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ANTECEDENTS OF FINANCIAL WELL-BEING: ARE THE PERCEPTIONS OF THE FINANCIAL SYSTEM AND FINANCIAL KNOWLEDGE RELEVANT?[1]

ANTECEDENTES DO BEM-ESTAR FINANCEIRO: AS PERCEPÇÕES DO SISTEMA FINANCEIRO E DO CONHECIMENTO FINANCEIRO SÃO RELEVANTES?

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ABSTRACT
Objective: This study analyzes how perceptions of the financial system, financial knowledge, and socioeconomic and demographic variables impact citizens' financial well-being.
Fundamentals: Financial well-being is a state of being in which each person can fully meet their current and ongoing financial obligations, feel secure regarding the financial future, and be able to make choices to enjoy life (CFPB, 2015)

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Method: We conducted a survey involving 1,137 participants from twelve Brazilian cities. To measure financial well-being, we utilized the Consumer Financial Protection Bureau's short scale along with descriptive statistics, hypothesis testing, and multiple regression analysis.
Results: The findings suggest that, beyond just financial knowledge, perceptions of inclusion, protection, and financial citizenship positively influence an individual's financial well-being. This underscores the importance of implementing policies that foster a deeper understanding of the financial system, as they can potentially elevate citizens' financial well-being.
Contributions: This study is distinctive in its evaluation of how perceptions related to various facets of the financial system can affect financial well-being.

Keywords: Financial Well-being. Financial Knowledge. Financial Citizenship. Financial System.

RESUMO
Objetivo: Este estudo analisa como as percepções do sistema financeiro, o conhecimento financeiro e as variáveis socioeconômicas e demográficas impactam o bem-estar financeiro dos cidadãos.
Fundamentos: O bem-estar financeiro é um estado de ser em que cada pessoa pode cumprir plenamente as suas obrigações financeiras atuais e contínuas, sentir-se segura em relação ao futuro financeiro e ser capaz de fazer escolhas para aproveitar a vida (CFPB, 2015)
Método: Realizou-se uma pesquisa envolvendo 1.137 participantes de doze cidades brasileiras. Para medir o bem-estar financeiro, foi utilizada a escala curta do Consumer Financial Protection Bureau juntamente com estatísticas descritivas, testes de hipóteses e análise de regressão múltipla.
Resultados: Os resultados sugerem que, para além do conhecimento financeiro, as percepções de inclusão, proteção e cidadania financeira influenciam positivamente o bem-estar financeiro de um indivíduo. Isto sublinha a importância da implementação de políticas que promovam uma compreensão mais profunda do sistema financeiro, uma vez que podem potencialmente elevar o bem-estar financeiro dos cidadãos.
Contribuições: Este estudo se diferencia na avaliação de como as percepções relacionadas às diversas facetas do sistema financeiro podem afetar o bem-estar financeiro.

Palavras-chave: Bem-estar Financeiro. Conhecimento Financeiro. Cidadania Financeira. Sistema financeiro.

1. INTRODUCTION

Financial life is intricately woven into the daily experiences of individuals and their families, influencing their standard of living. It is closely tied to purchasing power, acquiring both tangible and intangible goods, and realizing life objectives. Within this framework, particularly in developed countries like the United States, the notion of financial well-being has gained prominence, as evidenced by numerous studies spanning disciplines such as medicine, economics, psychology, and public health (Kempson et al., 2017; Bowman & Van Kooy, 2016). Given the current economic and financial uncertainties landscape, it is imperative to connect social and individual factors to financial well-being. This is not just an economic matter but also a social one (Bowman & Van Kooy, 2016; Ponchio et al., 2019).

The Consumer Financial Protection Bureau (CFPB, 2015) defines financial well-being as a state of financial welfare that allows individuals to make choices that enhance their quality of life. This encompasses meeting present and future financial obligations. Sorgente and Lanz (2019) highlighted the complexity of relating the financial well-being of emerging adults to subjective aspects, including education, behavioral patterns, and the influence of parents and societal surroundings on their financial decisions.

Kempson (2016) further stressed that personal financial well-being extends beyond individual actions. It intertwines with external environmental and societal factors, which often lie beyond one's control. Such factors range from attitudes, abilities, behaviors, and biases to motivations, all pivotal in shaping personal financial well-being. Consequently, the Organization for Economic Co-operation and Development has taken the initiative to pinpoint factors that can elevate the financial well-being of the general populace (OECD, 2015).

Among the elements that can increase financial well-being is citizens' capability to participate in a country's financial system (Kim et al., 2018). Herein lies the significance of the concept of financial citizenship. This notion provides a lens through which one can evaluate populace behaviors concerning financial services, encompassing financial inclusion, education, protection, and consumer engagement (Brazilian Central Bank [BCB], 2017). Consumers included in the financial system who feel safe carrying out operations and satisfied with the care of financial institutions invariably exhibit higher levels of financial well-being (Nanda & Banerjee, 2021).

Effective participation in a country's financial system often hinges on demographic characteristics. Chawla and Joshi (2018) conducted studies in India and investigated which demographic characteristics most influence users' attitudes towards banking services, highlighting the variables related to gender, age, income, and educational background. In the Brazilian context, only a handful of studies have probed user behavior in relation to the financial system, especially regarding banking services and their impact on financial well-being (dos Santos et al., 2020).

Given this backdrop, this study aims to evaluate the influence of financial knowledge, perception of the financial system, and socioeconomic and demographic variables on financial well-being. The salience of this investigation is underscored by two intertwined phenomena: the burgeoning inclusion of citizens within the ambit of financial services and the myriad offerings they are presented with. Such a dynamic compels individuals to navigate a labyrinth of financial decisions, each bearing implications for their financial well-being. In this scenario, the OECD report (2018) highlights the need to structure and implement effective financial education policies in Brazil so that the decision-making of individuals and legal entities promotes financial well-being and, consequently, positive economic impacts. Aligning with this perspective, Schmulow (2020) states that enhancing consumers' financial well-being ought to be the zenith of both public and private endeavors. This should take precedence over merely safeguarding the financial sector or advancing the pecuniary interests of this cohort.

