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Evaluating short- and long-term investment strategies: development and validation of the investment strategies scale (ISS)



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Abstract

Purpose: In response to the growing importance of understanding individual investment strategies, the present study aimed to develop a new scale for measuring both the short- and long-term investment strategies of individuals.

Design/methodology/approach: The study assessed the psychometric properties of the investment strategies scale (ISS) using data collected from 1428 individual investors. In the initial study, an exploratory factor analysis (EFA) was conducted to investigate the factor structure of the proposed scale (N = 700). The EFA results yielded a two-factor structure, and Cronbach's alpha values for short- and long-term investment strategies were 0.90 and 0.88, respectively. A confirmatory factor analysis was performed to validate the factor structure of the scale in the second study (N = 728).

Findings: The results demonstrated that the two-factor model fit the data well. In the third study, the correlation between Hofstede's long-term orientation and the two dimensions of the scale was investigated. The results indicated that long-term investment strategies significantly predict long-term orientation, thus confirming the concurrent validity of the scale.

Research implications: These findings demonstrate that the proposed ISS is a reliable and valid instrument for measuring individuals' short- and long-term investment strategies, contributing to a deeper understanding of investment decision-making processes.

Originality/value: This study introduces a novel measurement tool—ISS—specifically designed to comprehensively assess both short- and long-term investment strategies among individual investors.

Keywords: Financial literacy, Investment strategies, Individual investors, Investment strategies scale

Introduction

Nowadays, the skill of efficiently managing personal finances has become progressively essential. While the prominence of savings and the desire to live a prosperous life financially are important, the rising variety and complexity of products in financial markets to invest in are among the effective factors to achieve them. Further, the fact that people



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have had high debt levels and inadequate retirement plans after the 2008 Global Financial Crisis and the adverse socioeconomic consequences have led countries to consider financial literacy more deeply and attach importance to it. In particular, the deficiency of financial knowledge and skills among today's youth, who are confronted with complicated financial institutions, services, and products, is raising financial literacy concerns among both households and authorities.

According to Ganesan et al. (2020), governments face substantial challenges when there is a lack of financial information. In this context, individuals should make appropriate financial decisions both in the long and short run to maintain a financially prosperous life. Making the appropriate financial decisions would be possible once individuals attain financial literacy. Financial literacy can theoretically be classified into two: comprehension ("know-what" or "personal finance knowledge") and use ("know-how" or "personal finance application") (Huston 2010). Remund (2010) defined financial literacy as "an individual's ability to manage money." Unfortunately, various studies (Chen and Volpe 1998; Gathergood and Weber 2017; Garg and Singh 2018) have indicated that individuals, especially young people, suffer from financial illiteracy and that their skills to manage personal finances are insufficient. Therefore, it is important to be financially literate, make wise investment decisions in financial markets, and raise the financial literacy level in today's complex economic and financial markets.

Numerous studies have investigated people's financial literacy level and the variables that predict it (Remund 2010; Lusardi and Mitchell 2011; Stolper and Walter 2017). In most of these studies, the scales applied mainly investigated the relationship between demographic factors and fundamental financial literacy; however, no measurement tool for either financial instruments or investment strategies was developed for individual investors. Further, as there is an information asymmetry between individual investors and financial intermediaries such as banks, dealers, and brokers (Grassi et al. 2022; Ye et al. 2022), individual investors should have a strategy to minimize risks and reduce losses. To address this need, the present study endeavors to develop a novel scale to measure both short- and long-term investment strategies of individuals investing in various financial instruments.

In this study, the relationship between long-term investment strategies and Hofstede's long-term orientation is also examined. Hofstede's (2011) long-term orientation measures individuals' perceptions of time and maturity in a society and is defined as pragmatic versus normative. Long-term-oriented nations are typically modest, pragmatic, and thrifty, whereas short-term-oriented nations tend to place more emphasis on consistency and reality. The literature and previous studies reveal a strong relationship between the short- vs. long-term orientation and economic growth (Hofstede 2011). For instance, the United States (US) has a short-term orientation and tends to make rapid revenues. This situation is also reflected in the country's comprehension of nationalism. Nevertheless, there is a positive and significant correlation between long-term orientation and the revenues of countries and individuals (Hofstede 2011). This study differs from other financial literacy studies by developing a new scale to measure the shortterm (less than a year) and long-term (five years) investment strategies of individual investors to fill the gap in the literature. The research questions addressed in this study are as follows:

- 1. What is the factor structure of the ISS in evaluating both short- and long-term investment strategies among individual investors?
- 2. Does a statistically significant relationship exist between long-term investment strategies, as assessed by the ISS, and Hofstede's concept of long-term orientation?

