Research Article

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Studying the Impact of Certain Behavioural Antecedents on Investment Intention: Evidence from Saudi Arabia

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Abstract

Investment and intention to invest is now a matter and hot topic of serious discussion amongst academics, policymakers, social scientists, finance experts, and corporations, particularly in developing countries. However, systematic studies that examine the antecedent behaviours of investment intention are scant. This study was undertaken to bridge this gap in the existing literature by focusing on how behavioural antecedents like financial literacy, financial planning, and risk tolerance influence investment intention. Data for the study was collected online from 405 samples using four structured and standardized questionnaires. The data were analysed using PLS-SEM. The study results indicate that all the proposed paths clearly impacted investment intention. The study is an intense interest to scholars and financial experts, as it is the first to be conducted in Saudi Arabia to examine various behavioural antecedents on investment intention. It is sincerely expected that this study will act as a catalyst for more and further studies in Saudi Arabia and the region.

Keywords: *Financial literacy, Financial planning, Risk tolerance, Investment intention, Intention to invest, Investment decision, Behavioural finance, Saudi Arabia*

1. Introduction

Investments form the foundation of any economy and its sustainability. If investors make poor financial decisions, society and the economy are forced to pay the price. A comprehensive examination of the 2008 Global Financial Crisis reveals that the troubles arose due to the US housing bubble burst caused by the financial institutions and investors' irrational optimism that house prices would continue to rise. However, prices did not react as planned, resulting in a financial crisis affecting a large number of economies and financial markets across the world. This incident has prompted governments and financial experts to consider financial literacy as a form of social welfare and take responsibility for improving the quality of investor financial decisions. Furthermore, financial and investment techniques are becoming increasingly important to people worldwide, including Saudi Arabia. It is now a matter of serious discussion amongst academics, policymakers,

social scientists, as well as management and finance experts. Therefore, this study comes to fill the gap in the existing literature, as well as to understand how behavioural factors may impact an individual's investment decision. Behavioural finance studies examine how cognitive bias and emotions influence financial decision-making, such as personal investment decisions and retirement plans (Muradoglu and Harvey (2012); D. Kahneman and Tversky (2013); Shiv, Loewenstein, Bechara, Damasio, and Damasio (2005); Holden (2010); Taffler (2018); Charles and Kasilingam (2015); Cantarella, Hillenbrand, and Brooks (2023).

There is substantial empirical evidence in the existing literature on the impact of attitudes towards financial decisions and behavioural intentions (Ali (2011); Phan and Zhou (2014); Pahlevi and Oktaviani (2018); Mudzingiri (2019); Raut (2020); Akhter and Hoque (2022). The most proximal determinant of any behaviour, which individual attitudes determine, is intention (Norman, Webb, and Millings (2019); Pahlevi and Oktaviani (2018); Conner and Norman (2022). A fair understanding of the association between behavioural intentions, financial literacy, propensities, and financial risk tolerance would help consultants and investment managers to identify individual tolerance levels and design financial products and services accordingly or make appropriate adjustments to the portfolio. The fiduciary and legal responsibilities of consultants and advisors require them to make clients financially literate, accurately determine their risk tolerance levels, and recommend an optimal investment portfolio (Rattiner, 2010) Further, individual risk tolerance influences the stock market via the stock price and trading volume, emphasizing the need to accurately understand financial risk tolerance levels Hirshleifer (2001); and Shefrin (2002). By interpreting the relationship among various behavioural propensities, financial risk tolerance helps identify preferred investments. For instance, if an individual has a propensity for overconfidence, it can be presumed that their willingness to take risks would be higher (high propensity for risk tolerance) and would possibly invest in risky investment avenues. Generally, risky investments are more likely, with high-risk tolerance and vice-versa (Grable, Roszkowski, Joo, O'Neill, and Lytton (2009); M. D. Kumar, Kambuaya, Jamil, and Muneer (2015); Nguyen, Gallery, and Newton (2019); Rahman, Albaity, and Isa (2020); Rahman (2020).

Literature about the combined effect of financial literacy, planning, and risk tolerance on investment intention is lacking, and there are deficiencies. The available literature is about the impact of either of the variables on intention to invest. The current work intends to fill this gap in the literature. Further, this study is undertaken in Saudi Arabia, where scant evidence exists about behavioural variables and their impact on investment decisions. The contribution of this study is likely to be multi-fold. Earlier literature focussed primarily on attitudes and purchase intentions (Fünfgeld and Wang (2009); Kalia, Zia, and Kaur (2022), and less focus has been made on the intention to invest; hence, a detailed examination is plausible and required. Furthermore, from a contextual standpoint, there is limited research evidence in emerging economies such as Saudi Arabia, which are seeing continuous improvement in investment, aiming to propel systems toward efficiency and sustainability through implementing new laws and regulations. These investment-friendly laws and regulations have positively impacted the consumer appetite for investment and attitude towards investments.