2. THEORETICAL FRAMEWORK

Financial well-being permeates various facets of life, such as health, entertainment, and schooling. In its 2015 report, the CFPB defined financial well-being as a state of being in which each person can fully meet their current and ongoing financial obligations, feel secure regarding the financial future, and make choices to enjoy life (CFPB, 2015). Brüggen et al. (2017, p.229) provided a complementary perspective, defining it as the "perception of the capacity to uphold desired and anticipated living standards and to possess financial freedom." This notion of financial freedom dovetails with Vlaev and Eliot's (2014) interpretation of experiencing life unencumbered by fiscal anxieties.

To further elucidate, CFPB (2015) outlined four pillars of financial well-being. First, they emphasized the importance of daily control over one's financial life. Second, they highlighted the ability to absorb a financial shock, which equips individuals to handle unforeseen events. Looking ahead, the third pillar underscores the importance of being on a trajectory to meet financial goals, which arises from diligent financial planning. Lastly, they stressed the freedom to make choices that fulfill the needs and desires of both personal and family life. This interpretation corroborates the findings of Netemeyer et al. (2018), wherein financial well-being is perceived as the individual's sense of stress related to managing current financial resources (a dimension tied to the present) and an anticipated feeling of security (a dimension linked to the future).

Equally paramount as charting an individual's life trajectory (past, present, future) is discerning their life context and their fiscal comportment within it. Morduch and Schneider (2017) underscored the precarious financial position many find themselves in, often living paycheck-to-paycheck, grappling to address their recurring and sometimes immediate expenses. Echoing this sentiment, Xiao (2016) posited that financial well-being can be gauged through financial satisfaction, which encompasses satisfaction with earnings and overall life quality. In addition to satisfaction, it is necessary to investigate the individual's personality, access to financial education, and level of financial knowledge. Those with a moderate grasp of financial knowledge tend to economize and invest more for the future (Iramani & Lutfi, 2021).

To identify the level of financial well-being, researchers assume two dimensions: subjective and objective. Some studies have reported subjective aspects, which correspond to individuals' perceptions and psychological reactions concerning financial well-being. With the objective approach, others have referred to issues such as revenue, debt and income ratio, and degree of liquidity, alluding to the financial condition and not exactly to financial well-being (Brüggen et al., 2017;). Among the myriad international scales focusing on financial well-being, notable ones include those by Norvilitis et al. (2003), Prawitz et al. (2006), and the CFPB (2015). Each one has a proposal, and the scale of Norvilitis et al. (2003) aims to measure feelings of confidence and financial security, whereas the scale of Prawitz et al. (2006) measures current financial concerns and future expectations.

For this study's framework, we used subjective financial well-being grounded on the theory of subjective well-being. Subjective well-being is conceptualized as a broad category of phenomena that include emotional responses, satisfaction domains, and global life satisfaction judgments (Diener, 2009; Collins & Urban, 2021). Thus, for this model, financial well-being is a state of being in which a person controls their day-to-day and monthly finances, can absorb unforeseen financial events, meets their financial goals, and has the financial freedom to make choices that allow them to enjoy life (CFPB, 2019).

The first antecedent is financial knowledge. Given the extensive body of research underscoring the impact of financial literacy and its associated dimensions on financial well-being (BCB, 2017; Gutter & Copur, 2011; Joo, 2008; Lee et al., 2020; Mokhtar & Husniyah, 2017; Sorgente & Lanz, 2017), the first research hypothesis (H1) is that financial knowledge positively impacts financial well-being.

Secondly, comprehending the intricacies of today's financial system necessitates sufficient financial knowledge and adept planning skills (Fan & Henager, 2022). The Financial System of a country is an amalgamation of entities and institutions fostering financial intermediation, effectively bridging the gap between creditors and resource holders between creditors and resource holders. Through this system, people, companies, and the government circulate part of their assets, pay their debts, and make investments (BCB, 2018). Such a system may favor financial inclusion, described by Ofosu-Mensah et al. (2021) as access to and use of formal financial products and services by low-income people, family farmers, and small or marginalized businesses by the financial system. Nanda and Banerjee (2021) further contend that a substantial segment of society remains systematically excluded from the traditional financial apparatus, often due to challenges like limited income, unsatisfactory credit records, low literacy levels, and a sparse understanding of financial concepts. Thus, the second hypothesis of the model (H2) is that financial knowledge positively impacts the perception of inclusion in the financial system.

Another cornerstone of the financial system is safeguarding its participants (i.e., the citizens). Consumer protection in financial services encompasses mechanisms mandated by laws, regulations, resolutions, and the global financial system's blueprint (Higuera, 2015) to provide a sense of security to the consumer in interactions with financial institutions (Sahela et al., 2021). The perceived security for the consumer of financial services contributes to long-term stability, efficiency, and transparency of the financial system, encouraging financial institutions to retain risks for which they are better equipped and prepared than consumers, in addition to subsidizing reductions in information asymmetries and power imbalances between users and providers of financial services (Kriese et al., 2019). Notably, consumers who possess rudimentary financial knowledge and depend on advice from financial intermediaries tend to feel less protected (Chang et al., 2015). Thus, hypothesis (H3) establishes that financial knowledge positively impacts the perception of financial protection.

An essential part of the protection perception is associated with consumer guarantees. In the financial case, the perception of a guarantee may be associated with a credit guarantee fund, serving as a financial safety net for consumers in instances of complications with financial institutions. Therefore, the fourth hypothesis (H4) posits that financial knowledge positively impacts the perception of guarantee.

For a financial system to truly function efficiently, it must engender in its users a sense of being "financial citizens." Financial citizenship is the exercise of rights and duties that allows citizens to sustainably manage their financial resources (Brazilian Central Bank [BCB], 2018), and in order to exercise financial citizenship, citizens must be financially literate (Vieira et al., 2021). Therefore, the fifth hypothesis (H5) is that financial knowledge positively impacts the perception of financial citizenship.

