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Effect of Financial Literacy and Financial Self-Efficacy on Individuals' Investment Intention: The Mediating Role of Risk-Taking Behavior

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Abstract: *The research specifically contributes to the Theory of Planned Behavior (TPB) by examining the financial literacy and financial self-efficacy of those partaking in financial market activities as major contributing factors toward their intentional behaviors to invest. Furthermore, it also takes into account their risk-taking behavior as a mediator. Hence, a cross-sectional research approach was adopted. Additionally, Multiple Regression and the Hayes Process method were used. Primary data was collected through a survey questionnaire from 400 active investors who were statistically selected through purposive sampling. The results indicate that the financial literacy of the respondents, as well as their financial self-efficacy, significantly determines their intentions to invest (H1, H2). The findings further indicate the partial mediation of their financial literacy and investment intention (H3) relationship and their financial self-efficacy and investment intention (H4) through their risk-taking propensity. This research recommends that financial events, trainings, and seminars should be organized for awareness.*

Key Words: Financial literacy, financial self-efficacy, investment intention, risk-taking behavior

JEL Classification:

Introduction

Human beings make decisions on a regular basis as operational practices for their life. The capacity to make decisions has a direct impact on all parts of life. As a result, the human decision-making process has remained a crucial part of research. Initially, the decision-making process was taken into consideration from the perspective of economic affairs (Fama, 1970). Rational decision-making depends on the information available, its analysis, and the selection of the optimal utility level. The rational decision-making of human beings is backed by the expected utility theory (Schiffman & Kanuk, 2007). Different authors including Markowitz (1999), Sharpe & Pnces (1964), and Fama (1970) identified the individual's rational decision-making practices

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while investing in portfolios, deciding asset pricing, and market efficiency, respectively. Later on, these aspects of rational decision-making were challenged due to a lack of sufficient information, motivation, and time (Simon, 1978) and the notion that humans are rational beings, who always make rational financial decisions, was challenged by a new financial behavior paradigm, which focused attention on the individuals' situational and personal aspects that play a vital role in their investment decisions.

Some scholars claim these investor's rational decision-making acumen when investing in financial securities is influenced by cognitive, psychological, and market factors. These factors include changes in price, customer preferences, market information, and risk tolerance (Raut et al., 2018; Riaz et al., 2020). There has been a significant increase in investor participation in these monetary markets of late (Van Rooij et al., 2011; Calvet et al., 2010). Therefore, investigating why and how individuals choose to participate or avoid participating in these is important, both at the individual level and the collective level (Luotonen, 2009).

Priorly, extant literature has investigated numerous factors influencing aspects of individuals' partaking in the financial marketplaces worldwide (Gao et al., 2019; (Liivamägi et al., 2018); Zou and Deng, 2019). Individual level factors such as peoples' income, their social and disposable capital, their intelligence and pedagogical levels, their investment and financial acumen along with prior similar experiences, and their optimism; along with collective factors such as general cultural and demographic trends, peer effects, and herding behavior have, in general, the focus of such studies (Hong et al., 2004; Campbell, 2006; Brown et al., 2008; Georgarakos and Pasini, 2011; Grinblatt et al., 2012; Hurd et al., 2011; Malmendier and Nagel, 2011; Van Rooij et al., 2011; Bonaparte and Kumar, 2013; Calvet and Sodini, 2014; Kengatharan and Kengatharan, 2014; Li, 2014; Arrondel et al., 2015; Balloch et al., 2014; Gao, 2015). The aspects researched in these studies have not only studied the intentions of individuals to participate in such markets but also how they manage risks and adopt the associated risk-taking behavior.

From Pakistan's perspective, the most important factor is the risk associated with investment decisions due to the uncertainty in the economic and political situation of the country. Therefore, the majority avoid aggressive investments in financial markets because of their high-risk loss perception (Miano, 2020). Similarly, some scholars claim that risk is negatively associated with individuals' intent to invest (Trisnatio, 2017; Onasie & Widioatmojod, 2020). According to Nosi´c and Weber (2010), this evaluation of associated risk, which they claim to be highly correlated with investment behavior, is subjective in nature. Akhtar and Das (2019) and Cheng et al. (2018) also is of the same opinion. On the other hand, authors such as Sutter et al. (2013) are of the opposite opinion and deem that the relationship between the two is weak (Brown et al., 2008; Gürdal et al., 2017).