Literature review

The US is one of the nations where research studies on financial literacy have been performed the most. Ben Bernanke, a former president of the US Federal Reserve, declared that financial literacy led to the dawn of better results for both individuals and the economy in general. The need for financial literacy was once again made clear by the 2008 Global Financial Crisis. Prior research results revealed that low financial literacy was a crucial problem for both developed and developing countries. For instance, Van Rooij et al. (2011) stated that although individuals had basic financial literacy knowledge, few of them knew beyond the basic concepts, lacking knowledge of the distinction between stocks and bonds, the correlation between interest rates and stock prices, and risk diversification. Therefore, financial literacy is effective in financial decision-making processes. This suggests that low financial literacy is significantly correlated with a lower propensity to buy stocks. The "International Network for Financial Education" (INFE) was founded by the Organization for Economic Cooperation and Development (OECD 2011) in response to recent changes in the global financial sector to facilitate knowledge and experience sharing between professionals and the public. Moreover, INFE has performed activities aimed at improving financial literacy at the global level, while making crucial recommendations to policymakers. For this reason, OECD and INFE have developed tools and scales to measure financial literacy levels due to problems caused by development differences among countries, especially due to the lack of data (Potrich et al. 2016).

The disparities across the financial literacy levels in various countries can be attributed to several factors. For instance, using cultural characteristics, Hofstede (2011) explained the orientation of individuals or investors to long- or short-term investments in their investment preferences. According to Hofstede (2011), while Eastern Asian countries, as well as Central and Eastern European countries, were long-term oriented, South Asian and Southern and Northern European countries were medium-term oriented, whereas the US, Latin America, Africa, Australia, and Muslim countries were short-term oriented. Although countries and individuals with long-term orientation had high savings levels, they also had investment funds suitable for investors. Thus, countries with long-term orientation had investment atmospheres with higher stability. Similarly, Howlett et al. (2008) stated that, in general, investors who participated in savings and pension funds were future-oriented.

Because financial literacy is a relatively novel field, there is not yet a generally accepted financial literacy measurement. There is no agreement on the definition of financial literacy; thus, elevating the standard for the level of financial literacy and making it useful are problems that need to be fixed. Huston (2010) stated that without a generally accepted standard financial literacy measurement, educators cannot determine whether they might have achieved success in financial literacy. Therefore, numerous scales have been developed to assess financial literacy.

For example, Knoll and Houts (2012) measured participants' perceptions of interest, inflation, risk diversification, investment, housing prices, time value of money, retirement investments, and debt management using a 20-item psychometric scale developed within the scope of the item response theory. It brought forth a new dimension to the existing scales by reducing the variability problem. In another study, Sarıgül (2015) developed a scale to measure the financial literacy attitudes and behaviors of spending and saving individuals. EFA was used based on data collected from 407 students, yielding a four-factor scale (i.e., spending, attitude, perception, and interest). It was reported that the developed 14-item scale is a valid and reliable instrument for assessing financial literacy levels. Biçer and Altan (2016) used Sarıgül's (2015) scale and explored the relationship between the demographic characteristics and the financial literacy levels of the participants. Their results demonstrated that individuals with training in financial literacy had higher perception levels than those without.

Özdemir et al. (2015) focused on students enrolled in the Faculty of Economics individuals who were already immersed in financial terminology and concepts. Their objective was to assess whether financial literacy can be cultivated through educational interventions, and they adapted the 21-item OECD financial literacy scale to Turkey's conditions. The survey was filled out by 221 students, and their results indicated that the financial literacy level of the students was high. This indicates that economics education can enhance financial literacy levels. Similarly, prior research indicated that financial education may enhance financial literacy levels (Lusardi 2003; Fox et al. 2005).