Conversely, the citizens' perceptions of the financial system can significantly impact their financial well-being, and evidence has already shown that financial inclusion increases financial well-being (Chen & Yuan, 2021; Nandru et al., 2021; Prina, 2015; Rashid et al., 2022). Such an outcome is furthered when financial institutions foster trust with their clientele. Banks' transparent and comprehensible information dissemination facilitates informed decision-making (Nanda & Banerjee, 2021), and some researchers have advocated for banks to demonstrate genuine concern for their clients (Losada-Otálora & Alkire, 2019; Ianole-Calin et al., 2020). Some of these suggestions posit that bolstering financial protection increases financial well-being. Furthermore, if the financial system of a country can promote financial citizenship, it enriches the financial well-being of its citizens, consequently bridging the gap between consumers and financial service providers (Khalil, 2021; Vieira et al., 2021). Given this evidence, the following hypotheses were defined:

H6: the perception of inclusion positively influences financial well-being;

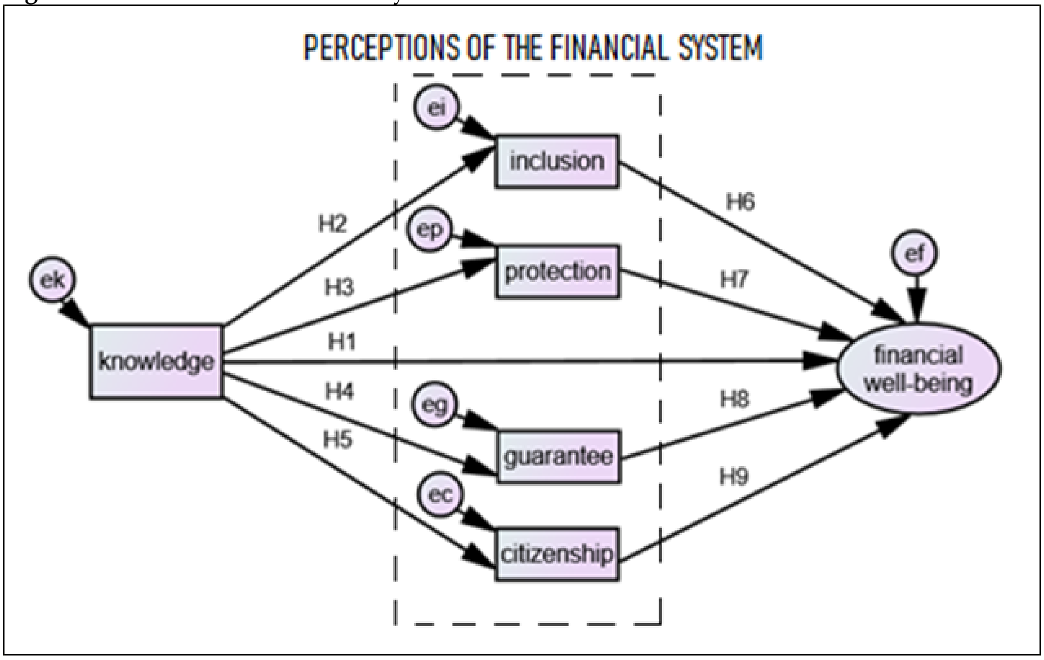
H7: the perception of protection positively influences financial well-being;

H8: the perception of guarantees positively influences financial well-being;

H9: the perception of financial citizenship positively influences financial well-being.

Additionally, it is plausible to infer that all perceptions concerning the financial system are interrelated. For instance, research delving into monetary and banking exclusion emphasizes that individual experiences of exclusion pertain not merely to financial system access but pivotally to aspects like self-worth, a feeling of societal belonging, and the assertion of citizen rights (Carton et al., 2022). In essence, consumers who feel alienated from the system likely do not perceive themselves as financial citizens. Figure 1 illustrates the study framework.

Figure 1. The framework of this study.



Source: The authors (2023)

This model has a construct (financial well-being) influenced by five variables: four (inclusion, protection, guarantee, citizenship) representing the financial system's perception and one representing the level of financial knowledge. In addition, there are nine research hypotheses: five (H1–H5) are about the role of financial knowledge as an antecedent of perceptions, and four (H6–H9) evaluate the impact of the perception of the financial system on the citizens' financial well-being.

Analyzing differences in financial well-being from the point of view of socioeconomic and demographic profiles is as important as identifying antecedents of financial well-being. Several authors carried out this investigation and pointed to evidence of factors such as income, occupation, education, children, marital status, age, and sex. Table 1 summarizes the evidence found.

Table 1. Synthesis of the relationship between socioeconomic and demographic variables and financial well-being.

Variable	Expected relationship	Authors
Sex	Men have greater levels of financial well-being.	Leach et al. (1999); Shim et al. (2009); Gutter & Copur (2011); Dickason-Koekemoer & Ferreira (2019); Fu (2020); Lind et al. (2020); Gonçalves et al.(2021)
Age	Older individuals have greater financial well-being compared to younger individuals.	Sumarwan (1990); Xiao et al. (2006); Plagnol (2011); Collins & Urban (2021); Kaur et al. (2021); Riitsalu & Van Raaji (2022)
	Older individuals have lower financial well-being.	García-Mata et al. (2022)
Marital status	Married individuals have greater financial well-being.	Sumarwan (1990); Dickason-Koekemoer & Ferreira (2019); Lee et al. (2020); García-Mata et al. (2022)
	Single individuals have greater financial well-being.	Gutter & Copur (2011)
Dependents	Dependents at home negatively influence financial well-being.	Keese (2012); García-Mata et al. (2022); Steiber et al. (2022)
Education	Individuals with higher educational levels tend to have greater financial well-being.	Lown & Ju (1992); Fu (2020); Riitsalu & Murakas (2019)
	Individuals with lower educational levels tend to have greater financial well-being.	Plagnol (2011)
Income	Individuals with higher income levels have greater financial well-being.	Vlaev & Elliott (2014); Riitsalu & Murakas (2019); Dickason-Koekemoer & Ferreira (2019); Lee et al. (2020); Fu (2020); Kaur et al. (2021); Collins & Urban (2021); Riitsalu & Van Raaji (2022)
Housing	Owning a home provides a greater level of financial well-being.	Xiao & O'Neill (2018)
Race/Ethnicity	Self-declared white individuals have higher levels of financial well-being compared to other races.	Gutter & Copur (2011); Dickason-Koekemoer & Ferreira (2019); Lee et al. (2020)
Occupation	Unemployed people or those with no income have lower levels of financial well-being.	Riitsalu & Murakas (2019); Brenner et al. (2020); Lee et al. (2020); Choi et al. (2020); Collins & Urban (2021)

Source: The authors (2023)

Table 1 contains a set of evidence of differences in the perception of financial well-being for different countries, especially more economically developed countries. Therefore, in addition to building and validating the framework, this work will seek evidence of differences in financial well-being in the Brazilian context.