The paper proceeds as follows. Initially, it discusses the literature related to the variables, followed by formulating the research hypotheses. The next step is defining the data set and methodology, including the reliability and validity of the variables, and then analyses. A discussion of the findings in the backdrop of the related literature follows this. The last sections consist of theoretical and practical implications, limitations, and suggestions for future studies, followed by the conclusion.

2. Literature Review

Behavioural finance (BF) is a harmonious blend of psychology and finance. It deals with the psychological factors influencing investor decisions (Ritter, 2003; Baker & Nofsinger, 2010; Hirshleifer,

2015; Muradoglu & Harvey, 2012; Sulphey, 2014; Raut, 2020). Many behavioural scientists have enriched BF. Some of the significant contributions are made by Thaler (1980); Shefrin (2002); Ritter (2003); D. Kahneman and Tversky (2013); and Hirshleifer (2015). BF proposes that investment decisions have their basis in multiple psychological and behavioural decision theories. The discipline discusses concepts like loss aversion and overconfidence and how psychological factors influence financial decisions (D. Kahneman & Tversky, 1979). Financial literacy would help to alleviate biases through accurate information and reduction of overconfidence. In addition, financial planning facilitates behavioral insights and help address and counter biases, leading to informed investment intentions. One of the most important BF theory is the prospect theory, propounded by T. Kahneman (1979). The theory was originally introduced as an alternative to the Rational expectations theory and the Efficient market hypothesis. However, it was applied to financial markets by Thaler (1980). His main contention was that individuals are not always rational. They are prone to mistakes while making investment decisions. This study is based on the Prospects theory. The current research also derived inputs from the social cognitive and social learning theories.

Another theory from which the current study derives inputs is the financial literacy framework (FLF). According to Lusardi and Mitchell (2014), financial literacy is the key and one of the main factors for making effective financial decisions. It involves knowledge and application of financial concepts to make informed financial decisions. Financial literacy directly impacts financial planning as it provides the required knowledge to generate realistic financial goals and strategies. Risk tolerance derived from financial literacy will help investors understand and manage risks, as they are better informed and are, hence, likely to engage in investing. Based on these theories and the available literature, it is propounded that financial knowledge and planning impact individual financial decisions and intention to invest (Ainia & Lutfi, 2019; East, 1993; Hassan Al-Tamimi & Anood Bin Kalli, 2009; Nguyen, Gallery, & Newton, 2016; Raut, 2020; Seraj, Alzain, & Alshebami, 2022; Shehata et al., 2021; Sulphey & Faisal, 2020). Saudi Arabia's *Vision 2030* initiative has proposed the heightened need for the financial literacy as a springboard for a diversified economy. As financial literacy programs are being integrated into educational curricula and public awareness campaigns (Alhabshi & Ali, 2020), they will facilitate better financial planning and setting realistic and pragmatic investment strategies and goals. The following sections discuss in more details the related literature on each variable.

2.1 Intention to invest (ITI)

The emerging discipline of Behavioural finance has enhanced the understanding of individual investors' behaviours by explaining the individual characteristics and psychological processes that influence their investment intentions and related decisions (Che Hassan et al., 2023). To better comprehend investment intention, it is essential to analyse human behaviour, financial behaviour, and decision-making from investors' perspectives. Ajzen (1991), in the pathbreaking piece of literature, proposed that behavioural intention influences behavioural performance. An individual devoutly engaging in a particular behaviour will likely act on it. Hence, intention can predict behaviour. Adequate literature exists about financial literacy positively impacting behavioural intention. Appropriate financial literacy and knowledge enable investors to have a fairly good understanding of financial products, enhancing their capability of taking financial risks and exploiting investment opportunities. This would help them make informed decisions and attain financial well-being (Ibrahim and Alqaydi, 2013).

2.2 Financial literacy (FL)

Financial literacy is the understanding, evaluating, and sharing knowledge about money and financial services. It comprises making sound financial decisions, developing long-term strategies, and dealing with life's ups and downs and their impact on one's finances. Vidovićová (2021, p. 1868) defined FL as

"a set of skills and abilities to navigate the world of money". It entails having a solid understanding of financial concepts and applying them to make efficient decisions in various financial circumstances. FL has the potential to improve both individual and societal financial well-being. According to Widagdo and Roz (2022) FL is the "ability to understand finances in general, including savings, investments, debt, and insurance." FL, which requires knowledge and capacity (Fernandes et al., 2014), helps acquire the required information about financial concepts and instruments, enabling informed decisions (Agarwal et al., 2010). According to Huston (2010) and Remund (2010), FL consists of two key components: how effectively an individual understands financial information and how well it can be used to manage their finances through short and long-term financial planning. Atkinson and Messy (2013) identified three dimensions of FL - Financial knowledge, financial behaviour, and financial attitude. These three dimensions contribute to individual decision-making ability and help attain financial well-being.

