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Accountants' Risk-Taking and Alertness to Investment Opportunities

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Abstract

While accountants working in financial institutions possess extensive expertise in accounting, finance, and investment activities, it can be challenging to identify the primary factors influencing their investment decisions. This study examines the alertness of experienced accountants to investment opportunities (AIOs), with a particular focus on their propensity for risk-taking (RT). A random sample of 468 Iranian accountants, including accounting students and graduates from public and private institutions, was selected to achieve this. Data analysis was conducted using Structural Equation Modeling (SEM) and SPSS 26 software. In this study, financial intelligence, ambiguity tolerance, and optimism positively influenced RT and AIOs. Additionally, there was a positive relationship between RT and AIOs. However, it was observed that accounting education significantly impacted AIOs, whereas the propensity for RT decreased with age among accountants. From a theoretical perspective, the findings of this study can contribute to the understanding of decision-making processes among accountants, investors, and entrepreneurs, shedding light on the factors affecting their RT and AIOs. In terms of practical implications, the results of this study can be valuable for those involved in establishing rules and regulations, as well as educational planners. By promoting the best possible investments and rational decision-making, these insights can contribute to the optimal allocation and utilization of resources, facilitate job creation and entrepreneurship, and ultimately foster economic growth and development within society.

Keywords:

Alertness to Investment Opportunities, Ambiguity Tolerance, Experience Intelligence, Risk-Taking

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1. Introduction

Individual investors encounter numerous challenges in various societies, including making decisions about the most suitable investments for achieving high returns when confronted with many options. Additionally, they often miss emerging opportunities (Haws, 2021). Sahi (2017) has pointed out that individual investors face even greater difficulties evaluating all aspects of these new investment opportunities. Consequently, the human brain is wired to respond to events in a manner that leads to lasting benefits (Toricelli et al., 2021). A rational decision-making process typically considers multiple factors, including risk-taking (RT), knowledge, and experience, when making financial decisions or responding to financial matters. Surprisingly, observed behavior often diverges from the principles of conventional finance theory (Sahi, 2017). As the term "Homo economicus" implies, humans are not purely rational beings but rather Homo sapiens with emotions, beliefs, and preferences influenced by cognitive limitations, reactions, and psychological motives. These factors help individuals make sense of their surroundings and can influence or bias their decision-making processes. The relevant literature suggests that these biases can significantly impact financial behavior and comfort, underscoring the importance of evaluating and addressing them. Evolutionary psychology posits that these biases can lead individuals to make wise investment choices, avoid costly mistakes, and ultimately find satisfaction in their financial decisions (Sahi, 2017).

Consequently, individual investors may need assistance making rational decisions (Kahneman and Riepe, 1998; Barber and Odean, 2001; Baker and Nofsinger, 2002; Shefrin, 2002). Psychological biases and emotions have the potential to erode their wealth. Furthermore, they may encounter unforeseen outcomes, engage in unwarranted trading, and attribute blame to themselves or others. Addressing financial issues is paramount for investors to succeed in their investment and entrepreneurial endeavors (Gerardi, Goette, and Meier, 2010). Identifying and correcting biases in individual investors can significantly enhance their decision-making regarding investments (Shefrin, 2002; Pompian, 2006). Huhmann and McQuitty (2009) contend that certain factors can be integrated to improve the rationality of complex financial markets. Despite the common association of rationality with cognitive ability, general intelligence, and financial literacy, objective and subjective intelligence tests should be considered. Nguyen, Gallery, and Newton (2016) propose an advisory process for evaluating clients' risk tolerance (RT) and assisting financial advisers in making informed investment decisions. Despite extensive research on RT, its precise impact on investment decision-making in the financial context remains somewhat enigmatic.

This study aimed to identify factors and personality traits affecting accountants' opportunities when investing in various types of assets. Also, the study's purpose is to:

1. identify the key factors influencing the risk-taking of accountants in investment decision-making,
2. examine how alertness to investment opportunities is affected by certain traits and characteristics of accountants,
3. explore the role of accountants' age in their risk-taking behavior,
4. investigate the impact of selected variables on the accountants' risk-taking and alertness.

As a contribution to the literature, first, accounting professionals gain the essential knowledge and skills required to master accounting, finance, and investment expertise. A second advantage of accountants is their practical skills and theoretical knowledge, which empowers them to navigate a wide range of concepts and make informed and prudent investment decisions. Furthermore, accountants can independently engage in entrepreneurial activities, generate employment opportunities, and play constructive economic roles through their knowledge, skills, and financial acumen.

The next section discusses the related literature and outlines the main testable hypotheses. Our

survey methods and data are summarized in Section 3. The primary empirical results are presented in Section 4, followed by a concise discussion of the findings in Section 5.

2. Literature Review

2.1 Effect of FI on accountants' RT and alertness to investment opportunities (AIOs)

Due to the intricate nature of finance and investment decisions, it is crucial to comprehend concepts such as event probabilities and compound interest rates. Cole and Shastry (2008) indicate that individuals with high Financial Intelligence (FI) are more likely to succeed. An individual's knowledge, skills, and decision-making abilities can significantly impact their financial success, as observed by Kamil, Musa, and Sahak (2014). While FI plays a vital role in shaping financial behaviors and decision-making outcomes, it differs from general intelligence, as assessed through IQ tests. Individuals can enhance their financial behaviors and well-being by assessing their essential financial expertise. Remund (2010) argued that financial literacy can be viewed as managing money effectively. Specifically, he identified five core financial literacy categories: understanding financial concepts, communicating economic ideas, managing personal finances, making sound financial decisions, and planning for the future. Operational financial literacy categories include budgeting, saving, borrowing, and investing. Similarly, Berman et al. (2008) have defined FI as a concept comprising three fundamental skills. The first skill involves comprehending fundamental concepts related to investments and business, such as understanding a balance sheet, income statement, and cash flow statement. The second key skill pertains to understanding accounting and financial techniques, including estimating depreciation on long-term assets and allocating costs. The third essential skill involves proficiency in financial analysis; for instance, individuals with financial intelligence can calculate financial ratios such as return on equity and return on assets.

Before venturing into investments or exploring new markets, individuals need to acquire financial knowledge and skills, as Lusardi (2008) emphasized. Sages and Grable (2010) contend that individuals with solid financial intelligence (FI) skills are more inclined to take calculated risks. This is particularly important in the current landscape, where financial instruments are growing increasingly complex, and concerns about scams and unscrupulous brokers abound. Research by Almenberg and Widmark (2011) suggests a positive relationship between FI and risk tolerance (RT). In the study conducted by Sages and Grable (2010), individuals with low RT levels exhibited lower competence in financial matters, held less accurate asset pricing perspectives, and expressed dissatisfaction with their financial management. The researchers concluded that higher financial expertise positively correlated with RT, enabling individuals to optimize their wealth. Individual risk tolerance is instrumental in pursuing improved economic and investment opportunities. Almenberg and Widmark (2011) further assert that individuals' risk preferences significantly impact their decision-making, their ability to leverage financial and investment opportunities, and the subsequent economic consequences of those decisions. Nguyen et al. (2016) collected survey data from 538 financial advisors in Australia, finding a positive correlation between RT and investment decision-making.

Individuals and institutional investors' planning and counseling are influenced by risk tolerance (RT), as indicated by Bayar et al. (2020). Their study also explored the connection between financial literacy and risk tolerance among individual investors. Their findings suggest that specific demographic characteristics, such as age, gender, education, and income, impact an individual's financial risk tolerance. Sahi, Dhameja, and Arora (2012) discovered that individual investors' biases, financial risk tolerance, and perceived knowledge of financial markets also shape their preferences.