3. METHOD

A quantitative study was carried out through a survey to address the outlined objectives. Data collection was conducted using a questionnaire with four blocks of questions was used. The first block consists of five questions assessing financial well-being levels, adapted from the financial well-being scale developed by the CFPB (2015). The second block consists of seven questions that seek answers to analyze individuals' perceptions of the National Financial System. These questions drew inspiration from the dimensions of financial citizenship. The first question delves into the number of banking institutions (including credit unions) with which respondents have affiliations, serving as a proxy for system access. This is followed by a query probing awareness of the Credit Guarantee Fund, a mechanism designed to offer financial reassurance to citizens. The subsequent five questions, on a 0–10 scale, require respondents to evaluate the adequacy of the Credit Guarantee Fund in safeguarding credit transactions. Additionally, these questions measure perceptions of inclusion within the National Financial System, gauge the sense of financial protection, and determine the extent to which respondents view themselves as financial citizens.

The third block, aimed at assessing financial knowledge, incorporates 12 questions formulated by Potrich et al. (2015). These questions span interest rates, inflation, money value and time, risk, return, diversification, credit, the stock market, and government bonds. To identify the respondents' level of knowledge, a value of 1 was assigned to the correct answer and a value of 0 for the incorrect answers. Therefore, the knowledge index can vary between 0 and 12, where 0 represents the individual who erred in all the answers and 12 indicates the one who answered all the questions correctly. In the fourth and final block, nine questions were listed to identify the respondents' profile, with variables of sex, age, marital status, race/ethnicity, level of education, whether or not they have financial dependents, type of housing, occupation, and their monthly income.

Data was collected in 12 municipalities in three Brazilian regions, totaling a sample of 1137 respondents. The interviewers were trained by the authors of the research in order to standardize the procedures related to the application. Data was collected in public places, such as squares, parks, shopping malls, and neighborhoods, in all five regions of Brazil for two months. The interviewer approached the citizen and invited him or her to participate voluntarily and without any remuneration. Those who agreed to participate received an explanation about the ethical aspects of the research and the estimated time required for participation. Respondents filled out the instrument after reading and signing the informed consent form, and the Research Ethics Committee of the university approved the study.

The measure of financial well-being was constructed following the method proposed by the CFPB (2015). Within this framework, scores are attributed to five pivotal variables integral to financial well-being. For statements such as "Because of my financial situation, I feel I will never have the things I want in life," "I often worry that my money will not last," and "I am just getting by financially," the scoring system is defined with 'completely' and 'not at all' both receiving a score of 0, 'very well' scoring 1, 'somewhat' scoring 2, and 'very little' scoring 3. In response to the statement "My finances control my life," the scores are delineated as: 0 for 'always,' 1 for 'often,' 2 for 'sometimes,' 3 for 'rarely,' and 4 for 'never.' For the assertion "I have money left at the end of the month," the scoring is allocated as 4 for 'always,' 3 for 'often,' 2 for 'sometimes,' 1 for 'rarely,' and 0 for 'never.' By summing up the scores from all these variables, a composite score ranging from 0 to 20 is derived, where a higher score indicates enhanced financial well-being.

We used descriptive statistics and analysis of variance (ANOVA) with post hoc and structural equation modeling techniques as data analysis procedures. To identify the differences between the means for the variables with more than two groups, we used ANOVA at a significance level of 5%. The structural equation model was estimated with the variance-covariance matrix estimated by maximum likelihood via the direct procedure. Convergent validity was analyzed by observing the magnitude and statistical significance of standardized coefficients, by and by the absolute adjustment indexes: chi-square statistics (χ^2), root mean square residual (RMR), root mean square error of approximation (RMSEA), and comparative fit indexes: normed fit index (NFI), and the Tucker-Lewis index (TLI). For the chi-square/degrees of freedom ratio, recommendations are less than five; for CFI, GFI, NFI, and TLI, values greater than 0.950 are suggested, and RMR and RMSEA should be below 0.080 and 0.060, respectively (Hair et al., 2019; Hooper et al., 2008; Kline, 2015).

Initially, the construct of financial well-being was validated, seeking to obtain a valid measurement model. Next, the model proposed in Figure 1 was estimated. For the financial well-being construct, the average variance extracted (AVE) and unidimensionality were analyzed in addition to the adjustment indices. Notably, AVE values equal to or greater than 0.5 are desirable (Fornell & Larcker, 1981). The unidimensionality is evaluated from the standardized residuals related to the indicators of each latent variable. Constructs with standardized residues below 2.58 are considered one-dimensional at a 5% significance level (Hair et al., 2019).

4. RESULTS

Initially, we sought to know the participants' profiles, and their descriptive data is listed in Table 2.

Table 2. Profile of respondents according to the variables sex, age, marital status, race/ethnicity, education level, financial dependents, type of housing, occupation, and average monthly income.