Dam and Hotwani (2018) developed a 32-item scale to measure financial literacy. Their scale consisted of two main parts-advanced and basic financial literacy. The advanced financial literacy items covered the topics of portfolio diversification stocks, mutual funds, and insurance. The basic financial literacy items covered topics such as the time value of money, inflation, tax, risk management, retirement, and bank accounts. Using five components of financial literacy-retirement planning, financial planning, investment planning, risk and return, and mutual funds-the scale was evaluated and found to be highly reliable. Additionally, it was found that more than 50% of Indians are not financially literate. Dinc et al. (2021) proposed an "Islamic Financial Literacy" (IFL) scale to cover the entire elements of the Islamic finance industry. Throughout the scale development phase, a question pool consisting of 40 items to be responded to by 297 participants was generated; then, a four-factor and 20-item IFL scale was developed. The IFL scale aimed to measure the participants' Islamic financial attitudes, behavior, awareness, and knowledge. The results confirmed the reliability and validity of the developed scale. Further, the findings revealed that the scale and its dimensions had convergent and discriminant validity.

In recent years, studies examining how financial decision-making and financial literacy are related have proliferated at an increasing rate. Although financial illiteracy is common among individuals of different age groups and educational levels (Mandell 2004; Agnew and Szykman 2005; Lusardi and Mitchell 2011), it is perceived as an acute problem among the young population. In this context, financial literacy scales are to be developed for the overall population, and the obtained results of these scales are crucial for improving financial literacy. Well-known financial literacy scales in the literature are summarized in Table 1. In each study, the proposed method and aim of the study are

Study	Sample	Method	Major findings
Chen (2022)	329 Participants	EFA	23-Item basic financial literacy scale
Méndez Prado et al. (2022)	478 Participants	CFA	44-ltem financial attitude, financial behavior, financial knowledge scale
Özer and Ersoy (2022)	567 Fourth-grade primary school students	EFA, CFA	17-Item financial literacy scale
Celikten and Dogan (2020)	457 Primary school students	EFA, CFA	21-Item financial literacy scale
Ranyard et al. (2020)	589 Participants	EFA	50-Item financial literacy scale
Dinc et al. (2021)	297 Participants	EFA	40-Item Islamic financial literacy scale
Uraz Kaya and Kilic (2021)	300 Students	EFA, CFA	35-Item financial knowledge, financial attitude, financial behavior scale
Henager and Cude (2019)	12,050 Participants	EFA	7-Item financial literacy scale
Kim et al. (2019)	6784 Participants	EFA	15-Item financial knowledge scale
Dam and Hotwani (2018)	160 IT Professionals	EFA	32-Item financial literacy scale
Sarıgül (2015)	407 Students	EFA	14-Item financial literacy attitude and behavior scale
Knoll and Houts (2012)	2539 Participants	CFA	20-Item financial knowledge scale

Table 1 Summary of financial literacy assessment tools

different. Most studies only included specific populations, such as university students, the elderly, young people, or certain nations, and cannot be generalized to effectively assess financial literacy. Moreover, the items used in the state-of-the-art studies were limited. However, our proposed scale is efficient and overcomes the deficiencies of well-known scales.

This study introduces a novel measurement instrument—ISS—designed to assess both short- and long-term investment strategies among individual investors. The development of this scale constitutes a noteworthy contribution to the field as it addresses a significant gap in the existing literature by delivering a comprehensive tool for measuring investment strategies. This study rigorously evaluates the psychometric properties of the ISS by conducting both EFA and CFA. It goes beyond scale development and integrates with existing research on long-term orientation, specifically using Hofstede's concept. This novel approach allows for a deeper understanding of how long-term investment strategies relate to a long-term orientation.

Method and findings

Each stage of the research process depicted in Fig. 1 significantly contributes to establishing the validity and reliability of the ISS. The sequential approach for developing the measurement instrument comprises nine key steps: (1) generating the item pool, (2) assessing the content validity of the item pool via expert panel reviews, (3) revising the item pool, (4) conducting a pilot study, (5) collecting data for the first study, (6) performing exploratory factor analysis (EFA), (7) collecting data for the second study, (8) conducting CFA, and (9) performing a concurrent validity test. Figure 1 outlines the general path to follow in the process of developing the measurement instrument.

The process begins with the creation of scale items. Then, the item pool was rigorously assessed for content validity by an expert panel. Subsequently, the researchers collected initial data using the remaining items after the expert panel assessments. EFA was conducted to elucidate the underlying factor structure of the scale. To mitigate



Fig. 1 The process of developing a measurement instrument

concerns related to common method variance (Campbell 1976), it is advisable not to utilize the same dataset for both the development of the scale and the testing of psychometric properties. Additionally, following the recommendation of Anderson and Gerbing (1991), an updated scale was applied to a distinct and independent sample whenever an item was removed or added to the scale (Anderson and Gerbing 1991). Accordingly, the researchers collected data from a separate sample group using the remaining items identified through EFA. CFA was conducted to validate and affirm the factor structure of the scale (Hinkin 1998). Finally, a concurrent validity test, a form of criterion validity, was conducted to gauge the extent to which the scale correlates with a well-established measure.