Moreover, Grable and Joo (2000) demonstrated that individuals with strong financial skills and expertise are more likely to exhibit higher risk tolerance levels. Therefore, financial intelligence (FI) is expected to enhance individual investors' risk tolerance and investment outcomes (AIOs). In addition, more risk-tolerant investors will likely have a greater number of investment opportunities and potentially achieve better results.

H1: Accountants' FI has a positive effect on their RT.
H2: Accountants' RT has a positive effect on their AIOs.
H3: Accountants' FI has a positive effect on their AIOs.

2.2 Effect of optimism on accountants' RT and AIOs

Optimists demonstrate a greater propensity for anticipating positive future events than pessimists, as highlighted by Meza and Southey (1996) and Green and Heywood (2011). Research by Weinstein in 1980 and Hey in 1984 similarly indicates that optimists perceive positive future events as more likely than pessimists. Optimistic individuals are inclined to selectively follow information that aligns with their beliefs and may disregard information that contradicts or has a negative outlook, as Mitchell et al. (2002) observed. The notion that optimism is inherently detrimental to financial and investment decisions is not universally accepted. Nevertheless, it is acknowledged that optimism can occasionally lead to incorrect decisions stemming from a misinterpretation of current and future circumstances, as noted by Naeiji and Esfandiari (2015). Optimists often encourage others to adopt a similar outlook, per Simon and Houghton's (2003) definition of optimism. However, as Puri and Robinson (2007) suggest, investors with elevated levels of financial optimism may not attain their financial objectives because they tend to perceive new investment risks less and give less importance to ambiguity.

Furthermore, Kim and Nofsinger (2007) assert that optimistic investors tend to overlook negative stock news. Moreover, investors exhibit diverse experiences, personality traits, and investment needs, influencing their selection of investment options based on their psychological characteristics. In addition to their objectives and risk tolerance (RT), investors consider factors like liquidity balance, profitability, and return expectations, as Gakhar (2019) suggested. Stocks, bonds, and derivatives represent high-risk options in the capital markets for those willing to embrace greater risks. Foo (2011) suggests that individuals with an optimistic outlook are more likely to take on increased risk and invest in ventures with higher inherent risk. Gakhar (2019) posits that both optimism and risk tolerance have a significant impact on investment decisions. According to Kahneman and Tversky (1979), investors often display optimism when making investment choices. It's noteworthy that financial optimism is frequently practiced in economic contexts to meet future expectations, as Astebro et al. (2014) outlined. Consequently, the following hypotheses warrant exploration:

H4: Accountants' optimism has a positive effect on their RT.
H5: Accountants' optimism has a positive effect on their AIOs.

2.3 Effect of AT on accountants' RT and AIOs

Ambiguity tolerance (AT) refers to individuals' perceptions and responses in the face of unpredictable, unknown, and complex situations, as noted by Budner (1962) and Furnham and Ribchester (1995). Furnham and Ribchester (1995) highlight that individuals with high AT are more adept at handling ambiguous circumstances and do not shy away from complexity. In contrast, those with low AT tend to avoid ambiguous stimuli. Endres, Chowdhury, and Milner (2009) provide supporting evidence for the connection between AT and self-efficacy in intricate decision-making

processes, signifying AT's positive role in uncertain decision-making situations (Morris et al., 2013; Ng, 2013) and its contribution to improving decision-making quality (Xu and Tracey, 2014). The economic decision-making theory proposed by Tversky and Kahneman (1981) underscores the importance of AT in decision outcomes. Tversky and Kahneman (1981) demonstrate that available information and preferences for ambiguity frequently influence decisions. Their perspective challenges rational choice theory, which places greater emphasis on information collection and processing while neglecting the aspects of information availability and consistency. AT scores predict enhanced information-handling capabilities (Xu and Tracey, 2014).

Hence, recognizing and accounting for future fluctuations and ambiguities can influence risk tolerance (RT). Risk-takers are those who embrace volatility and uncertainty in investment outcomes and performance. For instance, Haws (2021) suggests that investors willing to take risks may achieve higher returns by accepting greater uncertainty and ambiguity. Acknowledging that any investment decision inherently carries elements of uncertainty and risk (Slovic, 1972; Thaler, 1999) is crucial. Consequently, risk-taking constitutes a fundamental component of the decision-making process in circumstances marked by uncertainty and ambiguity, potentially leading to either rewards or adverse consequences (Bechara et al., 2005; Krain et al., 2006; Brand et al., 2007). Krein et al. (2006) contribute valuable medical insights into the mechanisms underlying risky and confounding decision-making. As a result, individuals often face the dilemma of choosing between a safe or a risky approach to decisions characterized by risk. While the rewards of safe choices may be modest, the potential value of risky choices could be more substantial. The absence of contradictions arises from ambiguous decisions being inherently uncertain or stemming from chance. Although both risky and ambiguous decisions may engage similar underlying neural mechanisms, as they entail choices without knowledge of the outcomes, they are likely to represent qualitatively distinct modes of decision-making. Furthermore, statistical comparisons reveal notable disparities between decision-making processes in the frontal cortex for risky and ambiguous scenarios.

Given this, AT in individuals who intend to invest can have a positive effect on their RT as well as AIOs. Thus, the following hypotheses are put forth:

H6: Higher levels of AT lead to more RT in accountants.
H7: Higher levels of AT lead to more AIOs in accountants.

2.4 Effect of education on accountants' RT and AIOs

While Hallahan, Faff, and McKenzie (2003) did not find a significant correlation between education and risk tolerance (RT), Grable (2000) and Yao, Sharpe, and Wang (2011) demonstrated that higher levels of education could indeed influence RT. Sages and Grable (2010) argue that individuals can effectively engage in risk-taking when equipped with financial and accounting education. This, in turn, enables them to seize investment opportunities, ultimately leading to the capacity to generate wealth and value. Consequently, accounting and financial education can significantly enhance an individual's prospects for success in achieving their investment objectives (AIOs). The concepts presented by Sages and Grable (2010) can be analyzed from two additional perspectives: First, the relationship between financial education and RT, despite variations in findings across studies. Second, the connection between RT and wealth and value creation typically aligns with the expectations of the capital markets. Additionally, investors often anticipate higher returns with increased risk tolerance (RT), leading to wealth creation through opportunistic investments. The study conducted by Haws (2021) delved into the realm of investment decision-making and its impact on better decision-making processes. It explored the factors influencing individual investors' choices, the sources of information employed for sound investment decisions, the potential risks associated

with such decisions, and strategies for mitigating those risks. Through a sample of 12 private investors, the study revealed that investors can make more informed investment choices by equipping themselves with accounting, portfolio management, investment analysis, and emotional intelligence knowledge. To better cater to individual investors' financial needs, a comprehensive understanding of diverse investment options and their associated opportunities is paramount. Accounting education can positively influence the outcomes of accountants' investment choices (AIOs). However, it is important to note that there isn't a direct, one-size-fits-all relationship between education level and risk tolerance (RT). Education can yield positive or negative effects for two primary reasons. Some individuals may become overconfident, leading them to take greater risks based on their knowledge and skills. In contrast, others embrace conservatism or the precautionary principle, making them more risk-averse. The following hypotheses are proposed:

H8: There is a significant relationship between levels of education and RT among accountants.
H9: Higher levels of education lead to more AIOs among accountants.