Besides risk tolerance, financial literacy also plays a vital role in the decision-making process of individuals regarding their investment in financial securities. Hilgert, et al., (2003b) claim that individuals' financial acumen directly impacts their choice to engage in activities of financial nature. Similarly, Lusardi and Mitchell, (2008) also posit the same. That is, individuals' lack of financial knowledge negatively impacts their participation in financial and monetary markets (Bonte & Filipiak, 2012). Additionally, financial acumen or lack of knowledge is also significant to the financial risk-taking behavior of individuals, and thus, both are important aspects that influence individuals' speculation choices (Kabra, Mishra, & Dash, 2010). Research by Bonte and Filipiak, (2012) reveals the notion that individuals with a lack of financial expertise and relevant knowledge perceive high risk associated with such endeavors, while that of Weber and Milliman, (1997) revealed that individuals with high acumen predict such risk to be lower, which

positively increased their intentions to participate in financial activities.

Similarly, in addition to financial acumen, the individuals' self-efficacy in financial matters also goes a long way towards developing their financial capacity and skills (Rothwell et al., 2016), and hence, may play a vital role in influencing people's financial partaking intentions (Akhtar & Das, 2019). Moreover, financial self-efficacy has scantly been studied in entrepreneurship and the behavioral finance literature. Similarly, literature also indicates the propensity of individuals' financial self-efficacy to inspire and encourage them to be primed for greater risk-taking behavior (Forbes and Kara, 2010; Chatterjee et al., 2011).

Numerous scholars have explored various behavior-driven factors affecting individual investment intention in the stock market, such as investors' attitudes (Adnan et al., 2020), product involvement (Ibrahim & Arshad, 2018), celebrity endorsements (Shiva, et al., 2022), and investor personality traits (Jain, et al., 2022) in different countries. There is little to no literature available that sheds light on individuals' financial literacy and financial self-efficacy as independent variables in the context of behavioral biases among Pakistani investors. Moreover, it is imperative to study whether the Pakistani investors' tolerance of risk mediates these relationships because they are more tilted towards loss aversion and low-risk tolerance owing to the uncertain political and financial conditions prevalent in the country. Therefore, this study is devised to fill this gap in the literature.

Literature Review

Investment decision is an important issue in today's stock markets (Kim and Nofsinger, 2008). Understanding investment behavior is necessary not only for the individual investor, the policymakers, and the investment agencies but also for the researchers and managers of firms, who also take a keen interest in understanding individuals' varying investment intentions (Anju and Anuradha, 2015). Intention is the willingness and propensity of an individual to engage in a particular behavior (Ajzen, 1991). Thus, the higher the intention of an individual to engage in certain behavior, the larger the possibility of them adopting it (Ajzen, 2020). Thus, a person's investment propensity increases their likelihood of adopting or engaging in investment activities. Already, a mounting number of studies have researched this in regard to the stock markets (e.g., Akhtar & Das, 2019; Nugraha & Rahadi, 2021; Sadiq & Khan, 2018; Sondari & Sudarsono, 2015).

Financial Literacy and investment intention

Financial literacy, which is people's acumen and knowledge about monetary institutions, their workings, technical know-how, tools, etc. (Aren & Hamamci, 2020), influences an individual's propensity to engage in related activities. It influences the decision-making of people to engage in financial investments through related tools, which is determined by their increased confidence levels (Purwidianti & Tubastuvi, 2019) in acquiring maximum returns (Lusardi & Mitchell, 2008). Furthermore, it is firmly related to financial decisions (Hilgert, Hogarth, & Beverly, 2003), and its higher levels increase the probability of an individual participating in stock markets and related activities (Lusardi & Mitchell, 2008). On the other hand, people with lower financial literacy and knowledge will have decreased levels of behavioral readiness to engage in such marketplaces (Bonte & Filipiak, 2012; Lusardi, Michaud, & Mitchell, 2017). These marketplaces abound with a vast assortment of financial instruments and products (Lusardi & Mitchell, 2011), making financial knowledge and literacy a vital prerequisite possibly affecting the investment attitude of people in a positive manner (Amari & Jarboui, 2015), literature on which is scarce, however (Chu et al., 2017). Some studies, such as those by (Lim et al., 2018) and Van Rooij et al. (2011), have found a positive association between the two. Therefore, we posit that:

H1: Financial Literacy has a significant positive effect on investment intention.