Study 1

Content validity

The pool consists of 75 items developed by researchers and was assessed by a panel of three field experts with a Ph.D. in Finance. The panel reviewed the scale items and labeled them as "should be removed or revised" and "appropriate." After the revision, the 48-item form was obtained. The scale items were written in Turkish language and then translated into English by following a translation-back-translation procedure. A pilot study was conducted with 50 participants to evaluate the 48-item questionnaires. The aim was to identify any unexpected issues such as misinterpretations of questionnaire items.

Procedure and sample

This study has received the approval of the affiliated university's institutional review board (#2022-2). Before taking part in the study, every respondent gave their informed consent. The target population for the study comprised individual investors, and a purposive sampling methodology was used. According to the Central Registry Agency of Turkey, the number of individual investors reached 2,002,873 by January 15, 2021. The population of the research was individual investors in Turkey. Yamane's (1967) formula was utilized to calculate the minimum sample size (n). In this formula, n = N/(1 + N(e)2), where N is population size (2,002,873), and e (0.05) is confidence level (± 5% precision and 95% confidence level). The representative sample size of this population was calculated as 400.

The first study consists of 700 individual investors with an average age of 24.90 years (SD = 9.31). In all, 45.1% of the participants were females (316 females and 384 males); 71% were undergraduate students; 17.9% were married; 57.6% had an income of less than 1,000 USD; 48% stated that they invest in foreign currencies (mainly in USD and Euro), 46.71% in commodities such as gold and silver, 31.43% in cryptocurrencies, 28.29% in stock markets, and 20.5% in real estates; and only 22.6% have participated in an individual retirement scheme.

Exploratory factor analysis (EFA)

An EFA with maximum likelihood extraction and Promax with Kaiser normalization rotation method were employed to extract the underlying factor structure of the scale. After several runs, 24 items were eliminated as they had a commonality value lower than the threshold or failed to load significantly. The results indicated that the proposed scale (ISS) consisted of two factors (i.e., short- and long-term investment strategies) along with 24 items, with the two factors accounting for 44.19% of the variance. The scree plot is illustrated in Fig. 2 as a graphical representation of the total eigenvalues in relation to the factors.

Bartlett's test for sphericity (χ^2 (DF = 300) = 6,719.865, p < 0.001) and the Kaiser–Meyer–Olkin (KMO) (0.961) results indicated that the items are suited for the factor analysis. As presented in Table 2, the factor loadings exceeded the 0.40 threshold value, ranging from 0.425 to 0.722. (Hair et al. 2019). Further, commonalities ranged from 0.305 to 0.479, which are greater than the threshold of 0.30 (Child 2006).



Fig. 2 Scree plot

Table 2 EFA results

Items	Communality	Factor 1	Factor 2
I revise my portfolio frequently	0.391	0.544	
Political developments affect my investment decisions	0.377	0.645	
Central banks' statements have an impact on my investment decisions	0.404	0.619	
I analyze world markets when deciding on investments	0.373	0.645	
Before buying an investment instrument, I always look at its chart	0.393	0.541	
I check my investment account frequently	0.396	0.722	
I follow the news about financial markets daily	0.457	0.636	
Asset valuations of financial institutions affect my investment decisions	0.432	0.657	
I follow the announcements about my financial instruments on official platforms	0.475	0.637	
I would like to receive training in technical analysis	0.418	0.576	
I research sectoral risks of the financial instruments I will invest in	0.479	0.453	
Managing psychology is very important when investing	0.434	0.516	
Investing in different financial instruments for a long time reduces the risk of loss	0.341		0.578
Trading every day increases the risk of making mistakes	0.305		0.513
It is important to diversify investment instruments in long-term invest- ments	0.429		0.514
The best strategy for me is to invest in solid companies	0.435		0.479
I patiently wait until I reach my long-term investment goals	0.424		0.718
I keep my calm in sudden decreases in the markets	0.380		0.696
When buying a stock, I consider the financial situation of the company	0.423		0.434
The stock market allows individuals to become partners with companies	0.340		0.553
For me, it is important that the financial instrument is in an uptrend rather than its price when investing	0.319		0.563
Short-term fluctuations do not affect my long-term plans	0.391		0.652
When buying stocks, I research whether companies pay dividends to their investors	0.350		0.425
It is important to invest for the long term to maintain the value of money	0.458		0.627