2.5 Effect of age on RT

Research findings indicate that risk tolerance (RT) typically decreases over an individual's lifespan, as documented in earlier studies (Wallach and Kogan, 1961; McInish, 1982; Morin and Suarez, 1983; Palsson, 1996; Hallahan et al., 2003). However, some researchers, such as Weber, Weber, and Nosic (2012), Guiso and Paiella (2008), and Grable and Lytton (1999), have concluded that there is no substantial relationship between RT and age. Bakshi and Chen (1994) also discovered that risk aversion tends to increase with age, a result that was further supported by Hallahan et al. (2004). Moreover, McInish (1982) examined the correlation between the personality traits of individual investors and their risk aversion, employing the Capital Asset Pricing Model (CAPM) and the beta factor to evaluate their systematic risks. This analysis indicated that both the level of education and age may have adverse effects on RT, meaning that RT may decline with age and higher levels of education. Given the consistent positive correlation between ageing and heightened risk aversion or reduced RT in most of the studies reviewed, it was hypothesized that there would be a negative relationship between age and RT among accountants. Hence, the following hypothesis was posited:

H10: RT decreases with the accountants' age.

Based on the theoretical foundations and the results reported in the related research, the conceptual model of this study is initially offered below, and thenceforth, the research hypotheses are tested.

By employing the conceptual model presented here, we anticipate that several attributes of accountants working within institutions, namely Financial Intelligence (FI), Ambiguity Tolerance (AT), and optimism, may exert a positive influence on their Risk Tolerance (RT) and, consequently, their Attainment of Investment Objectives (AIOs). Accountants possessing higher levels of FI, AT, and optimism are likely to be more inclined to take on investment risks, resulting in improved performance when capitalizing on investment opportunities. Additionally, those accountants who exhibit a greater propensity for risk-taking and possess higher educational qualifications could excel in seizing such opportunities. Conversely, RT among accountants is expected to decrease with advancing age. Consequently, we anticipated discovering a significant relationship between education levels and RT among accountants.

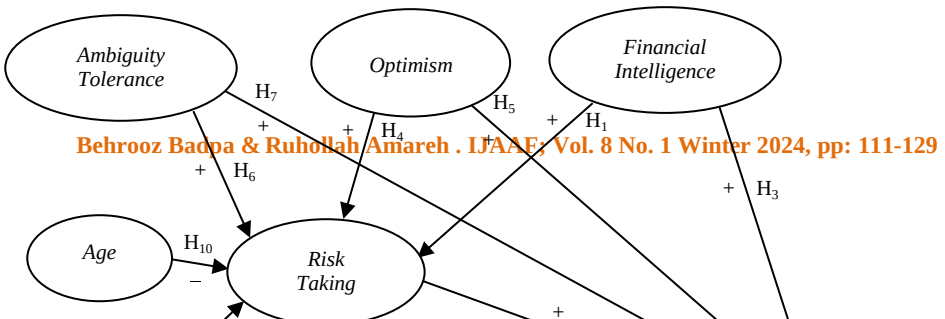

Figure 1. The conceptual model for the factors affecting RT and AIOs among accountants

3. Methodology

3.1 Research design

The present study employed a descriptive-correlational approach and utilized Structural Equation Modeling (SEM). This field study was conducted at a single time point during the summer of 2022. Structural Equation Modeling (SEM) models are employed to elucidate how latent variables are elucidated by the corresponding observable variables (questions) or to illustrate the relationships between latent variables. One of the foremost justifications for using SEM in this research lies in its capacity to test theories by representing them as equations connecting variables. Another rationale for employing this method is its capability to account for measurement errors, thus enabling us to conduct data analysis while considering measurement inaccuracies.

3.2 Statistical population and samples

The statistical population for this study comprised both Iranian public and private accountants. Due to the diversity within this statistical population and the presence of the Coronavirus disease 2019 (COVID-19) within the study environment, an electronic research questionnaire was designed and administered using AvalForm. After distributing the questionnaire link and conducting multiple follow-ups, 468 complete questionnaires were collected. Cochran's formula was then employed to determine the sample size, which yielded a requirement of 384 questionnaires at a 95% confidence level. Consequently, as 468 questionnaires were obtained, they exceeded the adequacy criteria, allowing for the generalization of the results.

3.3 Instruments

We gathered data using a standardized questionnaire. The initial section of the questionnaire covered respondents' age, gender, work experience, educational background, and their field of accounting specialization. Financial Intelligence (FI) was assessed on a scale. To evaluate FI, we employed a Likert-type scale with five response options (1: not at all, 2: rarely, 3: sometimes, 4: most of the time, and 5: always) while analyzing the 25-item Indices of Financial Intelligence (IFI) developed by Igbokwe, Gerinde, and Adeoye (2014). In addition, we used Likert-type scales developed by Cui et al. (2021) for measuring risk propensity (5 items) and optimism (6 items). To gauge accountants' Attainment of Investment Objectives (AIOs) (6 items), we utilized the Alertness to Opportunity Scale, also proposed by Cui et al. (2021). In assessing Ambiguity Tolerance (AT), we adopted the Ambiguity Tolerance Scale developed by Cui et al. (2021). Both scales were presented in a Likert-type format (1: very low, 2: low, 3: moderate, 4: high, and 5: very high). We ensured

content validity by interviewing eight accounting, entrepreneurship, sociology, and professional investing experts. The questionnaire's reliability was assessed by calculating Cronbach's alpha coefficient, which indicated satisfactory reliability. In the pre-test phase, we distributed thirty questionnaires, and any identified issues were rectified accordingly.

3.4 Data analysis

We used IBM SPSS Statistics (version 26.0) and SmartPLS (version 3.0) for data analysis. In the initial phase, we presented descriptive statistics, encompassing frequency, mean, standard deviation, and minimum/maximum values. Inferential statistics were calculated using the partial least squares (PLS) estimation method. Partial Least Squares-Structural Equation Modeling (PLS-SEM) is recognized for its suitability in identifying significant explanatory factors within models and for predictive research. This approach aims to reduce and enhance the explanation of residuals in dependent indicators and constructs within the model (Dash and Paul, 2021; Richter et al., 2016). Conversely, covariance-based SEM (CB-SEM) is more appropriate when the research objective pertains to theory testing and confirmation. Subsequently, we evaluated the measurement model for the research variables, considering reliability, validity, and fit factors. Following this assessment, we conducted hypothesis testing.

4. Findings

4.1 Descriptive statistics

In this study, a total of 468 Iranian accountants employed in both public and private institutions participated, comprising 226 men and 242 women. It's worth noting that the study had a mean age of 29, with a standard deviation of 7.4 years. This relatively lower age range can be attributed to the limited participation of more senior accountants, perhaps less inclined to partake. However, the study successfully included a significant number of working students and recently graduated accountants. The data revealed that accountants, on average, possessed a level of education equivalent to a bachelor's or master's degree, with an average educational level of 4.78. The statistics corroborated these findings, which indicated that the participant pool consisted of 8 doctoral graduates, 266 senior experts holding master's degrees, and 194 experts who held bachelor's degrees, in addition to accounting students and recent graduates.