Financial self-efficacy and investment decision

The belief in oneself and one's abilities to be capable of certain tasks and to achieve relevant objectives is called self-efficacy (Top, Colakoglu, & Dilek, 2012). This includes aiming for, organizing for, and carrying out requisite actions related to the achievement of those goals (Bandura, 1977). In light of the above-mentioned definitions, financial self-efficacy (FSE) can be taken to refer to people's confidence in their personal financial ability to carry out financial actions to attain financial goals.

It entails the belief in one's ability to control the monetary aspects of one's life, thereby having a profound impact on one's behavior profoundly (Asebedo and Payne, 2018). Thus, people with high FSE are likely to be more confident in accessing, analyzing, accessing, and using the aforementioned tools, products, and services in the financial realm, and also more likely to invest (Ozmete and Hira, 2011 in Asebedo and Payne, 2018).

Published studies, such as by Asandimitra and Kautsar (2019) and Farrell et al. (2016), have also posited that FSE is a predictor of a person's monetary conduct. Conversely, Sondari and Sudarsono (2015) did not find any such association in their study. On the other hand, Akhtar and Das's (2019) FSE does affect a person's investment intention in an affirmative manner. Other authors (Spaseska et al., 2016; Sivaramakrishnan et al., 2017; Husnain et al., 2019; Pangestika & Rusliati, 2019) are also of the same opinion. Therefore, we posit that:

H2: Financial self-efficacy has a significant positive effect on investment intention.

The Mediating Role of Risk-taking Behavior

The risk factor is an essential concept of finance-related fields such as entrepreneurship and is considered an innate ability of entrepreneurs and investors. According to Bruhin et al. (2010), evaluating a person's risk-taking acumen may be used to predict their decisions regarding investment. Literature is laden with studies that have evaluated the financial behavior of taking risks in determining the decision-making people in the financial realm. The findings of various scholars present different results. Some scholars claim that perceived risk or risk attitude has a positive effect on investment decisions while others claim a negative reaction. For example, According to Nosi´c and Weber (2010), this evaluation of associated risk, which they claim to be highly correlated with investment behavior, is subjective in nature. Akhtar and Das (2019) and Cheng et al. (2018) also is of the same opinion. On the other hand, authors such as Sutter et al. (2013) are of the opposite opinion and deem that the relationship between the two is weak (Brown et al., 2008; Gürdal et al., 2017). According to Kiyosaki, (2011), even though the majority of the population is aware of the significance of investment opportunities, it can be but they believe that investing is a very perilous endeavor if they lack financial acumen.

Furthermore, in literature, various scholars have discussed risk-taking behavior as a mediating variable. For example, Nandan and Saurabh (2016) in their research opined that "Risk behavior acts as a mediator between personality traits and short-term investment intentions as well as long-term investment intentions of individuals". They further state that "risk behavior mediated the relationship between neuroticism and short-term investment intention, extraversion and short-term investment intention, and Openness to experience and short-term investment intentions". Similarly, Sadiq & Khan (2019) published the revelation that the association between an individual's personal traits and their intentions to invest is mediated partially by risk-taking propensity. Nonetheless, perceived risk was not found to mediate the relationship between individuals' financial acumen, their FSE, and their intentions to

invest. Therefore, we put forth the following hypotheses:

H3: Risk-taking behavior significantly mediates in the relationship between Financial Literacy and investment intention.

H4: Risk-taking behavior significantly mediates the relationship between financial self-efficacy and investment decisions.

Methodology

The population of this study consisted of active investors in the Pakistani stock market, who have had at least one year of experience in trading. The minimum timeframe of requisite exposure for respondents was set in order to guarantee their relevant understanding of the nuances and different facets of the stock market that influenced their investment behavior. A sample of 400 respondents was statistically obtained through the purposive sampling technique. The online survey Questionnaire method was used for primary data collection which is considered the best method to check the attitude of investors in behavioral finance (Lenney, 1977; Beyer & Bowden, 1997; Bengtsson et al., 2005). Questionnaires of all variables were adopted from previous studies developed by various scholars. The investment Intention questionnaire was adapted from (Lim, 2013) with seven (7) items, Financial self-efficacy from Lown, 2011 with six (6) items, Risk-taking behavior from Mayfield et al. (2008) with four (4) items, financial literacy from Lusardi & Mitchell (2008), and Ghaffar and Sharif (2016) with eight (8) items.