FL, which accumulates over time (Nanziri and Leibbrandt, 2018), enables higher returns on investments as it helps investment in complex assets like stocks, helps cope with emergency expenditures, and helps overcome income shocks (Hasler et al., 2018). It also directly impacts financial behaviours like savings and investment as well as involvement in the wealth accumulation process (Lusardi and Mitchell, 2014; Lusardi, 2019). Financially literate individuals will likely amass wealth and plan their retirement lives well (Lusardi and Mitchell, 2014). Evidence suggests that individuals with low FL could run the risk of having excessive debts, incur higher transaction and service costs, and suffer from issues related to high-cost borrowings (Lusardi and Tufano, 2015; Moore, 2003). Further, Mottola (2013) and Utkus and Young (2011) found that low FL levels make people engage in expensive credit behaviours and make higher borrowings.

Aren and Aydemir (2014) found that FL positively influences multiple financial behaviours. Studies by Bongini and Cucinelli (2019) and Liaqat et al. (2020) found FL to influence the propensity to invest. In addition, Heckman et al. (2014) found individuals with higher FL to manage financial stress effectively. Further, they also enjoy financial well-being (Rahman et al., 2021). Samek et al. (2021) empirically tested and found that higher FL results in effective utilization of social security schemes and benefits. Evidence shows that FL influences various financial behaviours and intention toward investments (Aren & Aydemir, 2014; Vlaev et al., 2009). Raut (2020) also found FL to have a decisive impact on helping individuals make investment decisions. All this evidence suggests a positive relationship between FL and investment decisions. Based on these, it is hypothesized as follows:

H1: *Financial literacy and intention to invest have a significant positive relationship*.

2.3 Financial planning

Adequate empirical evidence exists about the relationship between FL and financial planning (Arrondel et al., 2013; Lusardi and Mitchell, 2007, 2011; Lusardi et al., 2017). Adequate empirical evidence also exists to show that FL impacts risk-taking behaviour. For instance, higher FL could complicate the decision-making process, leading to investing in low risks (Abdillah et al., 2019). A study by Safari et al. (2021) found that FL significantly impacts personal planning. Increased FL will facilitate financial planning, contributing to sustainable development (Dogra et al., 2022). This relationship has been found across the globe (Lusardi and Mitchell, 2011). While Almenberg and Save-Soderbergh (2011) found this relationship in Sweden, Bucher-Koenen and Lusardi (2011) identified it in Germany, and Klapper and Panos (2011) found it in Russia. A similar relationship was observed by Surendar and Sarma (2017) in an Indian sample. Lusardi et al. (2017) and Lusardi and Mitchell (2007) opined that FL has profound social and socioeconomic foundations and involves financial knowledge and planning behaviour. Based on the literature and above discussion, the following hypothesis is formulated.

H2: Financial literacy and financial planning have a significant positive relationship.

Several attitudinal variables and antecedents explain the intention to invest (Palacios-González and Chamorro-Mera, 2018; Fitri Wahyuni et al., 2023). It is affected by the perceived risk and a sequence of evaluation processes, which include choice, planning, and buying behaviour (Dogra et al., 2020). Several studies (for instance, Abdillah et al., 2019; Widagdo & Roz, 2022; Yang et al., 2021) also reported that good financial planning positively influences investment intentions. Another recent study by Roemanasari et al. (2022) found FL to influence planning and the resultant intention to invest. Along the same lines, Dogra et al. (2023) found that financial planning plays a significant role in making investment decisions. Similarly, Che Hassan et al. (2023) found financial planning to facilitate investment behaviours and strategies and influence investment intentions. Based on this literature, the next hypothesis is formulated as follows:

H3: Financial planning and intention to invest have a significant positive relationship.

2.4 Financial risk tolerance

Financial risk tolerance is the maximum uncertainty an individual is willing to accept when making financial decisions (Lucarelli and Brighetti, 2011; Carr, 2014). It is closely associated with the financial planning and management process (Carr, 2014), and most investment decision-making is aided by a reasonably accurate assessment of financial risk tolerance levels (Hanna et al., 2008). Financial risk tolerance is a phenomenon associated with wealth inequality. Individuals with higher financial risk tolerance levels tend to earn higher returns that could help create wealth (Anbar and Eker, 2010). Alternatively, individuals with inappropriately low levels of financial risk tolerance tend to avoid risky investment propositions like stocks and could miss out on achieving financial goals (Yao et al., 2004).