Table 1. The descriptive statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	468	19.000	46.000	29.030	7.402
Experience	434	1.000	20.000	4.060	4.146
Accounting Education	458	1.000	10.000	4.780	1.767
Ambiguity Tolerance	468	1.330	5.000	3.757	0.657
Optimism	468	1.340	5.000	3.745	0.788
Financial Intelligence	468	1.220	5.000	3.792	0.766
Risk-Taking	468	1.000	5.000	3.374	0.983
Alertness to Investment Opportunity	468	1.250	5.000	3.696	0.775

The results of the one-sample t-test indicate that the mean scores for all three variables were significantly higher than the midpoint of the Likert-type scale (i.e., 3). Specifically, Attainment of Investment Objectives (AIOs), Risk Tolerance (RT), and Financial Intelligence (FI) were observed to be 3.70, 3.37, and 3.79, respectively. Regarding education levels, the descriptive statistics reveal that mean AIOs were higher for accountants with higher education, namely, 3.59, 3.74, and 4.66 for bachelor's, master's, and doctoral degrees, respectively. In the case of FI, the mean scores for

individuals with bachelor's, master's, and doctoral degrees were 3.71, 3.84, and 4.52, respectively. The data suggest that as the education level of accountants increased, both FI and AIOs improved. However, these trends did not extend to accountants' Risk Tolerance (RT). Specifically, the mean RT scores for individuals with bachelor's, master's, and doctoral degrees were 3.47, 3.28, and 4.44, respectively, with the lowest RT mean score belonging to master's degree holders. You can find the detailed descriptive statistics in Table 1.

4.2 Inferential statistics

The Structural Equation Modeling (SEM) analysis was conducted to assess the research hypotheses, comprising two key phases: the evaluation of the measurement model and the assessment of the structural model. First, the measurement model of the research variables was examined, followed by the evaluation of the proposed conceptual model, i.e., the structural model. Subsequently, the results of these analyses are presented as follows.

4.3 Measurement model evaluation

In this study, we employed Confirmatory Factor Analysis (CFA) to assess the measurement model's validity, reliability, and fit. The goodness of fit (GoF) indices are reported in Table 2, while a summary of the outcomes of the measurement model evaluation is presented in Table 3. Additionally, Table 4 displays the correlation coefficients and the Average Variance Extracted (AVE).

4.4 Model fit

The GoF index was used to simultaneously calculate the fit of the structural and measurement models. This index could be computed using the geometric mean of the average communality and the average R2. Of note, the GoF index was devised by Tenenhaus et al. (2004) and computed by the following relationship:

$$\text{GoF} = \sqrt{\text{Average (Commonality)} \times \text{Average } (R^2)}$$

To evaluate the Goodness of Fit (GoF) index, we adopted the criteria proposed by Wetzels, Odekerken-Schroder, and Van-Oppen (2009), which categorize fit values as follows: weak (between 0.1 and 0.25), moderate (between 0.25 and 0.36), and strong (above 0.36). Our analysis yielded a GoF index of 0.50 based on the software output and the formula, indicating a favorable model fit. According to Tenenhaus et al. (2004), the GoF index is a useful tool to assess the model's fit, similar to the fit indices used in covariance-based modeling. This index ranges between zero and one, with values closer to one signifying high model quality. While this index was satisfactory for the overall evaluation of the fit in the measurement and structural models, we also examined the Standardized Root-Mean-Square Residual (SRMR) index. An SRMR value below 0.10 indicates an excellent fit for the proposed model, as Hair et al. (2017) and Henseler et al. (2014) recommended. As depicted in Table 2, the GoF indices for the measurement model evaluation in this study are indeed favorable.

4.5 Composite reliability (CR)

According to Hair et al. (2017), a construct was desirable if its CR value was equal to or greater than 0.7. The results in Table 3 depict that the CR value for all research variables is greater than 0.7, so they were satisfactory.

Table 2. GOF indices of the measurement model of the study

Fitness index	GOF	SRMR
Suggested value	>0.25	<0.10
Estimated value	0.50	0.088

4.6 Convergent validity (CV)

It is appropriate if the AVE value for each variable is equal to 0.5 or more, as Hair et al. (2017) stated. The results in Table 3 confirm that the AVE in the measurement model here is favorable.

Table 3. Measurement model evaluation results

Latent Variable	Items	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Ambiguity Tolerance	5	0.676	0.814	0.594
Optimism	6	0.742	0.851	0.656
Risk-Taking	5	0.841	0.903	0.757
Alertness to Investment Opportunity	6	0.840	0.893	0.677
Financial Intelligence	25	0.880	0.901	0.507

4.7 Discriminant validity (DV)

Based on the criterion of Fornell and Larcker (1981), the DV of variables could be confirmed if the AVE square root for each construct was higher than the estimated correlation between that construct and others in the research model. According to the results presented in Table 4, the AVE for each model construct (0.71< AVE <0.87) was greater than the correlation (0.33< r <0.51) between all. Thus, the DV of all research variables in the measurement model was suitable.

Table 4. Discriminant validity (The criterion of Fornell and Larcker, 1981)

	Latent Variable	1	2	3	4	5
1	Alertness to Investment Opportunity	0.823				
2	Ambiguity Tolerance	0.477	0.771			
3	Financial Intelligence	0.478	0.365	0.712		
4	Optimism	0.511	0.385	0.393	0.810	
5	Risk-Taking	0.418	0.348	0.338	0.358	0.870

Note: The diameter numbers of the table are the square root of each AVE and the lower diameter elements are the correlation coefficients between the constructs

4.8 Structural model evaluation

Once the measurement model was confirmed using the CFA, path analysis was utilized to test the research hypotheses. Therefore, the structural model with standardized path coefficients and the significance value (t-statistic) is illustrated in Figures 2 and 3, respectively. The summary of the structural model evaluation is also given in Table 5.