Variables	Alternatives	Percentage
Sex	Male	51.5
	Female	48.5
Age	17–21 years old	28.8
	22–25 years old	22.8
	26–35 years old	23.5
	36–45 years old	14.0
	46–55 years old	6.5
	56–65 years old	2.9
	66–81 years old	1.6
Marital status	Single	68.5
	Married or common-law marriage	26.5
	Separated	3.2
	Widowed	0.5
	Other	1.2
Race/Ethnicity	White	75.8
	Black	6.1
	Brown	16.5
	Yellow	1.1
	Indigenous	0.3
	Other	0.2
Education level	Incomplete elementary school	2.1
	Elementary school	1.9
	Technical course	6.0
	High school	31.0
	University education	37.7
	Specialization or MBA	9.2
	Master's degree	11.9
Financial dependents	None	68.5
	1	17.5
	2	10.1
	3 or more	3.9
Type of housing	Owned	52.7
	Leased	33.0
	Borrowed	7.1
	Financed	7.0
Occupation	Civil servant	23.5
	Salaried employee	20.4
	Liberal professional	2.4
	Autonomous	8.6

	Business owner	4.4
	Retired	1.7
	Unemployed	20.0
	Other	19.0
Average monthly income	I do not have my own income	18.6
	Up to $199.60	14.8
	Between $199.61 and $399.20	21.3
	Between $399.21 and $598.90	10.9
	Between $598.91 and $798.40	9.1
	Between $798.41 and $1,197.60	10.4
	Between $1,197.61 and $1,796.40	7.9
	Between $1,796.41 and $2,395.20	3.1
	Over $2,395.21	3.8

Source: Currency conversion performed: BRL 5.00 to USD 1.00. Survey data (2023).

Most respondents were male (51.5%), and the prevalent age group was 17–21 (28.8%). Regarding marital status, a significant majority reported being single (68.5%), and 75.8% self-declared as being white. In terms of educational attainment, 37.7% indicated they had completed higher education. When inquired about financial dependents, 68.5% revealed they had none. As for housing, 52.7% reported owning a home. As for occupation, civil servants were the most prevalent category, accounting for 23.5% of respondents. The monthly average income with greater representation is between $199.61 and $ 399.20, corresponding to 21.3% of the sample. To analyze the financial well-being, the small scale proposed by the CFPB (2015) was used. Table 3 lists the degrees of agreement and mean of each variable.

Table 3. Means and valid percentages of the financial well-being scale.

Variables	**Mean**	**Not at all (0)**	**Very little (1)**	**Somewhat (2)**	**Very well (3)**	**Completely (4)**
Because of my financial situation, I feel like I will never have the things I want in life.	2.94	2.9	11.1	9.4	42.5	34.2
I'm often worried that my money won't last.	1.85	11.1	40.1	12.3	25.5	11.0
I'm just surviving, in financial terms.	2.39	37.6	19.9	11.1	23.8	7.6
Variables	**Mean**	**Always (0)**	**Often (1)**	**Sometimes (2)**	**Rarely (3)**	**Never (4)**
My finances control my life.	2.21	7.7	25.6	19.8	31.9	15.0
Variables	**Mean**	**Never (0)**	**Rarely (1)**	**Sometimes (2)**	**Often (3)**	**Always (4)**
I have money left at the end of the month.	2.09	11.5	26.3	15.8	34.2	12.2

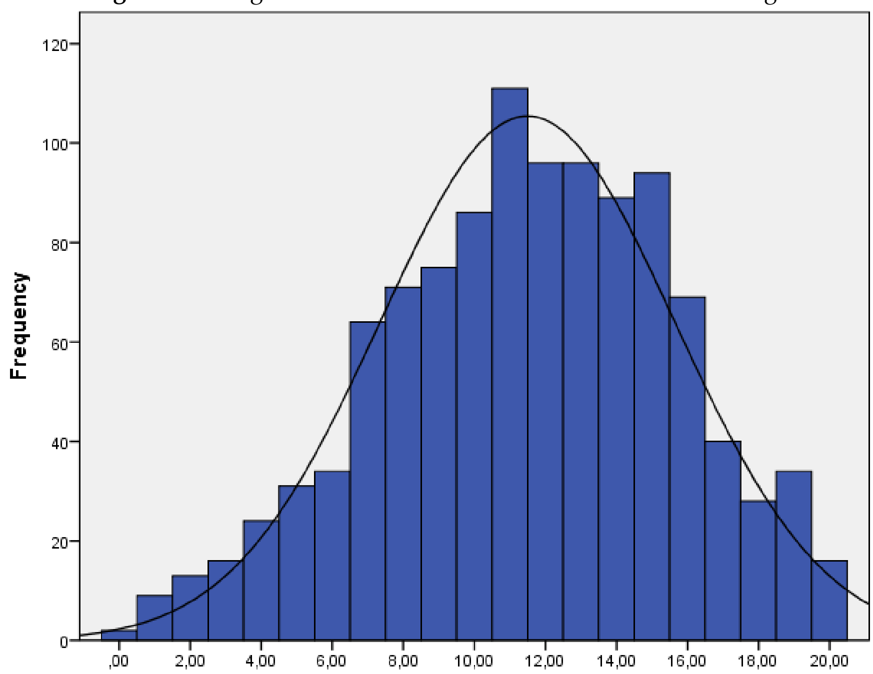
Values are provided in percentages. Source: Survey data (2023)

Upon examining the average scores, it is evident that values fall between 1 and 3. This suggests that respondents possess a median level of financial well-being. Notably, the highest average corresponds to respondents feeling they will never attain what they desire (2.94), with 42.5% concurring with this sentiment. Such data might imply that respondents' financial aspirations significantly exceed their living standards. This creates a "hedonic treadmill," as described by Diener et al. (2009), suggesting that levels of contentment and happiness may fluctuate with income, thereby influencing overall well-being. The statement "I'm often worried that my money won't last" yielded a mean of 1.85, indicating that 40.1% of respondents are infrequently concerned about their financial longevity.

As for the statement "My finances control my life" with a mean of 2.21, 31.9% of respondents felt their finances dominate their lives. However, this metric merits careful scrutiny since 25.6% feel their finances often control them and 19.8% feel this way occasionally. Such sentiments underscore volatility in financial behavior, knowledge, attitudes, and decision-making, potentially mirroring inadequate financial literacy (Potrich et al., 2018; Lusardi, 2019). For the statement "I'm just surviving, in financial terms," with a mean of 2.39, 37.6% of respondents disagreed entirely. Another noteworthy variable, addressing the surplus of money at month-end, has an inverse relationship: a higher score correlates with increased financial well-being. With a mean of 2.09, 34.2% of respondents often have residual funds at the month's close. Such a variable positively correlates with financial well-being, as corroborated by various studies (Collins & Urban, 2021; Dickason-Koekemoer & Ferreira, 2019; Lee et al., 2020; Riitsalu & Murakas, 2019).