Financial experts use the information about financial risk tolerance to profile individual risk and design appropriate investment strategies (Carr, 2014). According to Yao (2013), financial risk tolerance levels help identify the types of investment products an individual is willing to accept, and the amount of wealth created. A person having adequate knowledge about their level of risk tolerance can earn optimum returns on their investments. According to West and Worthington (2012), knowledge about individual risk tolerance levels has multiple uses, including its ability to influence financial and regulatory policies. It also aids in framing appropriate governmental and regulatory policies about financial decisions (Sung and Hanna, 1996). Financial plans could falter and disappoint if appropriate risk tolerance evaluation is not carried out professionally (Moreschi, 2005). Accurate assessment of financial risk tolerance is of profound interest to a host of professionals, including financial planners, regulators and administrators, consultants and financial advisors, and research scholars (Pan and Statman, 2012; Carr, 2014).

Furthermore, according to Carr (2014), the likelihood of achieving financial plans increases multi-fold when there is adequate knowledge about the financial risk tolerance levels. Alternatively, Moreschi (2005) contended that if the financial risk tolerance level assessment is not carried out flawlessly, financial planning could falter, generating misunderstandings and disappointments among the parties. Financial plans succeed if the financial consultant accurately captures the right information through a risk tolerance assessment process (Moreschi, 2005). The Knowledge about risk tolerance also helps in the financial planning process and the development of appropriate investment models and strategies (Rahman. 2019). Based on these, the next hypotheses are formulated as:

H4: *Financial risk tolerance and financial planning have a significant positive relationship.*

H5: *Financial risk tolerance and intention to invest have a significant positive relationship.*

Based on the hypotheses formulated in the study, the following model (Figure 1) is proposed to be tested.

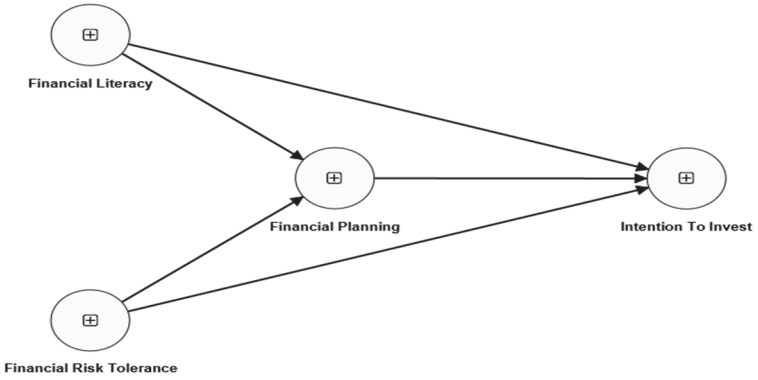

Figure 1: Study Model

3. Data Collection and Methodology

3.1 Data Collection

Online data was gathered for the study through a multi-item measure with a five-point scale, ranging from strongly agree to strongly disagree. A form of snowball sampling helped to collect the data. The questionnaire was uploaded to Google Forms. The questionnaire link was then forwarded to group administrators of various relevant social media groups with prospective respondents, requesting them to help gather the data. A personal appeal to the respondents was also included, requesting responses to the questionnaire, and assuring confidentiality for the responses.

The study used the following generalized and validated questionnaires:

1. *Financial literacy:* This variable was measured using a four-item scale developed by Van Rooij, Lusardi, and Alessie (2011). A sample item includes "*The stock market helps to predict stock prices and earnings*."
2. *Financial planning*: The four-item scale developed by Manocha, Bhullar, and Sachdeva (2023) was used to measure the individual's financial planning. A sample item of the questionnaire is "*Proper planning helps me in enhancing better return utilization of my savings*." This questionnaire reported a robust Cronbach alpha of 0.854.
3. *Financial risk tolerance*: The three-item scale developed by Rahman et al. (2020) was used to measure financial risk tolerance. A sample item includes "*I believe I need to take more financial risks if I want to improve my financial position*."
4. *Intention towards investment*: The three-item scale developed by Chen (2007) measured intention towards investment. A sample item is "*Will invest in the stock market frequently.*"

The questionnaire had also a section that elicited demographic information like gender, age, qualification, occupation, and citizenship. The data collection process, which took around eight weeks, yielded 405 responses. The demographic profile of the sample is presented in Table 1. It can be observed from the table that the data enjoys wide diversity, pointing towards representativeness. The age of the respondents ranged from 19 to 67 years. The average age is 38.12 years. Out of 405 responses, 45.9 per cent are female, 51 per cent hold undergraduate degrees, and 86.4 per cent are employees. The respondents had varying experiences in different organizations. 15.1 per cent of the respondents had more than 20 years of experience, while 20.2 per cent had less than five years. The details presented in Table 1 show that the sample's experience is evenly poised. Table 2 presents the descriptive statistics of the collected data.