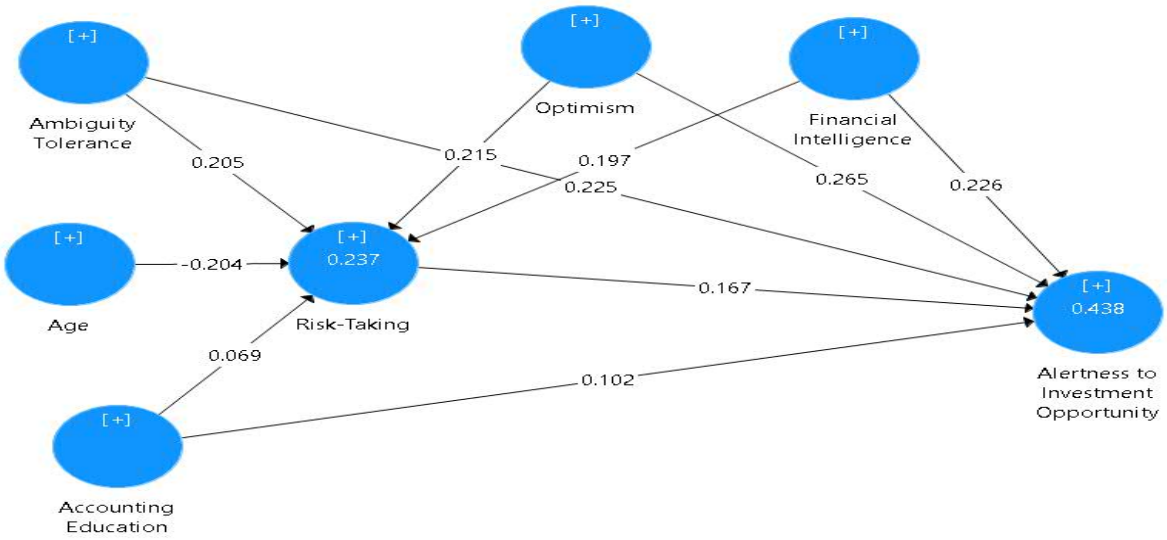

Figure 2. The structural model with standardized path coefficients

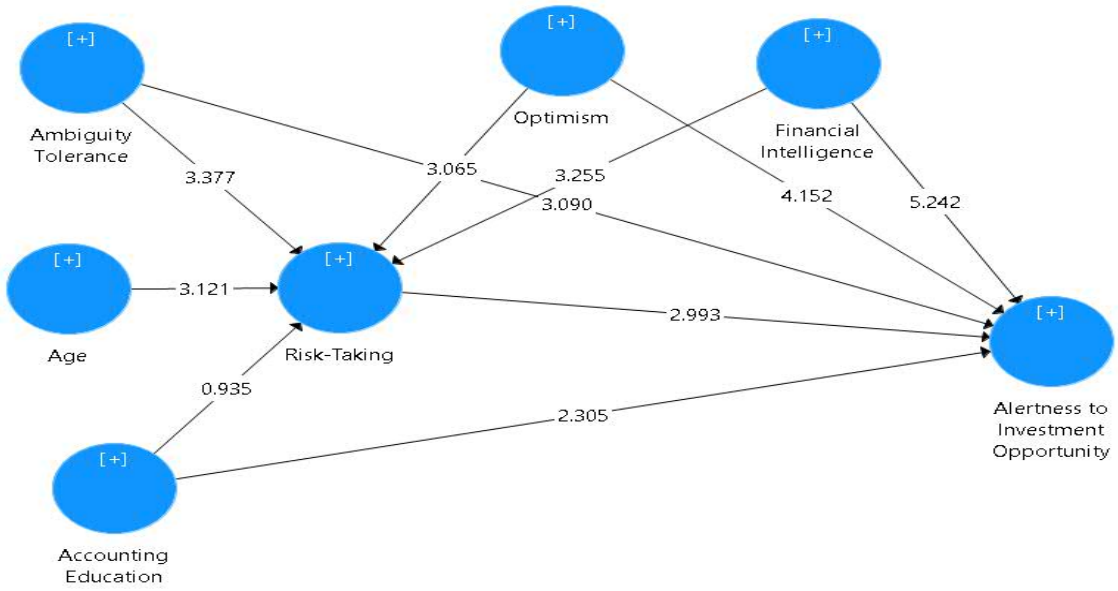

Figure 3. The structural model with t-statistics

To examine the presence of Common Method Bias (CMB), we conducted a multicollinearity test developed by Kock and Lynn (2012). Multicollinearity is indicated by Variance Inflation Factors (VIFs) exceeding 3.3, which may suggest the presence of CMB in the model, as outlined by Kock (2015). In our analysis, all independent variables displayed VIFs within the range of 1.02 to 1.50. Given that all the VIF values for the independent variables were below the threshold of 3.3, the evaluation results of the proposed research model were found to be unbiased and, importantly, reliable in this context.

Table 5. Structural model evaluation results

Direct Path	Path Coefficients	T Statistics (|O/STDEV|)	P-Values	
Accounting Education -> Alertness to Investment Opportunity	0.102	2.305	0.022	Accept
Accounting Education -> Risk-Taking	0.069	0.935	0.350	Reject
Age -> Risk-Taking	-0.204	3.121	0.002	Accept
Ambiguity Tolerance -> Alertness to Investment Opportunity	0.225	3.090	0.002	Accept
Ambiguity Tolerance -> Risk-Taking	0.205	3.377	0.001	Accept
Financial Intelligence -> Alertness to Investment Opportunity	0.226	5.242	0.000	Accept
Financial Intelligence -> Risk-Taking	0.197	3.255	0.001	Accept
Optimism -> Alertness to Investment Opportunity	0.265	4.152	0.000	Accept
Optimism -> Risk-Taking	0.215	3.065	0.002	Accept
Risk-Taking -> Alertness to Investment Opportunity	0.167	2.993	0.003	Accept
Q^2=0.268		R^2=0.438		

As depicted in Table 5, the first and third hypotheses were confirmed when analyzing the path coefficients between the research variables at the 99% confidence interval (CI). In other words, the relationship between RT and AIO could increase as Financial Investment (FI) increases among experienced accountants. The results of testing the second research hypothesis also demonstrate that RT positively influences Accountants' Investment Opportunities (AIOs) ($p = 0.003$). Accountants with higher RT scores exhibited increased AIOs. The research findings also indicate that optimism positively affected RT and AIOs in accountants ($p < 0.01$). Consequently, optimistic accountants tend to take more risks during investments and excel when presented with investment opportunities. As a result, the fourth and fifth research hypotheses were substantiated. Regarding the analysis of the sixth and seventh hypotheses, Attitude Towards Risk (AT) positively affected accountants' RT and AIOs ($p < 0.01$). Consequently, accountants with a higher AT tended to take more risks and displayed greater AIOs. Both of these views were confirmed. However, no significant relationship was observed between accountants' level of education and RT, according to the research findings in Table 5. Thus, the eighth research hypothesis was rejected. Moreover, the results in Table 5 indicate that accounting education positively impacts accountants' AIOs ($p < 0.05$). Specifically, individuals with higher levels of accounting education demonstrated a greater propensity for AIOs. Additionally, the research findings revealed that accountants' age negatively impacted their RT ($p < 0.01$). Consequently, the tenth research hypothesis was not rejected.

4.9 Predictive relevance (Q^2)

The Q2 index was introduced by Stone (1974) to determine the predictive power of the model. According to Henseler, Ringle, and Sinkovics (2009), the weak predictive power of a model could occur when the Q2 value of a construct was close to 0.02. Still, the model's moderate and strong predictive power means this value had been closer to 0.15 and higher than 0.35, respectively. The correlation coefficient of AIOs as a predictor variable was approximately equal to 0.27 (Table 5); therefore, the proposed research model had the appropriate predictive power at a moderate level to

account for the changes in AIOs. Of note, the Q2 value for RT was 0.16.

5. Discussion and Conclusion

Individual investors in various societies encounter challenges when making effective and efficient investments with their savings and comprehending upcoming investment opportunities (Haws, 2021). Assessing investment opportunities can be particularly daunting for investors lacking accounting, finance, or investment knowledge. Given the significant advancements in capital markets, the growth of innovative entrepreneurial endeavors, and the expansion of financial and investment prospects, understanding the factors and characteristics that influence their ability to identify opportunities and make informed, efficient investments is paramount. Since accountants employed by businesses and organizations are well-versed in fundamental accounting, finance, and investment concepts, this study sought to investigate the impact of several financial variables (specifically, FI, AT, optimism, education level, and age) on the Risk Tolerance (RT) and investment awareness of accountants working within Iran's public and private institutions. Additionally, the study delved into the influence of RT on Accountants' Investment Opportunities (AIOs) within this group, shedding light on its role in elucidating these variables.

With a 99% confidence level, it was determined that the first and third research hypotheses collectively positively impact both Risk Tolerance (RT) and Accountants' Investment Opportunities (AIOs) at a 1% error rate. In simpler terms, as Financial Investment (FI) increases among experienced accountants, RT and AIOs may also increase. These findings align with the conclusions drawn by Sages and Grable (2010) and Almenberg and Widmark (2011), who suggested that enhancing FI and financial skills can positively influence risk tolerance. Additionally, Berman et al. (2008), Sages and Grable (2010), Kamil et al. (2014), and Grable and Joo (2000) all found that greater financial knowledge and skills lead to improved financial and investment decision-making. Based on these insights, it becomes evident that utilizing training programs and in-service courses to enhance the financial, accounting, and investment knowledge and skills of accounting students, graduates, and practicing accountants can elevate their financial acumen. This, in turn, can enhance individual economic decision-making and their awareness of investment opportunities. In the subsequent analysis, the second research hypothesis unveiled that RT positively influences AIOs; accountants with higher RT scores exhibited increased AIOs. According to general capital market theories, high-yield investment opportunities are often linked to higher risk tolerance levels, a perspective shared by Bayar et al. (2020) and Nguyen et al. (2016).