Thus, the variables "I have money left over at the end of the month," "My finances control my life," and "I am only surviving, in financial terms" refer to the importance of paying attention to the considerations brought by the CFPB (2015) regarding the link between knowledge, attitude and financial behavior. Subsequently, from the procedure proposed by the CFPB (2015), the level of the financial well-being of the individuals was analyzed. The histogram (Figure 2) demonstrates the distribution of the scale.

Figure 2. Histogram of the data obtained for financial well-being.



Source: Survey data (2023)

The scale, which spans from 0 to 20, revealed an intermediate financial well-being score of 11.49 with a standard deviation of 4.16. The distribution exhibits slight asymmetry, with a higher concentration of respondents at the lower end of the scale compared to the higher end. The Kolmogorov-Smirnov normality test failed to accept the null hypothesis (0.066; p<0.001), meaning the financial well-being scale does not adhere to a normal distribution.

In probing access to the National Financial System, we aimed to discern the number of banks (including credit unions) with which respondents maintain affiliations. The majority, 39.8%, reported affiliations with just one bank. This was followed by 35.7% with two banks, 16.5% with three, a mere 1.5% with none, and 7.4% with more than four banks. Brenner et al. (2020) noted that consumers are increasingly confronting elevated incidences of financial fraud. This can manifest through dubious transactions or investments or the peddling of unsuitable financial products, which in turn undermines confidence in financial dealings and consequently diminishes financial well-being.

As for perceptions of the National Financial System, 58.9% of respondents were unfamiliar with the Credit Guarantee Fund, while 41.1% reported being aware. However, when asked to rate the sufficiency of the fund (i.e., the Credit Guarantee Fund) in safeguarding operations on a scale from 0 (wholly insufficient) to 10 (completely sufficient), a notable 62.1% allocated scores above 5. This insinuates confidence in the Credit Guarantee Fund's capacity to shield financial operations up to $50,000. This sentiment likely correlates with respondents' satisfaction regarding financial protection: a substantial 77.5% expressed satisfaction or high satisfaction with the offerings of financial institutions.

Table 4. The frequency and percentage in the block scale on financial knowledge.

Variables	Alternatives	Percentage
Suppose you put $20.00 into savings that earn 2% a year. You do not make any other deposits or withdraw any money from this account. How much would you have in this account at the end of the first year, including interest?	$19.60	0.5
	$20.00	0.9
	$20.40*	81.2
	$24.00	9.0
	I do not know	8.4
Imagine that the interest rate of your savings account is 6% a year and the inflation rate is 10% a year. After 1 year, how much money will you be able to withdraw from that account? Please consider that no money has been deposited or withdrawn.	More than today	6.6
	Exactly the same	3.2
	Less than today*	72.6
	I do not know	17.6
Which asset typically has the biggest fluctuations over time?	Savings	1.2
	Actions*	79.9
	Government bonds	3.4
	I do not know	15.5
When an investor distributes their investment among different assets, the risk of losing money:	Increases	10.9
	Decreases*	72.9
	It remains unchanged	2.1
	I do not know	14.1
Suppose you took out a $2,000 loan to be paid after one year and the total cost with the interest is $120.00. The interest rate you will pay on this loan is:	0.3%	1.2
	0.6%	13.5
	3%	1.1
	6%*	69.6
	I do not know	14.7
Suppose you saw the same TV in two different stores for the starting price of $200.00. Shop A offers a $30.00 discount, while shop B offers a 10% discount. What is the best alternative?	Store A ($30.00 discount)*	91.7
	Store B (10% discount)	3.3
	I do not know	4.8
Imagine that you have received a donation and will keep the money safe at home. Considering	More than I would buy today	3.9

that inflation is 5% per year, after one year you will be able to buy:	Less than I would today*	81.5
	The same amount as I would today	4.3
	I do not know	10.3
Suppose you borrowed $2.00 from a friend and after a week paid $2.00. How much interest are you paying?	0%*	94.7
	1%	0.6
	2%	0.9
	I do not know	3.8
An investment with a high return rate will have a high risk rate. This statement is:	True*	75.5
	False	10.2
	I do not know	14.3
When inflation increases, the cost of living rises. This statement is:	True*	89.9
	False	5.8
	I do not know	4.3
José acquires a $200.00 loan with an interest rate of 20% annually. If he does not make payments on the loan and at that interest rate, how many years would it take for the amount due to double?	Less than 5 years*	52.7
	From 5 to 10 years	27.5
	More than 10 years	2.6
	I do not know	17.2
It is possible to reduce the risk of investing in the stock market by buying a wide range of shares. This statement is:	True*	50.9
	False	24.1
	I do not know	25.0

*Correct answer. Source: Currency conversion performed: BRL 5.00 to USD 1.00 and research data (2023).

Upon assessing responses to topics such as simple and compound interest rates, the time value of money, and basic mathematical operations, we discerned that over 60% of respondents accurately answered the preliminary questions, which we categorize as relatively straightforward. Nonetheless, the two concluding questions deviate from this trend, as they were predominantly answered incorrectly or met with uncertainty. Specifically, 24.1% of participants responded incorrectly in the query addressing investment diversification, while 25.0% admitted unfamiliarity. Such ambiguities surrounding loans, stock markets, and the myriad services furnished by financial institutions may be attributed to the ethical considerations and the transparency—or lack thereof—with which contracts or the "fine print" are conveyed to financial product consumers (Nanda & Banerjee, 2021).

In order to measure the depth of knowledge, we tallied the number of correct responses per participant, aligning with the methodologies employed by Chen and Volpe (1998) and Potrich et al. (2016). Participants who correctly answered between 0 and 6 questions were designated as having a low level of knowledge, a category into which 17.3% of respondents fell. Those answering between 7 and 9 questions correctly were deemed to possess a medium level of knowledge; this group encompassed 29.6% of participants. To be classified with high financial knowledge, the respondent would have had to answer 10–12 questions correctly, which was achieved by 53.1% of the respondents (Table 5).