Table 1: Demographics of Sample

Demographics		Number	Per cent
Gender	Male	219	54.1
	Female	186	45.9
Education	High school	12	3
	Diploma	38	9.4
	Undergraduate	207	51
	Master	85	21
	PhD	63	15.6
Employment	Unemployed	29	7.3
	Self-employed	17	4.3
	Employed	350	86.4
	Retired	9	2.2
Experience	Less than five years	82	20.2
	5 - 10 years	92	22.7
	10 - 15 years	95	23.5
	15 - 20 Years	75	18.5
	More than 20 Years	61	15.1

3.2 Sample adequacy

Sample adequacy is of paramount importance for any empirical study. This study collected data from 405 gainfully employed respondents from Saudi Arabia. According to Daniel (1999), the sample required from a population of four million, with a 95 per cent confidence level and a margin of error of 0.05 is 384. The table that Krejcie and Morgan (1970) proposed for a population of ten million is also 384. The General Authority for Statistics (GASTAT) indicated that as of 2023, there were 3.9 million Saudi employees in the Kingdom of Saudi Arabia.[1] Hence, by all estimates, the 405 responses collected for the study exceeded the sample adequacy threshold limit.

Table 2: Descriptive Statistics

Variables	Sample	Mean	Median	Standard deviation
Financial literacy	405	16.13	16.00	2.57
Financial planning	405	17.68	18.00	2.04
Financial risk tolerance	405	8.62	9.00	3.18
Intention to invest	405	10.84	12.00	3.30

4. Methodology

4.1 Common method bias

Self-reported data could be prone to problems associated with common method bias (CMB), for which precautions need to be taken to reduce it. The steps taken to reduce CMB include maintaining anonymity, randomizing the questionnaire items, and separating items from the questionnaires used for the study. In addition, responses were solicited with a request to respond as honestly as possible. All these measures assisted in confirming the lack of CMV. Further, the extent of CMV was examined with the Harman-single-factor test as Podsakoff and Organ (1986) suggested. The cumulative variance of the method was 57.466%, and no single factor emerged with high levels of covariance.

[1] *For more details, please see https://www.spa.gov.sa/en/N2021588.*

The results showed that the variance of the first factor rotation (34.88) was less than 50%, the threshold value proposed by Podsakoff, MacKenzie, Lee, and Podsakoff (2003). The results thus confirm the nonexistence of CMV.

4.2 Construct reliability and validity

Since PLS-SEM does not assume a normal distribution of data, a nonparametric bootstrap procedure was employed in order to test the significance level (Hair, Matthews, Matthews, & Sarstedt, 2017; Jannoo, Yap, Auchoybur, & Lazim, 2014). Towards this, the bootstrap procedure for this study was set on 5000 subsamples. One item each from the variables financial literacy and financial planning were excluded due to the low loadings. The outer model was evaluated through confirmatory factor analysis. Hair, Sarstedt, Hopkins, and G. Kuppelwieser (2014) state that the outer model consists of unidirectional predictive correlations between the latent construct and the observed indicators. Furthermore, Santor (1999); and Kline (2016) stipulate that all standardized factor loading coefficients must exceed 0.50.

First, the outer loading factor, which provides details of convergent validity, was assessed. Since all the construct variables have values more than 0.60, convergent validity is assumed. In addition, the composite reliability (CR) was also assessed. The threshold value of CR is 0.70. was used to assess the internal consistency reliability. The composite reliability values for all constructs were higher than the threshold value, suggesting a strong internal consistency for the variables. According to Hair et al. (2014), alpha values above 0.60 are acceptable in exploratory research. Table 3 reports that this stipulation is met for the current study, indicating reliability.

Table 3: Outer loading, Reliability, and Validity

Variables	Standardized factor loading	Financial Literacy	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
Financial Literacy	FL1	0.756	0.613	0.791	0.560
	FL2	0.841			
	FL3	0.635			
Financial Planning	FP1	0.792	0.678	0.815	0.599
	FP2	0.642			
	FP3	0.871			
Financial Risk Tolerance	FRT1	0.854	0.737	0.850	0.656
	FRT2	0.855			
	FRT3	0.713			
Intention to Invest	ITI1	0.939	0.906	0.941	0.841
	ITI2	0.891			
	ITI3	0.921			

The next step is the evaluation of convergent validity. To do this, the AVE is assessed, and the values range between 0.560 and 0.841. Since all the values were above 0.50, it indicates the convergent validity of the variables in the model. This was followed by an evaluation of discriminant validity, which suggests that each construct is distinct (Fornell & Larcker, 1981). Following the work of Henseler, Ringle, and Sarstedt (2015), the Heterotrait-Monotrait ratio (HTMT) is used in order to examine the discriminant validity of the model. According to the Fornell-Larcker (1981) criterion, the

correlation values in the model should be less than the square root of AVE. The details presented in Table 4 show that this criterion is met.

Table 4: Fornell-Lacker Criterion

	Financial Literacy	Financial Planning	Financial Risk Tolerance	Intention to Invest
Financial Literacy	***0.749***			
Financial Planning	0.362	***0.774***		
Financial Risk Tolerance	0.488	0.258	***0.810***	
Intention to Invest	0.638	0.357	0.535	***0.917***

Note: The values provided in the diagonal are the square root of AVE.