In line with this, optimism positively impacts the Risk Tolerance (RT) of accountants contemplating new investments. Consequently, optimistic accountants tend to embrace higher levels of risk in their investment endeavors. These findings align with and corroborate Foo's (2011) discovery that optimistic individuals are more likely to invest in ventures characterized by higher risk. This propensity stems from the fact that optimists typically downplay or assign lesser significance to uncertainty in their investment outcomes and any unfavorable information regarding future investment prospects. Moreover, based on the outcomes of testing the fifth research hypothesis, optimism also demonstrates a positive influence on accountants' Accountants' Investment Opportunities (AIOs). In other words, optimistic accountants tend to excel when presented with investment prospects. This finding corresponds with Gakhar's (2019) observation that optimism can significantly influence investment decisions, and it echoes the insights from Kahneman and Tversky (1979), who noted that optimistic investors are more likely to achieve financial success.

The outcomes of the sixth and seventh research hypotheses testing revealed that Attitude Towards Risk (AT) has a positive influence on both Risk Tolerance (RT) and Accountants' Investment Opportunities (AIOs) in accountants who are contemplating investments. In essence, accountants with a higher AT are more inclined to take on increased levels of risk and exhibit greater AIOs. These findings align with the research conducted by Furnham and Ribchester (1995), which indicates that individuals with a stronger AT tend to have a heightened interest in future opportunities and ambiguities. The study results corroborate the findings presented by Haws (2021), demonstrating that investors who display higher RT levels are more willing to accept volatility and uncertainty in future investment prospects, consequently achieving superior performance. RT plays a crucial role in the decision-making process when dealing with ambiguity and uncertainty, as highlighted by Bechara et al. (2005) and Krain et al. (2006), where taking risks can lead to both positive and negative outcomes.

Furthermore, the examination of the eighth hypothesis yielded no significant correlation between the level of education and Risk Tolerance (RT) among accountants, which contrasts with the findings of Grable (2000), Sages and Grable (2010), Yao et al. (2011), and McInish (1982), all of which indicated a positive association between higher education levels and RT. Nevertheless, the results align with the conclusions drawn by Hallahan et al. (2003). These findings could potentially be attributed to a combination of overconfidence and conservatism among accountants or influenced by the particular orientations of the participants. On the other hand, the results of testing the ninth research hypothesis unveiled a positive impact of accounting education on Accountants' Investment Opportunities (AIOs). In particular, individuals with higher levels of accounting education tend to possess greater AIOs. Sages and Grable (2010) suggested that those with lower financial and accounting education levels might face wealth creation challenges. Likewise, Haws (2021) determined that better-educated investors are better equipped to leverage investment opportunities and make informed decisions, thus supporting the findings presented here.

Studies exploring the relationship between age and Risk Tolerance (RT) can be categorized into three distinct groups. First, some studies have found no significant correlation between these two variables, although such studies are relatively limited. Second, some research has indicated a negative relationship between age and RT, while thirdly, there are studies that have identified a positive relationship between age and risk aversion. Notably, both the second and third categories of research demonstrate that RT declines with age in the context of investment. As a result, the outcomes of testing the final research hypothesis confirm this trend, emphasizing that age has a negative impact on RT among accountants. This aligns with the findings reported by Hallahan et al. (2003, 2004), Wallach and Kogan (1961), McInish (1982), Morin and Suarez (1983), Bakshi and Chen (1994), and Palsson (1996).

In summary, the Risk Tolerance (RT) and Accountants' Investment Opportunities (AIOs) of accountants were significantly influenced by Financial Investment (FI), Attitude Towards Risk (AT), and optimism. Investors willing to take on greater risks reported higher AIOs and demonstrated better investment performance. Furthermore, accountants' RT was affected by their age, while higher levels of education were shown to enhance their success in investing. As a result, this study can serve as a foundation for establishing guidelines regarding accountants' RTs and AIOs. The practical insights drawn from this research can be valuable for lawmakers, policymakers, standard-setting bodies, and higher education planners, empowering them to make well-informed decisions in the investment process and ensuring efficient resource allocation and collaboration. This may include offering training programs for business development within the community and providing education to entrepreneurs, business professionals, and individuals interested in investment and innovation, both in formal and informal educational settings, thereby promoting sound decision-making. Undergraduate and higher education students can leverage these findings to deepen their knowledge

and skills in finance and accounting related to Financial Investment (FI). Moreover, the research findings can also be of interest to investors who seek to acquire the necessary skills for making effective and efficient investments, ultimately leading to a higher return on investment.

Future studies may explore the impact of various other factors, such as computational intelligence, emotional intelligence, overconfidence, and self-deprecation, on Risk Tolerance (RT) and Accountants' Investment Opportunities (AIOs) among accountants and other individuals involved in investment decision-making. It's worth noting that, in the current study, gender was not considered. However, accountants did investigate AIOs, encompassing stocks, assets, and other options. Nevertheless, accountants may have a limited inclination to invest in areas beyond the stock market or banking and financial institutions. This aspect could be explored in future research. One of the limitations of this study was the relatively young sample, with an average age of 29, consisting mostly of individuals with bachelor's and master's degrees. Consequently, the results may not be readily generalized to more experienced or senior accountants.

References

1. Almenberg, J., and Widmark, J. (2011). Numeracy, financial literacy, and participation in asset markets. *SSRN Electronic Journal.* 1(1), pp. 1–40. http://dx.doi.org/10.2139/ssrn.1756674.
2. Astebro, T., Herz, H., Nanda, R., and Weber, R. A. (2014). Seeking the roots of entrepreneurship: insights from behavioral economics. *Journal of Economic Perspectives*, 28(3), pp. 49–69. https://doi.org/10.1257/jep.28.3.49
3. Baker, H. K., and Nofsinger, J. R. (2002). Psychological biases of investors. *Financial Services Review*, 11(5), pp. 97–116. https://www.proquest.com/openview/71733cc3dac821b5a48b3a06bf8da7ca/1?pq-origsite=gscholar&cbl=31458
4. Bakshi, G. S., and Chen, Z. (1994). Baby boom, population aging, and capital markets. *Journal of Business*, 67(2), pp. 163-202. https://doi.org/10.1086/296629
5. Barber, B., and Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *Quarterly Journal of Economics*, 116, pp. 261–292. https://doi.org/10.1162/003355301556400
6. Bayar, Y., Sezgin, H. F., Öztürk, O. F., and Şaşmaz, M. U. (2020). Financial literacy and financial risk tolerance of individual investors: Multinomial logistic regression approach. *SAGE Open*, 10(3), pp. 1-11. https://doi.org/10.1177/2158244020945717
7. Bechara, A., Damasio, H., Tranel, D., and Damasio, A. R. (2005). The Iowa Gambling Task and the somatic marker hypothesis: some questions and answers. *Trends in Cognitive Sciences*. 9(4), pp. 159–162. https://doi.org/10.1016/j.tics.2005.02.002
8. Berman, K., Knight, J., and Case, J. (2008). Financial intelligence for entrepreneurs: what you need to know about the numbers. Cambridge, MA: Harvard: Business School Press. Cambridge. https://hbsp.harvard.edu/product/1915-PDF-ENG
9. Brand, M., Recknor, E. C., Grabenhorst, F., and Bechara, A. (2007). Decisions under ambiguity and decisions under risk: correlations with executive functions and comparisons of two different gambling tasks with implicit and explicit rules. *Journal of Clinical and Experimental Neuropsychology*, 29(1), pp. 86–99. https://doi.org/10.1080/13803390500507196
10. Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, 30(1), pp. 29–50. https://doi.org/10.1111/j.1467-6494.1962.tb02303.x
11. Cole, S., and Shastry, G. K. (2008). If you are so smart, why aren't you rich? Education, financial literacy, and cognitive ability affect financial market participation. Cambridge, Mass: Harvard