Cronbach's α of the first factor (12 items)—short-term investment strategies was 0.895. Cronbach's α of the second factor (12 items)—long-term investment strategies—was 0.881. The data reveal a normal distribution because the kurtosis (SE=0.185) and skewness (SE=0.092) values ranged from -3 to +3 (Hair et al. 2019). Table 3 presents the descriptive statistics and results for normality.

Study 2

Participants

The second study consists of 728 individual investors, averaging 25.47 (\pm 10.16) years in age (ranging from 18 to 73). In all, 44% of the participants were females (320 females and 408 males); 69.6% were undergraduate students; 20.5% were married; 61.8% had an income less than 1,000 USD; 43.43% stated that they invest in commodities such as gold and silver, 41.42% in foreign currencies (USD, Euro), 33.14% in cryptocurrencies, 29.43% in stock markets, and 19.57% in real estates; and only 19.8% have participated in an individual retirement scheme.

ltems	Mean	S.D	Skewness	Kurtosis
ltem 1	3.58	1.186	-0.434	- 0.719
ltem 2	3.67	1.218	- 0.589	-0.421
Item 3	3.70	1.200	- 0.618	- 0.703
ltem 4	3.58	1.221	- 0.463	- 0.525
Item 5	3.67	1.210	- 0.607	- 0.733
ltem 6	3.92	1.122	- 0.849	- 0.550
ltem 7	3.65	1.233	- 0.597	- 0.490
ltem 8	3.54	1.254	- 0.461	-0.484
ltem 9	3.59	1.204	- 0.507	- 0.719
ltem 10	3.58	1.205	- 0.502	-0.421
ltem 11	3.67	1.259	- 0.582	- 0.703
ltem 12	3.66	1.188	- 0.576	- 0.525
Item 13	3.63	1.134	-0.489	- 0.733
ltem 14	3.66	1.192	- 0.547	- 0.550
ltem 15	3.76	1.158	- 0.590	- 0.490
ltem 16	3.61	1.207	- 0.502	- 0.484
ltem 17	3.66	1.194	- 0.577	-0.719
ltem 18	3.69	1.150	- 0.562	- 0.703
ltem 19	3.54	1.201	- 0.437	- 0.525
ltem 20	3.68	1.173	- 0.553	- 0.733
ltem 21	3.50	1.189	- 0.352	- 0.550
ltem 22	3.59	1.146	-0.432	- 0.490
ltem 23	3.58	1.126	- 0.446	- 0.484
ltem 24	3.63	1.133	- 0.483	- 0.719

Table 3 Re	sults for	normality	and c	descriptive	statistics
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Reliability and factorability

Bartlett's test for sphericity (χ^2 (DF = 300) = 7,409.495, p < 0.001) along with the results of the KMO measure of sampling adequacy (0.970) confirmed that the data were factorable. The commonality values, ranging from 0.360 to 0.549, were greater than the threshold of 0.30 (Child 2006). The factor loadings, ranging from 0.404 to 0.713, were greater than the 0.40 cutoff value (Hair et al. 2019). In the second study, Cronbach's α coefficients of the first and second dimensions were 0.895 and 0.886, respectively. These two coefficients are much higher than the threshold of 0.70 (Cronbach 1951).

Confirmatory factor analysis (CFA)

The CFA was conducted using SPSS AMOS (v.26) to evaluate the measurement model. Table 4 presents the measurement model, and the study data fit well: $[x^2 = 620.787, DF = 270, x^2/DF = 2.299, AGFI = 0.923, GFI = 0.936, CFI = 0.951, TLI = 0.946, IFI = 0.952, "RMSEA = 0.042, LO90 = 0.038, HI90 = 0.047, PCLOSE = 0.998, SRMR = 0.0326].$

Fit indices	Measurement model	Threshold
AGFI	0.923	≥0.80
GFI	0.936	≥0.90
CFI	0.951	≥ 0.90
NFI	0.917	≥ 0.90
IFI	0.952	≥0.90
TLI	0.946	≥ 0.90
RMSEA	0.042	≤ 0.08

lable 4	Mode	l fit indices	

Study 3

Participants

The third study consists of 1,428 individual investors, averaging 25.19 (\pm 9.63) years in age (ranging from 18 to 75). In all, 44.5% of the participants were females (636 females and 792 males); 70.6% were undergraduate students; 19.2% were married; 63.3% had an income of less than 1,000 USD; 44% stated that they invest in commodities such as gold and silver, 43.8% in foreign currencies (e.g., USD, Euro), 31.7% in cryptocurrencies, 28.3% in stock markets, and 20.5% in real estates; and only 21.6% have participated in an individual retirement scheme.

