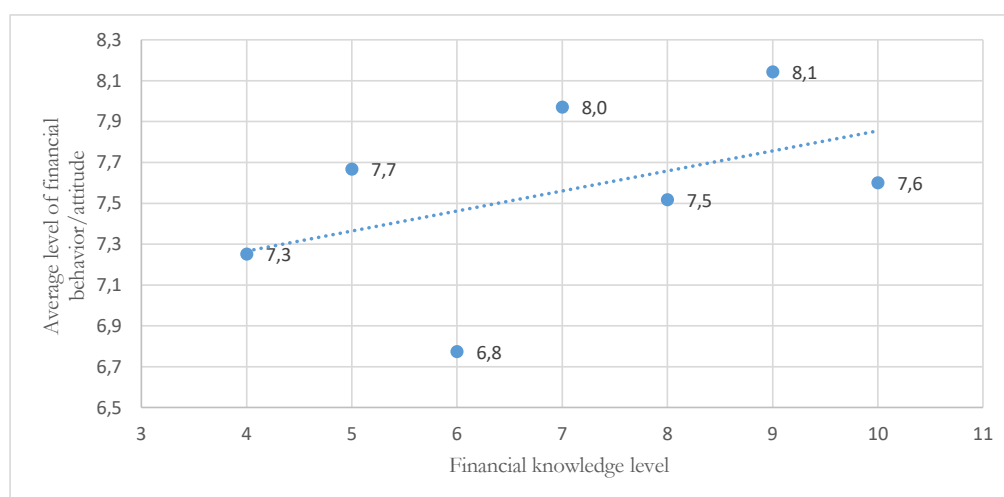
According to Atkinson & Messy (2012), literature often uses financial knowledge as a predictor of positive outcomes, which depend on behaviors that are consistent with individuals' financial well-being. Figure 1 shows that there is a positive relationship between knowledge and behavior/attitude. The financial knowledge score ranged from four to ten while the average behavior/attitude score was between 6.8 and 8.1. While the knowledge score increases by 6 points on the chart, the average behavior/attitude score increases by only 1.3 points. By passing a trend line between the observed points, we obtain the equation 6:

$$\text{Average level of behavior/attitude} = 6.8733 + 0.0981 * \text{level of knowledge} \quad [\text{equation 6}]$$

The degree of explanation of the simple linear regression model is $R^2 = 0.2174$. By analyzing the slope of the line (0.0981), one can confirm the low expressiveness of the influence of the level of knowledge on the average level of behavior/attitude. The increase of one point in the level of financial knowledge generates an increase of approximately 0.10 in the average level of behavior/attitude of the employees, not being a marked influence.

The figure 3 also shows that even employees with very low levels of financial knowledge exhibit non-zero financial behavior. Employees with a score of four in knowledge have a mean level of behavior/attitude of 7.3. This demonstrates that they are financially active and can present knowledge about other subjects not treated in the questionnaire that was used to measure the level of knowledge of the employees. It can also occur that the employee seeks information from other people more financially qualified to fill their lack of knowledge, promoting improvement in their financial decisions.

Figure 3 - Financial knowledge level and average level of financial behavior/attitude



Source: Research data

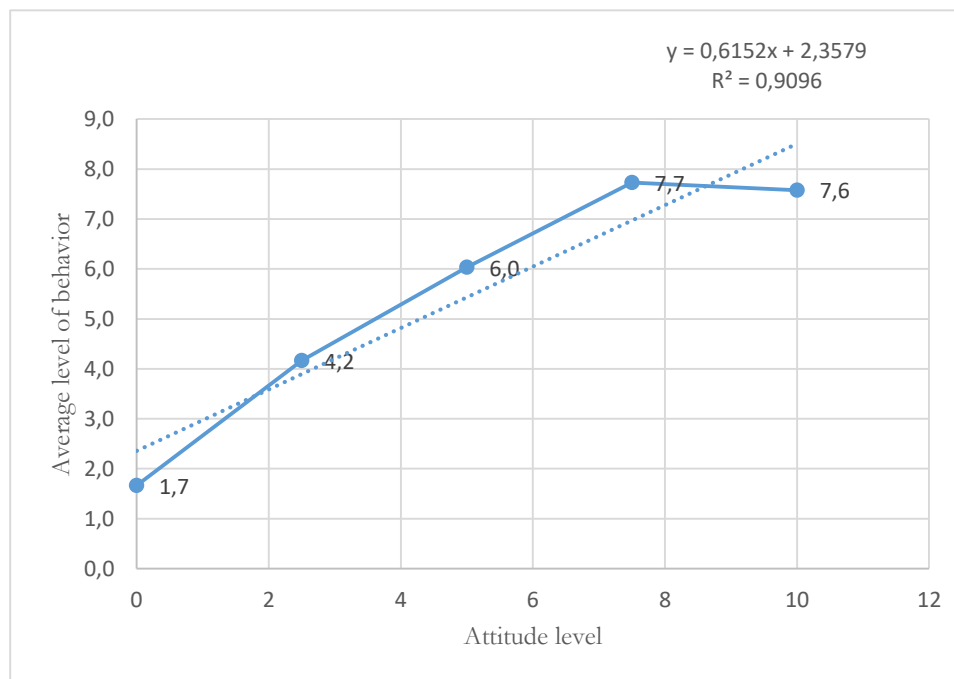
On the other hand, there are employees who have a higher level of knowledge than the minimum, but have a lower average level of behavior (six on knowledge and average score 6.8 on behavior/attitude).

This means that, despite having knowledge, they have not yet been able to put it into practice on a day-to-day basis.