Table 5. The number of correct answers per respondent, valid percentage, correct answer percentage, classification, and accumulated.

No. of CA	Frequency	Valid (%)	Correct answers (%)	Classification	Cumulative %
0	17	1.5	0	Low	17.3
1	13	1.1	8	Low	
2	12	1.1	17	Low	
3	28	2.5	25	Low	
4	30	2.6	33	Low	
5	39	3.4	42	Low	
6	58	5.1	50	Low	
7	85	7.5	58	Medium	29.6
8	115	10.1	67	Medium	
9	136	12.0	75	Medium	
10	175	15.4	83	High	53.1
11	209	18.4	92	High	
12	220	19.3	100	High	

CA = correct answers. Source: Survey data (2023)

In order to verify whether there are differences in the mean level of financial well-being, the socioeconomic and demographic variables were analyzed using the Student t/test and ANOVA tests. The significance of the tests is presented in Table 6, and Table 7 lists the significant outcomes derived from the post hoc tests.

Table 6. Tests of difference in mean financial well-being considering socioeconomic and demographic variables.

Variables	Financial well-being		Variables	Financial well-being	
	Value	(Significance)		Value	(Significance)
Sex (1)	2.199	(0.028)	Occupation (2)	1.986	(0.095)
Has dependents (1)	0.227	(0.820)	Income bracket (2)	6.117	(0.000)
Race (1)	2.145	(0.032)	Age (2)	1.952	(0.120)
Education (2)	2.216	(0.051)	Marital status (2)	0.121	(0.886)
Type of housing (2)	5.252	(0.000)			

Note: (1) Student t-test. (2) ANOVA. Source: Research data (2021). Division of groups: Sex: male and female. Has dependents: yes, no. Race: white(a), others. Education: elementary school, high school, technical course, higher education, specialization or MBA, graduate degree *stricto sensu*. Type of housing: owned, rented, financed, borrowed. Occupation: civil servant and retired; salaried employee; self-employed and liberal professional; company owner; unemployed; other. Monthly income: I have no income; up to $199.60; from $199.61 to $399.20; from $399.21 to $598.90; from $598.91 to $2,395.20; over $2,395.21. Age: from 17 to 21; from 22 to 25, from 26 to 35; from 36 to 81. Marital status: single; married or common-law marriage; widowed, separated, and others.

Table 7. Post-hoc HDS Tukey/Games-Howell test, mean and significance difference for each age and income level that showed a significant difference in financial well-being.

Variables			Mean difference	*p*
Income[2]	Between $1,796.41 and $2,395.20	Until $199.60	2.130	0.031
	Between $1,796.41 and $2,395.20	Between $199.61 and $399.20	2.092	0.031
	Over $2,395.21	I do not have income	2.304	0.000
	Over $2,395.21	Up to $199.60	2.631	0.000
	Over $2,395.21	Between $199.61 and $399.20	2.593	0.000
	Over $2,395.21	Between $399.21 and $598.90	1.539	0.031
	Over $2,395.21	Between $598.91 and $798.40	1.879	0.008
	Over $2,395.21	Between $1,197.61 and $1,796.40	1.498	0.044
Housing[2]	Own	Borrowed	1.776	0.001
	Leased	Borrowed	1.428	0.018
	Financed	Borrowed	1.556	0.044

[1] Tukey's HDS Post-Hoc Test. [2] Games-Howell Post-Hoc Test. Source: Survey data (2023)

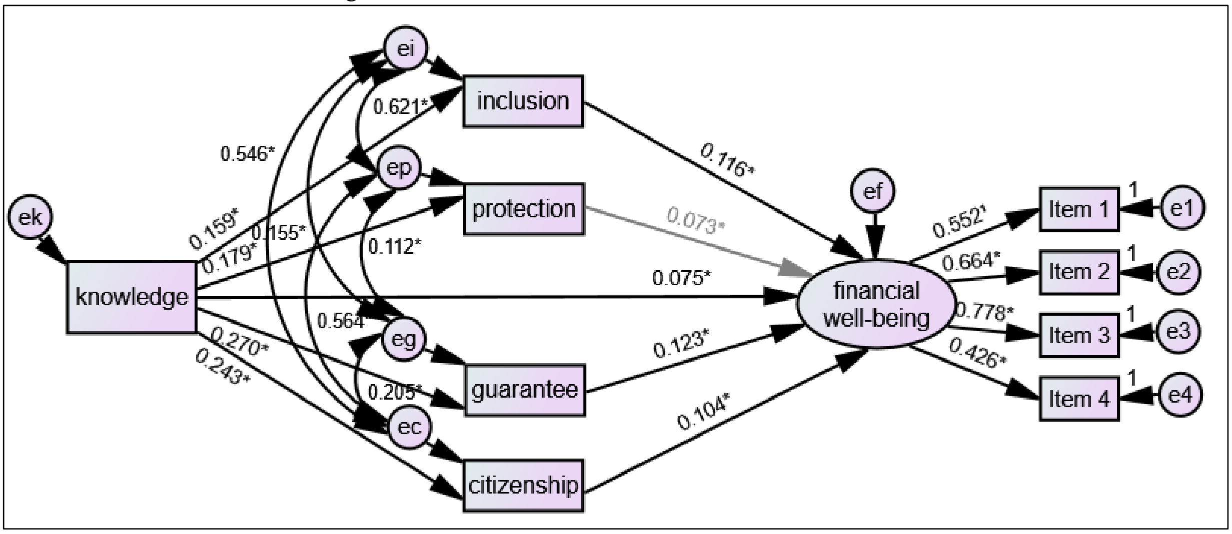
The data indicate that men have the highest financial well-being (mean 12.34) compared to women (mean 11.91), corroborating Dickason-Koekemoer and Ferreira (2019), and others. The results also showed that white individuals have greater financial well-being (mean 12.25) compared to other ethnicities/races (mean 11.77), corroborating the literature (Dickason-Koekemoer & Ferreira, 2019; Gutter & Copur, 2011; Lee et al., 2020). For income, it was found that individuals earning more than $2,395.21 possess the highest level of financial well-being when juxtaposed with those in the lower income brackets of the study. This trend echoes the findings of several researchers, including Riitsalu & Murakas (2019), Dickason-Koekemoer & Ferreira (2019), Collins & Urban (2021), and Lee et al. (2020). In addition, the mean perception of the financial well-being of those who own, financed, or rented property is higher than those who live in a borrowed property, the mean average difference being for those who own a home, emphasizing that government programs to encourage real estate credit can contribute to improving the financial well-being of Brazilians (Vieira et al., 2021). Lastly, the structural equation model was estimated to test the proposed framework. Table 8 showcases the initial and final adjustment indices for the financial well-being construct and for the overarching framework, while Figure 3 delineates the estimated coefficients and their significance levels.