Instruments

ISS. The ISS was developed and validated in this study. The ISS has 24 items that are scored on a five-point Likert-type scale ranging from "1=strongly disagree" to "5=strongly agree." Cronbach's α of the first factor (12 items)—short-term investment strategies—was 0.895. Cronbach's α of the second factor (12 items)—long-term investment strategies—was 0.881. "Appendix" presents the scale items and scoring details.

"Individual Cultural Values Scale" (ICVS). Yoo et al. (2011) developed the ICVS to test Hofstede's cultural values at the individual level. Turkish adaptation of the five-point Likert scale was performed by Saylık (2019). The long-term orientation dimension (six items) of the scale was used in the study. The sample items include the following: "A person should manage his/her money well and spend it carefully"; "One should go on in the direction of the goals resolutely despite all oppositions"; "Long-term planning is important"; and "Individuals need to be steady and stable." Cronbach's α was reported to be 0.87 in the original study, while Cronbach's α in the current study is 0.843.

Reliability and convergent validity

Reliability and convergent validity were assessed by calculating the average variance extracted and composite reliability (CR). The results indicated that the CR values were higher than the 0.70 cutoff. Further, even if a factor has an AVE below the cutoff, convergent validity is still acceptable if the CR value is greater than 0.70 (Fornell and Larcker 1981). A significant and positive correlation between long-term investment strategies and long-term orientation was also found (r=0.739, p<0.01).



Fig. 3 The structural model of investment strategies and long-term orientation

Concurrent validity

The "structural equation modeling" (SEM) approach was used to explore the relationships between the two dimensions (i.e., short- and long-term investment strategies) and Hofstede's long-term orientation. The CFA results suggested a good fit between the structural model and the data: $[x^2=1,249.728, DF=427, x^2/DF=2.927, GFI=0.944,$ AGFI=0.935, NFI=0.931, TLI=0.949, CFI=0.953, IFI=0.953, SRMR=0.0327, RMSEA=0.037 LO90=0.034, HI90=0.039, PCLOSE=1.0]. Further, the SEM results depicted in Fig. 3 indicated that long-term investment strategies positively and significantly predicted long-term orientation ($SE=0.079, CR=10.425, \beta=0.799, p<0.001$), explaining a significant proportion of the variation in long-term orientation ($R^2=0.55$, SE=0.22). On the other hand, short-term investment strategies were not significantly related to long-term orientation ($SE=0.063, CR=-1.024, \beta=-0.068, p=0.306$).

Sensitivity analysis

Artificial neural networks (ANNs) were employed to capture nonlinear relationships in the data (Arpaci and Bahari 2023). To mitigate the risk of overfitting, the ANN model incorporated a tenfold cross-validation technique (Al-Sharafi et al. 2023). This technique entailed using 90% of the data for the training phase and reserving the remaining 10% for the testing phase (Arpaci et al. 2022).

The input layers comprised two continuous variables representing short- and longterm investment strategies, while the output layer was defined by the categorical endogenous variable, that is, long-term orientation. Impressively, the ANN multilayer perceptron achieved an average accuracy of 87.7% in the training phase and an even higher accuracy of 90.1% in the testing phase.

Furthermore, the study employed sensitivity analysis to calculate the normalized importance of predictors as a percentage, facilitating an in-depth examination of each predictor's contribution (Arpaci 2023). According to the results of the sensitivity analysis, long-term investment strategies exhibited the most robust predictive capability for long-term orientation, with a mean importance of 0.604, corresponding to a normalized

importance of 100%. Short-term investment strategies also demonstrated significant predictive power, with a mean importance of 0.396 and normalized importance of 65.5%.