Business School. https://doi.org/10.2307/j.ctvc7778k.5
12. Cui, J., Sun, J., and Bell, R. (2021). The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: The mediating role of inspiration and the role of educational attributes. *The International Journal of Management Education*, 19(1), pp. 100278-100296. https://doi.org/10.1016/j.ijme.2019.04.001
13. Dash, G., and Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, A. 121092. https://doi.org/10.1016/j.techfore.2021.121092
14. Endres, M. L., Chowdhury, S., and Milner, M. (2009). Ambiguity tolerance and accurate assessment of self-efficacy in a complex decision task. *Journal of Management & Organization*, 15, pp. 31–46. https://doi.org/10.1017/s1833367200002868
15. Foo, M. (2011). Emotions and entrepreneurial opportunity evaluation. *Entrepreneurship Theory and Practice*, 35(2), pp. 375-393. https://doi.org/10.1111/j.1540-6520.2009.00357.x
16. Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservables variables and measurement error. *Journal of High Technology Management Research*, 11(1), pp. 137-153. https://doi.org/10.2307/3151312
17. Furnham, A., and Ribchester, T. (1995). Tolerance of ambiguity: A review of the concept, its measurement and applications. *Current Psychology*, 14(3), pp. 179–199. https://doi.org/10.1007/bf02686907
18. Gerardi, K., Goette, L., and Meier, S. (2010). Financial literacy and subprime mortgage delinquency: evidence from a survey matched to administrative data. Federal Reserve Bank of Atlanta. *Diane Publishing, 2010 SSRN Electronic Journal*. 1(1), pp. 1-51 https://doi.org/10.2139/ssrn.1600905
19. Gakhar, D. (2019). Role of optimism bias and risk attitude on investment behaviour. *Theoretical Economics Letters*, 9, pp. 852-871. https://doi.org/10.4236/tel.2019.94056
20. Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk taking in everyday money matters. *Journal of Business and Psychology*, 14(4), pp. 625-630. https://doi.org/10.1023/a:1022994314982
21. Grable, J. E., and Joo, S. H. (2000). A cross-disciplinary examination of financial risk tolerance. *Consumer Interests Annual*, 46(3), pp. 151-157. https://doi.org/10.1007/978-3-319-28887-1_2
22. Grable, J., and Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review*, 8(3), pp. 163-181. https://doi.org/10.1016/s1057-0810(99)00041-4
23. Green, C. P., and Heywood, J. S. (2011). Flexible contracts and subjective well-being. *Economic Inquiry*, 49(3), pp. 716-729. https://doi.org/10.1111/j.1465-7295.2010.00291.x
24. Guiso, L., and Paiella, M. (2008). Risk aversion, wealth and background risk. *Journal of the European Economic Association*, 6(6), pp. 1109-1150. https://doi.org/10.1162/jeea.2008.6.6.1109
25. Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., and Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science*, 45, pp. 616-632. https://doi.org/10.54055/ejtr.v6i2.134
26. Haws, M. K. (2021). Investor investment choices for better decision-making among investment options. A dissertation submitted in partial fulfillment of the requirements for the degree of PhD of Business Administration: Accounting. Baker College. Flint, Michigan. https://www.proquest.com/openview/b6970bc76db7460010c420cad83f272d/1?pq-origsite=gscholar&cbl=18750&diss=y

27. Henseler, J., Ringle, C.M. and Sinkovics, R.R. (2009), The use of partial least squares path modeling in international marketing, Sinkovics, R.R. and Ghauri, P.N. (Ed.) New Challenges to International Marketing (Advances in International Marketing, Vol. 20), Emerald Group Publishing Limited, *Bingley*, pp. 277-319. https://doi.org/10.1108/S1474-7979(2009)0000020014
28. Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., Ketchen, D. J., Hair, J. F., Hult, G. T. M., and Calantone, R. J. (2014). Common beliefs and reality about partial least squares: Comments on Rönkkö & Evermann (2013). *Organizational Research Methods*, 17(2), pp. 182-209. https://doi.org/10.1177/1094428114526928
29. Huhmann, B. A., and McQuitty, S. (2009). A model of consumer financial numeracy. *International Journal of Bank Marketing*, 27, pp. 270-293. https://doi.org/10.1108/02652320910968359
30. Hallahan, T., Faff, R., and McKenzie, M. (2003). An exploratory investigation of the relation between risk tolerance scores and demographic characteristics. *Journal of Multinational Financial Management*, 13(4-5), pp. 483-502. https://doi.org/10.1016/s1042-444x(03)00022-7
31. Hallahan, T., Faff, R., and McKenzie, M. (2004). An empirical investigation of personal financial risk tolerance. *Financial Services Review*, 13(1), pp. 57-78. https://www.proquest.com/docview/212017690
32. Hey, J. D. (1984). The economics of optimism and pessimism. *Kyklos*, 37(2), pp. 181–205. https://doi.org/10.1111/j.1467-6435.1984.tb00748.x
33. Igbokwe, D., Gesinde, A., and Adeoye, T. A. (2014). Development and validation of indices of financial intelligence among a cross-section of Nigerian private university students. *International Journal of Business and Management Study*, 1(3), pp. 76-80. https://www.researchgate.net/publication/306038231_DEVELOPMENT_AND_VALIDATION_OF_INDICES_OF_FINANCIAL_INTELLIGENCE_AMONG_A_CROSS-SECTION_OF_A_NIGERIAN_PRIVATE_UNIVERSITY_STUDENTS
34. Kahneman, D., and Riepe, M. W. (1998). Aspects of investor psychology. *Journal of Portfolio Management*, 24(4), pp. 52–65. https://doi.org/10.3905/jpm.1998.409643
35. Kahneman, D., and Tversky, A. (1979). Intuition prediction: biases and corrective procedures. *Management Science*, 12, pp. 313-27. https://doi.org/10.1017/cbo9780511809477.031
36. Kamil, N. S. S. N., Musa, R., and Sahak, S. Z. (2014). Examining the role of financial intelligence quotient (FiQ) in explaining credit card usage behavior: A conceptual framework. *Procedia - Social and Behavioral Sciences*, 130, pp. 568-576. https://doi.org/10.1016/j.sbspro.2014.04.066
37. Kim, K. A. and Nofsinger, J. R. (2007). The Behaviour of Japanese Individual Investors during Bull and Bear Markets. *The Journal of Behavioral Finance*, 8(3), pp. 138-153. https://doi.org/10.1080/15427560701545598
38. Kock, N., and Lynn, G. S. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for Information Systems*, 13(7), pp. 546-580. https://doi.org/10.17705/1jais.00302
39. Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), pp. 1-10. https://doi.org/10.4018/ijec.2015100101
40. Krain, A. L., Wilson, A. M., Arbuckle, R., Castellanos, F. X., and Milhama, M. P. (2006). Distinct neural mechanisms of risk and ambiguity: a meta-analysis of decision-making. *Neuroimage*, 32, pp. 477–484. https://doi.org/10.1016/j.neuroimage.2006.02.047
41. Lusardi, A. (2008). Household saving behavior: The role of financial literacy, information, and