Henseler et al. (2015) state that HTMT has better specificity and sensitivity rates, which are as high as 97% to 99%, compared to the Fornell-Lacker criterion. There is no discriminant validity if the HTMT values are close to one. HTMT criterion compares the values against a threshold. Gold, Malhotra, and Segars (2001); and Kline (2016) proposed two different threshold values. The threshold values proposed are 0.90 and 0.85, respectively. Any values higher than this threshold indicate a lack of discriminant validity. It can be observed from Table 5 that both these criteria are met, thus confirming discriminant validity.

Table 5: Heterotrait-to-Monotrait Ratio HTMT

	Financial Literacy	Financial Planning	Financial Risk Tolerance	Intention To Invest
Financial Literacy				
Financial Planning	0.514			
Financial Risk Tolerance	0.737	0.331		
Intention to Invest	0.824	0.423	0.653	

Furthermore, following the existing studies and to test whether there is a correlation between the variables the multicollinearity test is also conducted. This was evaluated using variance inflation (VIF). According to Hair et al. (2012), the criterion for VIF is that the value should be lower than 5. The values presented in Table 6 (outer model) and Table 7 (inner model) show the nonexistence of multicollinearity among the variables.

Table 6: VIF (Outer Model List)

Items	VIF
FL1	1.267
FL2	1.270
FL3	1.154

FP1	1.344
FP2	1.257
FP3	1.388
FRT1	1.649
FRT2	1.612
FRT3	1.304
ITI1	3.655
ITI2	2.516
ITI3	3.161

Table 7: VIF (Inner Model List)

Model	**VIF**
Financial Literacy -> Intention to Invest	1.423
Financial Literacy -> Financial Planning	1.312
Financial Planning -> Intention to Invest	1.162
Financial Risk Tolerance -> Financial Planning	1.312
Financial Risk Tolerance -> Intention to Invest	1.325

In PLS-SEM, the model fit, which examines how well the model explains the data, it is a critical step for model validation (Kline, 2016). Hair et al. (2014) stated that the model fit is based on SRMR, d_ULS, d_G, Chi-Square, and NFI. Fit can be assumed if the value of SRMR is $\leq$ 0.08 (Hu & Bentler, 1998), and NFI is also lesser than 0.9 (Bentler & Bonett, 1980; Hair, Ringle, & Sarstedt, 2013; Hair et al., 2014). In addition, the d_ULS and d_G demonstrate the empirical covariance matrix and composite factor model covariance matrix (Hair et al., 2017; Henseler, Hubona, & Ray, 2016). The current study's values meet these stipulations; hence, robust goodness of fit is assumed.

After the data fit, the coefficient of determination (R^2) and adjusted R^2 are the next steps toward assessing the structural model (Dijkstra & Henseler, 2015; West, Taylor, & Wu, 2012). The two indicate the percentage of variability accounted for by the antecedent constructs. The coefficient of determination (R^2) and path coefficients evaluate the structural model (Dijkstra & Henseler, 2015). It indicates that the dependent constructs of the study model explain the independent ones well. According to Cohen (1988), the R^2 values of 0.26 and 0.13 show substantial and moderate levels of explanatory power. The current study's R^2 values are 0.140 and 0.485, suggesting good explanatory power (Cohen, 1988). The adjusted R^2 values help the explanatory power of a model across the various data sets. The adjusted R^2 values are 0.135 and 0.481. The values indicate substantial explanatory power since both endogenous variables meet this stipulation.

4.3 Hypothesis testing

The study used a multi-analytical method to examine the hypothesized relationship between the variables and supplement the current knowledge. PLS-SEM facilitates the validation and prediction of conceptual models advanced through theories. Thus, after examining the factor analysis and data fit, the bootstrapping technique was utilized to assess the significance of the direct and indirect relationships between the variables in the model. A bootstrapping sample of 5000 was used for the test (Hair (Hair et al., 2021; Hair et al., 2014; Henseler et al., 2015). The t-values were then assessed to

determine the significance of the hypothesized paths in the model. Table 8 and Figure 2 present the PLS-SEM path analysis coefficients, t-values, and p-values. The results indicate a few interesting insights about the variables studied. All five hypothesized relationships are significant and are accepted. All hypotheses have high t-values. While four hypotheses are accepted at 0.01 level, one is accepted at 0.05 level.

Table 8: PLS-SEM Path Coefficient

Paths	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t statistics (|O/ STDEV)	P-values
H1: Financial Literacy -> Intention to Invest	0.458	0.458	0.047	9.651	0.000
H2: Financial Literacy -> Financial Planning	0.310	0.313	0.059	5.231	0.000
H3: Financial Planning -> Intention to Invest	0.118	0.119	0.042	2.806	0.000
H4: Financial Risk Tolerance -> Financial Planning	0.107	0.109	0.053	1.999	0.046
H5: Financial Risk Tolerance -> Intention to Invest	0.282	0.282	0.044	6.421	0.000

Since all five hypotheses are supported, the study's proposed structural model is also accepted. The final model with the path coefficients is presented in Figure 2.