Discussion

Financial literacy, which is a collection of specific abilities and knowledge on financial issues, empowers individual investors to make informed and effective financial investment decisions (Mutlu and Özer 2021). As the globalized marketplace is becoming risky every day, becoming financially literate is gaining great importance. Individuals who have more financial literacy make better decisions on financial investments (Klapper et al. 2015). Although several individuals think that they have enough knowledge and skills in financial literacy, prior research indicates the opposite. According to the OECD report, only 28% of Australians had knowledge about compound interest and many British did not have adequate financial information (OECD 2005). The same study revealed that, among Canadians, deciding on the right investments was more difficult than going to a dentist, and most Americans were not saving money for retirement.

This study introduces a novel measurement tool, the ISS, specifically designed to comprehensively assess both short- and long-term investment strategies among individual investors. This scale represents a significant departure from traditional assessment methods, effectively filling a critical gap in finance research. This study evaluated the psychometric properties of the proposed scale based on data collected from 1,428 investors from various job categories and different ages.

The initial study conducted an EFA to uncover the underlying factor structure of the scale. The results suggested a two-factor structure, and Cronbach's alpha of the shortand long-term investment strategies was 0.90 and 0.88, respectively. The results revealed that the proposed 24-item ISS can reliably measure both the short- (12 items) and long-term investment strategies (12 items) of individual investors. It was found that the two-factor structure can explain 44.19% of the total variance. In the second study, CFA was performed, revealing that the two-factor model provides a good fit for the data. In the third study, the relationships between the two dimensions of the scale and Hofstede's long-term orientation were investigated to test the concurrent validity. The results revealed that long-term investment strategies were significantly correlated with Hofst-ede's long-term orientation.

While limited prior research is specifically dedicated to the development of investment strategy scales, numerous studies have concentrated on assessing financial literacy. Following the scale proposed by Huston (2010), financial literacy was assessed through three distinct dimensions— "subjective financial knowledge," "subjective financial management ability," and "objective financial knowledge." Objective financial literacy was measured using a set of five questions derived from the study by Lusardi and Mitchelli (2007), which are questions commonly employed in various financial literacy studies. These questions formed a theoretical index score with a range of 0 to 5, reflecting a respondent's objective financial knowledge (Lusardi and Mitchelli 2007). On the other hand, the subjective financial knowledge of the participants was assessed by having them rate their overall financial knowledge on a scale ranging from 1 to 7. This self-assessment provided insight into the perceived level of financial expertise of the respondents. Similarly, the financial management ability variable was assessed through self-assessment, with respondents rating their competence in handling day-to-day financial matters on a scale ranging from 1 to 7. This measurement captured their subjective perception of their ability to manage financial affairs effectively.

The studies by Henager and Cude (2019) and Kim et al. (2019), which are frequently referenced studies, have provided insights into the assessment of financial behaviors. These studies identified two key variables—"long- and short-term financial behavior"—with each variable comprising four sub-behaviors. Short-term financial behavior comprises four specific actions—maintaining an emergency reserve, managing spending, avoiding overdrafts, and creating budgets. On the other hand, long-term financial behavior includes retirement planning, contributing to retirement savings accounts, investing, and setting long-term financial goals. Participants' responses to these activities are recorded as binary outcomes, represented by "yes" or "no."

The findings indicated that most of the participants invested in various financial products, including foreign currencies, gold, silver, stocks, real estate, cryptocurrencies, and individual retirement systems to reduce their risks. Prior findings emphasized the importance of portfolio diversification (Abreu and Mendes 2010; Domian et al. 2007; Narayan et al. 2022; Reinholtz et al. 2021; Statman and Scheid 2008; Qarni and Gulzar 2021). Previous studies emphasized that during hard economic conditions, a diversified portfolio is less likely to be damaged than an under-diversified portfolio and is generally less risky than other types of portfolios. For example, Choi et al. (2017) found that under-diversified portfolios contain higher risk than globally diversified portfolios.

People with higher education have more knowledge about finance and investment, but they are not perfectly educated about financial literacy (Lusardi and Mitchelli 2011). People in big cities have more financial literacy than those in rural areas, and the financial knowledge level of individuals in rural areas is entirely different from that of educated urban individuals (Hasan et al. 2021; Harun et al. 2021). Although borrowing has been increasing in Russia recently, most of the borrowers do not know about simple financial literacy terms such as compound interest and inflation rates (Klapper et al. 2012).