financial education programs. National Bureau of Economic Research, NBER Working Paper No. 13824. Federal Reserve Bank of Boston, 2009, pp. 109-149. https://doi.org/10.3386/w13824
42. Meza, D., and Southey, C. (1996). The borrower's curse: optimism, finance and entrepreneurship. *Economic Journal*, 106(435), pp. 375–386. https://doi.org/10.2307/2235253
43. Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., and Smith, J. B. (2002). Toward a Theory of Entrepreneurial Cognition: Rethinking the People Side of Entrepreneurship Research. *Entrepreneurship Theory and Practice*, 27(2), pp. 93–104. https://doi.org/10.1111/1540-8520.00001
44. McInish, T. H. (1982). Individual investors and risk-taking. *Journal of Economic Psychology*, 2(2), 125–136. https://doi.org/10.1016/0167-4870(82)90030-7
45. Morin, R. A., and Suarez, A. F. (1983). Risk aversion revisited. *Journal of Finance*, 38(4), pp. 1201-1216. https://doi.org/10.1111/j.1540-6261.1983.tb02291.x
46. Morris, M. H., Webb, J. W., Fu, J., and Singhal, S. (2013). A Competency-Based Perspective on Entrepreneurship Education: Conceptual and Empirical Insights. *Journal of Small Business Management*, 51(3), pp. 352–369. https://doi.org/10.1111/jsbm.12023
47. Naeiji, M., and Esfandiari, Z. (2015). The effect of overconfidence and optimism on decision to start innovative activities: the mediating role of risk perception (Case study: the companies of university incubators). *Journal of Entrepreneurship Development*, 8(3), pp. 531-550 [In Persian]. 10.22059/JED.2015.57649
48. Ng, D. (2013). Seeing through the fog of ambiguity: Entrepreneurial judgments under decision settings of complexity. *Human Systems Management*, 32(1), pp. 57–66. https://doi.org/10.3233/hsm-130784
49. Nguyen, L. T. M., Gallery, G., and Newton, C. (2016). The influence of financial Risk tolerance on investment decision-making in a financial advice context. *Australasian Accounting, Business and Finance Journal*, 10(3), pp. 3-22. https://doi.org/10.14453/aabfj.v10i3.2
50. Pålsson, A.-M. (1996). Does the degree of relative risk aversion vary with household characteristics? *Journal of Economic Psychology*, 17(6), pp. 771–787. https://doi.org/10.1016/s0167-4870(96)00039-6
51. Pompian, M. M. (2006). Behavioural finance and wealth management: How to build optimal portfolios that account for investor biases. New York: John Wiley & Sons, Inc. New York, U.S. https://doi.org/10.1002/9781119202400
52. Puri, M., and Robinson, D.T. (2007). Optimism and economic choice. *Journal of Financial Economics*, 86(1), pp. 71-99. https://doi.org/10.1016/j.jfineco.2006.09.003
53. Remund, D. L. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of Consumer Affairs*, 44(2), pp. 276–295. https://doi.org/10.1111/j.1745-6606.2010.01169.x
54. Richter, N. F., Cepeda, G., Roldán, J. L., and Ringle, C. M. (2016). European management research using partial least squares structural equation modeling (PLS-SEM). *European Management Journal*, 34(6), pp. 589–597. https://doi.org/10.1016/j.emj.2016.08.001
55. Sages, R. A., and Grable, J. E. (2010). Financial numeracy, net worth, and financial management skills: client characteristics that differ based on financial risk tolerance. *Journal of Financial Service Professionals*, 64(6), pp. 57-65. https://fpperformancelab.org/wp-content/uploads/Financial-Numeracy-Net-Worth-and-Financial-Management-Skills-Client-Characteristics-that-Differ-based-on-Financial-Risk-Tolerance.pdf
56. Sahi, S. K. (2017). Psychological biases of individual investors and financial satisfaction. *Journal of Consumer Behaviour*, 16(6), pp. 511–535. https://doi.org/10.1002/cb.1644
57. Sahi, S. K., Dhameja, N., and Arora, A. P. (2012). Predictors of preference for financial

investment products using CART analysis. *Journal of Indian Business Research*, 4(1), pp. 61–86. https://doi.org/10.1108/17554191211206807

58. Shefrin, H. (2002). Beyond greed and fear: Understanding behavioural finance and the psychology of investing. Boston: Harvard Business School Press. https://doi.org/10.1093/0195161211.001.0001
59. Simon, M., and Houghton, S. M. (2003). The relationship between overconfidence and introducing risky products: Evidence from a field study. *Academy of Management Journal*, 46(2), pp. 139-149. https://doi.org/10.2307/30040610
60. Slovic, P. (1972). A psychological study of human judgment: Implications for investment decision making. *The Journal of Finance*, 27(4), pp. 779–799. https://doi.org/10.1111/j.1540-6261.1972.tb01311.x
61. Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society*, 36(2), pp. 111-147. https://doi.org/10.1111/j.2517-6161.1974.tb00994.x
62. Tenenhaus, M., Amato, S., and Esposito Vinzi, V. (2004, June). A global goodness-of-fit index for PLS structural equation modelling. *In Proceedings of the XLII SIS scientific meetin*g, 1(2), pp. 739–742. https://doi.org/10.1002/cem.917
63. Thaler, R. H. (1999). Mental accounting matters. Journal of Behavioral Decision Making, 12(3), pp. 183–206. https://doi.org/10.1002/(sici)1099-0771(199909)12:3<183::aid-bdm318>3.0.co;2-f
64. Toricelli, M., Pereira, A. A. R., Abrao, G. S., Malerba, H. N., Maia, J., Buck, H. S., and Viel, T. A. (2021). Mechanisms of neuroplasticity and brain degeneration: strategies for protecting during aging. *Neural Regen Res*, 16(1), pp. 58-67. https://doi.org/10.4103/1673-5374.286952
65. Tversky, A., and Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science*, 211(4481), pp. 453–458. https://doi.org/10.1126/science.7455683
66. Wallach, M. A., and Kogan, N. (2007). Aspects of judgment and decision making: Interrelationships and changes with age. *Behavioral Science*, 6(1), pp. 23–36. https://doi.org/10.1002/bs.3830060104
67. Weber, M., Weber, W. U., and Nosic, A. (2012). Who takes risks when and why: Determinants of changes in investor risk taking. *Review of Finance*, 17(3), pp. 847-883. https://doi.org/10.1093/rof/rfs024
68. Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), pp. 806–820. https://doi.org/10.1037/0022-3514.39.5.806
69. Wetzels, M., Odekerken-Schröder, G., and Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *Management Information Systems Quarterly*, 33(1), pp. 177-195. https://doi.org/10.2307/20650284
70. Yao, R., Sharpe, D. L. and Wang, F. (2011). Decomposing the age effect on risk tolerance. *The Journal of Socio-Economics*, 40(6), pp. 879-887. https://doi.org/10.1016/j.socec.2011.08.023
71. Xu, H., and Tracey, T. J. G. (2014). The role of ambiguity tolerance in career decision making. *Journal of Vocational Behavior*, 85(1), pp. 18–26. https://doi.org/10.1016/j.jvb.2014.04.001