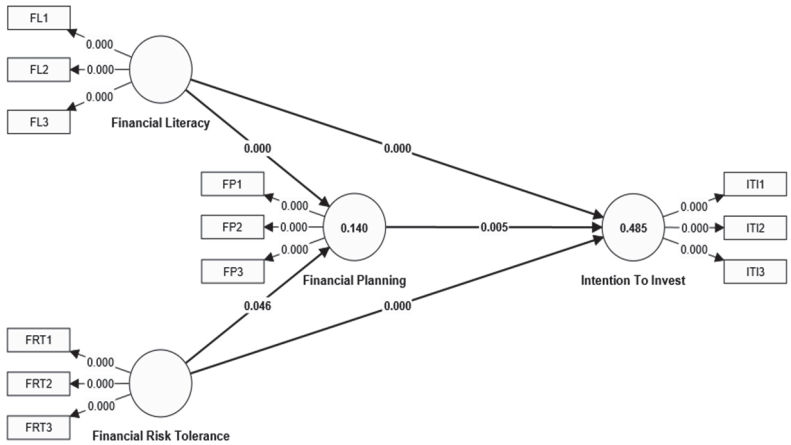

Figure 2: PLS-SEM Path Model

5. Discussion

This study was intended to understand the effect of a few behavioural antecedents on investment intentions in Saudi Arabia. The antecedents identified for this study are financial literacy, risk tolerance, and financial planning. The study was attempted as there are some deficiencies in the extant literature about intention to invest. In the Saudi Arabian socioeconomic context, which is undergoing rapid transition, the interplay between financial literacy, financial planning, risk

tolerance, and investment intention is crucial for the seamless achievement of the goals of *Vision 2030*. Improving financial literacy could foster financial planning, enhance risk management, and increase investment participation. Theoretical frameworks such as the financial literacy framework (FLF) and behavioral finance (BF) provide valuable insights into these interactions and their implications for individuals and the broader financial system.

A theoretical model was proposed based on an extensive literature review and empirically tested using SEM. The online survey method helped us to gather data from 405 respondents and validate the proposed model. Based on the statistical analysis, the findings of this study reveal that all the proposed hypotheses, and in turn, accept the proposed structural model. The results found that all the identified variables significantly impacted the investment intention variable. The first hypothesis of the study is that there is a positive relationship between financial literacy and intention to invest. This is indeed an important finding in the understanding of investment attitudes. Very few studies have examined the relationship between these constructs including S. Kumar, Watung, Eunike, and Liunata (2017); Rahman (2020); and Tanuwijaya and Setyawan (2021). The finding of this study is also in this line.

Furthermore, the study also furthers Esam-Aldin, Yusnidah, and Nurwati (2014) earlier finding that financial literacy combines the capacity and dependability of investors to weigh financial risks and opportunities and make prudent investment decisions to improve their financial well-being. The next hypothesis that there is a significant positive relationship between financial literacy and planning is also accepted with a p-value of 0.000. The results indicate that individuals with financial literacy are more likely to plan their finances well. This finding aligns with several previous studies (Adam, Frimpong, & Boadu, 2017; Agarwal, Amromin, Ben-David, Chomsisengphet, & Evanoff, 2015; Bongini & Cucinelli, 2019; Lusardi, 2019; Lusardi & Mitchell, 2011, 2014).

In addition to the above findings, a significant positive relationship was observed between the variables financial risk tolerance, financial planning, and investment intention. The study confirms that investment intention is significantly influenced by the level of risk tolerance and financial literacy, which aligns with the findings of a recent studies by Dogra, Kaushal, and Kalia (2023); and Samsuri, Ismiyanti, and Narsa (2019). Financial literacy helps investors make sound financial decisions and maintain personal financial health, as well as, economy development (Potrich & Vieira, 2018; Potrich, Vieira, & Kirch, 2018). This finding of this study also supports earlier studies. For instance, Rahman (2020) found that financial risk tolerance is a critical variable in the financial planning process and modern investment management decision-making models. In addition to existing findings from the literature, the findings of this analysis also provide significant implications for the financial and investment service industry, which are discussed in the following section.

6. Implications

This study, to the best of my knowledge, which is the first of its kind in Saudi Arabia and the region has a few theoretical and practical implications. It is unique to the Saudi environment and has numerous policy implications that can help enhance financial knowledge, planning, and well-being. Financial knowledge and planning would aid in risk tolerance and avoiding financial difficulty. The study enriches the literature about risk tolerance, financial literacy and planning, and intention to invest by integrating the prospects theory, social cognitive, and social learning theories. As expected, this study finds robust support for the relationship between the variables. The empirical support for the positive relationship between the variables and intention to invest contributes profoundly to the behavioural finance literature.