According to Atkinson and Messy (2012), this relationship does not prove the cause and needs to be researched in greater depth. It may be that improved knowledge leads to more active employee participation in the financial market, leading to positive financial behavior. It may be that the employee has the need to perform a task and seek more information, increasing their knowledge. It may also be that the employee does constant activities that promote a continuous cycle of improvements in knowledge and behavior/attitude. These are some ideas about what might happen in the relationship between the level of knowledge and the level of behavior.

Atkinson and Messy (2012) argue that those with positive attitudes toward the long run are more likely to behave in a manner consistent with reaching long-term goals. With this reasoning, we tried to see if the behavior scores increased with the attitude scores. According to figure 4, there is a positive association between attitude and the average level of employee behavior, indicating that employees with attitudes that tend toward short-term gratification have lower performance scores.

Figure 4 - Financial attitude level and average level of financial behavior



Source: Research data

The behavior and attitude score scale is between zero and ten, being that 22 (20%) employees reach the maximum attitude level (10) while any employee does not reach the maximum level of behavior. The highest score obtained in the sample is 8.3 and is reached by 66 (59%) employees. By passing a trend line between the observed points, we obtain the equation 7:

$$\text{Average level of behavior} = 2.3579 + 0.6152 * \text{level of attitude} \quad [\text{equation 7}]$$

The degree of explanation of the simple linear regression model is $R^2 = 0.9096$. Simple linear regression indicates that there is a minimum level of behavior in the individual that is independent of the attitude (2.3579) and each point that is added in attitude level, it positively influences the behavior of the employee in 0.6152 point. These results confirm the idea that employees with attitudes that tend to have long-term gratification have higher behavioral scores.

Although evidence of the positive relationship between attitude and behavior, there is a need for further research to verify why employees with a positive attitude toward long-term planning exhibit better financial behavior than employees who prefer short term.

Final considerations

Learning about financial matters plays an important role in shaping the attitude and behavior of individuals as they influence the management of personal resources and hence the level of financial well-being. Thus, this article seeks to analyze the influence of socioeconomic and demographic variables on the level of literacy of employees who participated in a program of financial education promoted by the company, trying to explain the level of financial literacy from these variables.

A preliminary analysis indicates that the majority (62%) of the employees who participated in the survey were classified as having adequate financial literacy (minimum score of 7.5). By means of non-parametric tests for comparison of medians, we can see a relationship between financial literacy and the variables *age, parent education, education, working time, income, workspace, savings, financial product, invested amount and equity situation*. *Social class, gender, ethnicity, and course* do not have a significant impact on financial literacy level of employee. Atkinson and Messy (2012) argue that it is possible that the differences pointed out are motivated in whole or in part by the mediation of variables such as age or education level; however, this does not reduce the importance of results.

These results can be summarized as follows: an employee aged between 40 and 50 years old, coming from a family whose parents have a higher education, with professional experience over 6 years, working in the administrative area of the financial institution, with income over R\$10,000, with a balanced budget, with financial reserves (contingencies, retirement and life project), are the most likely to belong to a group with a high level of financial literacy.

On the other hand, the group composed of employees under the age of 30, with incompleting higher education, secondary school parents, working less than 3 years, working at the operational area of the financial institution, with an income of less than R\$4,000, who do not have the habit of saving, do not have financial product and their budget is deficient are the most likely to belong to a group with a lower level of financial literacy. The results confirm previous studies (table 1).

The data also indicate that employees who have had a greater participation in the financial education program have had higher levels of financial literacy and a greater perception of the help the program promotes in managing their personal finances. These results lead to the idea that participation in the program generates greater understanding of financial issues, raising awareness of the importance of the subject in order to achieve higher levels of financial well-being.

With this information, the financial institution can develop strategies to increase the level of financial literacy of employees by working on the profile with the most significant shortcomings. Financial education materials should take into account behavioral differences and life stages, with preference for face-to-face courses, e-learning courses and seminars. Pamphlets, booklets and other media outlets are not much in demand. The issues to be included or reinforced are as follow: balanced budget; use of credit card and debt rollover; risk diversification; long-term savings; financial planning; postponement of consumption and financial mathematics. Special attention should be given to mathematics, which is the

main item that explains the low level of financial knowledge of employees. Only 38% of the sample presents a minimum level of 7.5 points.

The analysis of the relationship between behavior/attitude and knowledge suggests a positive association, that is, when knowledge increases, behavior increases. However, this does not prove the cause and future research should be undertaken to better understand this relationship. The data indicate that there is little influence of the level of financial knowledge on the level of behavior/attitude. For each additional point in the knowledge level, the behavior/attitude level increases by approximately 0.10.

There is also a positive association between behavior and attitude. Employees with a positive long-term attitude are more likely to exhibit a higher level of financial behavior. However, this relationship also needs more research to understand how this occurs. Survey data indicate that increasing one point in the employee's financial attitude level causes an increase of approximately 0.62 in the level of financial behavior. Therefore, if the financial institution develops activities that promote the increase in the level of financial attitude, consequently, it will improve the level of financial behavior.

Data analysis indicates that the level of financial knowledge influences the quality of financial decisions made by employees. In some cases, the mastery of the concept does not necessarily imply its practical application but, at least, an awareness of the need for greater planning for action. At other times, there is quality in making financial decisions, even without adequate knowledge about the subject.

The inequality between employees may prevent employees from being more literate, suggesting that some groups may be excluded from activities and opportunities that would improve their financial well-being. Financial education can contribute to the development of skills that promote prioritization in planning the use of financial resources available to meet the needs of the employee, increasing their financial well-being and, consequently, improving the employee's quality of life.

As the sample of this non-probabilistic study, selected for convenience, the conclusions of this study cannot be generalized to the population of employees of the banking institution that promoted financial education. Thus, for future studies, it is suggested to obtain a probabilistic sample in order to confirm the results obtained in this work.

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