Van Rooij et al. (2011) found that financial literacy affects people's financial decisions, and those with low literacy levels frequently seek financial advice from friends, family, or social media. When people make financial decisions, they frequently believe information received from a friend, family members who work in the finance field, and sales staff (Özdemir et al. 2015). Further, individuals who have low literacy levels invest in financial products other than stocks. Financial planning for retirement is more prevalent among people with higher financial literacy levels (Bucher-Koenen et al. 2017). Kocabiyik and Teker (2018) argued that among undergraduate students, men generally outperformed women in terms of financial literacy.

Concluding remarks

The findings have practical implications for both investors and financial professionals. The ISS can be used to assess individual investors' strategies, guiding investment decisions and financial planning. Moreover, the results suggest that long-term investment strategies significantly predict long-term orientation, offering valuable insights for investment advisors and policymakers. Overall, this study significantly advances our understanding of individual investment behavior. By providing a valid and reliable tool for measuring investment strategies and uncovering the relationship between these strategies and long-term orientation, it contributes to the theoretical framework in finance and psychology, enriching academic discourse in these fields.

In summary, this study makes a noteworthy contribution to the literature by developing a novel measurement tool, rigorously validating it, integrating it with existing research, offering practical insights, and advancing our understanding of individual investment behavior. Its innovative approach and comprehensive methodology distinguish it as a significant addition to the fields of finance and psychology.

The importance of this study is underscored by its potential to enhance investor decision-making, facilitate effective risk management, contribute to financial literacy initiatives, further academic research, provide valuable cross-cultural insights, assist financial professionals, and inform policymaking in the realms of finance and investments.

There are a few limitations that should be acknowledged and addressed. The study is primarily based on prior research conducted in a single country and lacks investigation into cross-border countries. Future studies should diversify the participating population for intercountry comparisons to improve the generalizability of the findings. In future studies, the proposed scale should be tested by recruiting participants from various countries with different cultural orientations to provide sufficient evidence for the generalizability of the findings and the validity of the instrument in different cultures.

Appendix: Investment strategies scale (ISS) Short-term investment strategies

short term intestment strategies

- 1. I revise my portfolio frequently.
- 2. Political developments affect my investment decisions.
- 3. Central banks' statements have an impact on my investment decisions.
- 4. I analyze world markets when deciding on investments.
- 5. Before buying an investment instrument, I always look at its chart.
- 6. I check my investment account frequently.
- 7. I follow the news about financial markets daily.
- 8. Asset valuations of financial institutions affect my investment decisions.
- 9. I follow the announcements about my financial instruments on official platforms.
- 10. I would like to receive training in technical analysis.
- 11. I research sectoral risks of the financial instruments I will invest in.
- 12. Managing psychology is very important when investing.

Long-term investment strategies

- 13. Investing in different financial instruments for a long time reduces the risk of loss.
- 14. Trading every day increases the risk of making mistakes.
- 15. It is important to diversify investment instruments in long-term investments.
- 16. The best strategy for me is to invest in solid companies.

- 17. I patiently wait until I reach my long-term investment goals.
- 18. I keep my calm in sudden decreases in the markets.
- 19. When buying a stock, I consider the financial situation of the company.
- 20. The stock market allows individuals to become partners with companies.
- 21. For me, it is important that the financial instrument is in an uptrend rather than its price when investing.
- 22. Short-term fluctuations do not affect my long-term plans.
- 23. When buying stocks, I research whether companies pay dividends to their investors.
- 24. It is important to invest for the long term to maintain the value of money.

Scoring. The ISS has 24 items that are rated on a "five-point Likert-type scale" ranging from "strongly disagree (1)" to "strongly agree (5)." The scale has a two-factor structure (i.e., short-term investment strategies and long-term investment strategies). The first 12 items measure short-term investment strategies, while the rest 12 items measure long-term investment strategies. When the total score is calculated, the dimension with the higher total score can be considered the dominant dimension.

Abbreviations

AGFI	Adjusted goodness of fit index
CFI	Comparative fit index
GFI	Goodness of fit index
IFI	Incremental fit index
OECD	Organization for Economic Cooperation and Development
RMSEA	Root mean squared error of approximation
SRMR	Standardized root mean square residual
TLI	Tucker–Lewis Fit Index

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IA managed and designed the study, conducted the analysis, and drafted the manuscript. All authors contributed to the writing of the manuscript, and they have all reviewed and approved the final manuscript.

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The data will be made available upon request.

Declarations

Competing interests

The authors declare that there are no conflicts of interest.

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