6.1 Theoretical implications

This study contributes to the growing body of knowledge in the behavioural finance literature. Firstly, the study details a few antecedents that explain the intention towards investment. The

findings enhance the understanding of the theoretical relationships among the antecedents of investment intention. The study has also highlighted intention toward investment is impacted by financial literacy, risk tolerance, and planning. Though studies have examined these variables individually, none have examined the combined effect. The study provides valuable insight to scholars and researchers about financial behaviour determinants and intention to invest. It also highlights how financial literacy and planning influence sensitive decisions like investment. The study also presents the need to enhance financial literacy to develop investment intentions. It provides further inputs about Saudi citizens' financial literacy and planning, aiding the country's sustainable development.

6.2 Practical implications

The findings of this study would be helpful to financial management professionals as the study provides inputs on awareness of saving and investment behaviours and their antecedents. The study provides the necessity of behavioural variables in shaping complicated investment decisions. The study also identified that investment intention is significantly related to risk tolerance and financial literacy, which can help personnel in charge of investments. The finding shows that financial risk tolerance is related to investment intention should be of interest to financial management professionals, as it shows that risk factors play a significant role and could act as a hurdle for investment decisions. This calls for financial professionals to lower risk perceptions through appropriate promotions and clear precautionary information and messages. Investment products should be framed based on the population category and culture, and in Saudi Arabia, like other Muslim countries, there is a general societal taboo towards usury (Alam Choudhury & Al-Sakran, 2001). Hence, investment products need to be designed accordingly to attract positive perceptions that could boost investment intentions.

The study results also call for policymakers to put in efforts to enhance financial literacy, improve financial knowledge, and positive credit and investment behaviour. It also calls for policymakers and administrators to allocate required resources to enhance financial literacy. The diversification of the Saudi economy would be successful only if the government focuses on financial education and financial literacy, and inculcating a culture of entrepreneurship (Abad-Segura & González-Zamar, 2019; Saber, 2020). Furthermore, a broad cross-section of society has easy access to various financial options, making financial education and literacy indispensable. In Saudi Arabia, the Capital Market Authority (CMA) is involved in financial education. However, it would be ideal if more organizations like universities and financial institutions were involved in financial education. This study recommends a futuristic national financial education strategy, as Ansari, Albarrak, Sherfudeen, and Aman (2023) proposed. Mechanisms could also be in place to monitor the effectiveness of various financial education programs and make appropriate periodical amendments as required.

7. Limitations and Future Research Directions

Despite the multiple contributions of this study to the existing literature, the study like other studies suffers from a few limitations that could be considered in future research. The focus of the study was on a sample from Saudi Arabia. Further studies could be extended to a sample from Middle Eastern countries or other regions such as GGC countries, as such studies could help achieve representative results and a piece of evidence of how some behavioural antecedents and culture may impact an individual's investment intention and decision. In addition, including developing and developed countries under the study's purview would help highlight the disparities between different cultures, regions, and economies regarding the intention to invest aspect. The study examined behavioral antecedents like financial literacy, risk tolerance, and planning. Other factors like income levels, employment status, and cultural attitudes were not considered, which could be considered in future

research. The study relied on self-reported data, which can be the subject of biases like social desirability, wherein respondents may overstate their financial literacy or planning behaviours. However, this study ensured the anonymity of responses, which could have reduced the impact of social desirability bias. Future research could mitigate this limitation by incorporating objective measures like utilizing actual financial data, and using techniques like indirect questioning. These limitations highlight areas for future research, including longitudinal studies, broader and more diverse samples, and the exploration of additional behavioral variables.

8. Conclusion

This study empirically tested the behavioural antecedents of the intention to invest, which were not covered in previous studies. The antecedents examined in this study are financial literacy, risk tolerance, and financial planning. While the prior studies focused merely on financial investment behaviour, this study investigated the impact of the identified variables on investment intention. The present study has this added to the behavioural finance literature. This study has helped understand the antecedents of investment behaviour in the Kingdom of Saudi Arabia, which would help formulate strategic and financial policies effectively. Furthermore, the study has provided a strong background for the critical factors for policymakers, administrators, and financial consultants towards economic and financial policy and financial product design.

The findings of this study clearly supported all the proposed hypotheses, pointing towards significant and positive relationships between the variables. The study has thus shed more light on the behavioural factors that predict intention to invest and has provided a considerable understanding of the behavioural determinants. Its contributions also could be used as a source of valuable input for the policymakers in the Saudi market, financial advisors and consultants to provide various ranges of investment products, as well as, guiding clients to the best and a suitable investment option. In addition, the findings would also help researchers and social scientists to study more about these exciting aspects.

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