Table 8. Initial and final adjustment indices of the model.

Index	Limits[1] suggested	Financial well-being		Framework	
		Initial	Final	Initial	Final
x^2 (value)	——	76.366	1.228	209.012	31.407
Chi-square/Degrees of freedom	<5.000	15.273	0.614	8.039	1.847
Goodness-of-fit index	>0.950	0.974	0.999	0.964	0.994
Comparative fit index	>0.950	0.927	1.000	0.925	0.994
Normed fit index	>0.950	0.923	0.998	0.916	0.986
Tucker-Lewis index	>0.950	0.854	1.000	0.871	0.986
Root mean square residual	<0.080	0.070	0.010	0.114	0.043
Root mean square error of approximation	<0.060	0.112	0.000	0.079	0.027

[1]Suitable levels for adjustment statistics based on Hooper et al. (2008) and Hu and Bentler (1999).

Figure 3. The estimated coefficients for the framework.



* p < 0.01; [1] value of z not calculated, where the parameter was set to 1 due to model requirements.

The model was constructed in a two-phase approach, and we aimed to estimate only the model that gauges financial well-being in the initial phase. Due to the lack of adjustment for some indices (Chi-square/GL, NFI, RMSEA), we used the model modification strategy. The model was adjusted after removing item 4, which had a low factor loading (-0.385). Unidimensionality was also confirmed, as all standardized residuals are less than 2.58. Thus, the proposed model was validated, presenting adequate fit indices in the initial estimation.

Analyzing the hypotheses, H1 was validated, underlining the fact that knowledge directly precedes financial well-being. This affirmative relationship between knowledge and financial well-being is also highlighted in the study by Lee et al. (2020). Moreover, financial knowledge significantly influences perceptions about the Financial System, showcasing positive coefficients for inclusion, protection, guarantees, and citizenship, thus validating hypotheses H2–H5. Among the perceptions about the National Financial System, three dimensions exhibited significant and positive coefficients. The variable associated with financial guarantees stood out with the highest coefficient (0.123), indicating that financial service users who feel safe and confident in carrying out operations have higher levels of financial well-being. Increased satisfaction with financial inclusion (0.116) and heightened sense of financial citizenship (0.104) also increase the levels of financial well-being. These results are supported by research that indicates that increasing access to the system (and financial citizenship in general, allows citizens to have better levels of financial well-being (Chen & Yuan, 2021; Khalil, 2021; Nandru et al., 2021; Philippas & Avdoulas, 2021; Prina, 2015; Rashid et al., 2022; Vieira et al., 2021).

According to Figure 3, financial protection (H7) was not confirmed, indicating that the perception of protection did not directly affect financial well-being. Nevertheless, we found a positive correlation between the protection error and the errors of the other three perceptions of the financial system, suggesting that individuals who perceive themselves as protected typically align with those who feel more financially included, better guaranteed, and more integrated into the system. Thus, the analysis underscores that both the level of financial knowledge and the individual's optimistic perception of the financial system serve as antecedents to financial well-being.

5. CONCLUSIONS

Understanding financial well-being is critical given the plethora of investment opportunities in the financial market and the increasing accessibility to credit. Hence, this study investigated how the perception of the financial system and financial knowledge impact citizens' financial well-being. Our findings revealed an intermediate level of financial well-being. The respondents with the highest level of financial well-being are men, white, and homeowners with higher education and income levels. This underscores the positive impact of national strategies that bolster citizens' access to financial services and diminish levels of financial exclusion on overall financial well-being. Moreover, beyond mere access, instituting regulations and mechanisms that heighten the sense of transactional security and elevate the financial literacy of the populace can significantly augment financial well-being. Specifically, discerning the determinants of financial well-being can guide policymakers to enhance financial well-being by emphasizing the refinement of counseling programs and personal financial services to inculcate favorable financial habits, as Fan and Henager (2022) suggested.

Incorporating financial and fiscal education into academic curricula is essential to create safer and better-prepared citizens prepared to navigate an increasingly complex financial system, thereby improving the financial well-being of the population. Additionally, as fintech burgeons and financial products become digitally accessible, citizens will invariably require enhanced digital financial acumen. This transcends mere financial literacy, necessitating digital proficiency, and facilitating financial strategizing, ultimately promoting financial autonomy and inclusion (Kumar et al., 2023).

For financial market regulators, there is an ongoing imperative to vigilantly monitor consumer dynamics (Zoilboev & Cyman, 2022). The assessment of the financial system perception and its impacts can be beneficial for identifying the need for changes in rules and procedures, for identifying socioeconomic and demographic profiles that specific government strategies should target, and for understanding the role of the perception in financial inclusion policies and financial citizenship programs.

A distinctive feature of this research is the application of the financial well-being proposed by the CFPB (2015). Using a model to identify the level of the financial well-being of the population is one alternative to evaluate the results of financial education and financial inclusion programs, since improving financial well-being is a coveted outcome of expanding financial education and financial inclusion (CFPB, 2015). Given its relatively nascent application, further research is warranted to validate this scale in diverse settings. Prospective research endeavors could delve deeper into the psychometric evaluation of this scale and explore other facets of the financial system that might influence citizens' financial well-being.

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