Analysis of Data

The demographic information of the population/investors was described on the basis of age, gender, and experience. It was found that there were 75 (25%) respondents between 21-30 years, 153(51%) between 31-42 years, and 72 (24%) were from 43 years and above. The majority of investors/respondents were male i.e. 255 (85%) male and 45 (15%) female respondents. Similarly, most of the investors 160 (53%) have experienced between 1- 10 Years, 112 (37%) have 11 to 20 years, and 28 (9%) have 21 Years and above years of experience.

Reliability and Validity of Variables

The reliability and validity of variables were measured on the basis of CR, AVE, and Cronbach's Alpha values. For example, the value of AVE for FNLTR (.51), RSKBEH (0.61), INVNT (0.76), and FINSEF (0.58) showed that all variables are above the threshold value (0.4). Similarly, the value of CR for FNLTR (0.89), RSKBEH (0.86), INVNT (0.96), and FINSEF (0.89) showed that all variables were beyond the minimum threshold value of 0.5, showing good convergence validity. Meanwhile, Cronbach's Alpha value for all constructs i.e. FNLTR (0.84), RSKBEH (0.78), INVNT (0.95), and FINSEF (0.86) is greater than 0.70 as suggested by Fornell and Larcker (1981) and shows that all data variables are reliable for hypothesis testing.

Table 1

	Factor Loading	α	AVE	CR		Factor Loading	α	AVE	CR
financial literacy					Investment Intention				
FNLTR1	.689				INVNT1	.630			
FNLTR2	.727				INVNT2	.889			
FNLTR3	.658				INVNT3	.945			
FNLTR4	.850	0.84	0.51	0.89	INVNT4	.884	0.95	0.76	0.96
FNLTR5	.647				INVNT5	.913			
FNLTR6	.726				INVNT6	.894			
FNLTR7	.635				INVNT7	.927			

	Factor Loading	α	AVE	CR		Factor Loading	α	AVE	CR
FNLTR8	.743				Financial self-efficacy				
Risk-taking behavior					FINSEF1	.826			
RSKBEH1	.809				FINSEF2	.706			
RSKBEH2	.747	0.78	0.61	0.86	FINSEF3	.773	0.86	0.58	0.89
RSKBEH3	.775				FINSEF4	.785			
RSKBEH4	.787				FINSEF5	.683			
					FINSEF6	.804			

Hypothesis Testing

Direct path of independent variables and dependent variable

Table 2 shows the independent variable directly affecting the dependent variable.

Hypothesis 1 predicted that our respondents' financial literacy significantly influenced their intentions to invest. This is evident by the coefficient path in the table below (β = 0.282, P= 0.004). Hence, the first hypothesis stands accepted.

The second hypothesis, which anticipated that the financial self-efficacy of respondents will also significantly affect their intentions to invest in the stock market, is also accepted with the coefficient path values of β = 0.277, and P= 0.003.

Table 2

Regression Analysis				
		B	Std. Error	Sig.
H1	FINLITR0	.282	.097	.004
H2	FINSELF0	.277	.094	.003

Dependent Variable= Investment Invention

Path Model of Risk-taking Behavior as a Mediator

Hypothesis 3 predicted individuals' risk-taking behavior to mediate the relationship between their financial literacy and investment intention. The Hayes Process method was used for mediation analysis. The result in Table 3 indicated a significant total effect (β = .281 p=0.004) between financial literacy and investment intention with a 95% confidence interval at lower (.0908) and upper (.4728) levels. The indirect significance was confirmed through the two-tailed test of significance, with a coefficient of β =0.0928, and does not contain 0 at a 95% confidence interval between the lower level (.0085) and the upper level (.1867) respectively. The result also found the value of direct effect significant (β = .189, p=0.030) with a 95% confidence interval between the lower and upper limits. Thus, it proved the partial mediating risk-taking behavioral effect between financial literacy and intention to invest, and hence, H3 is supported.

Hypothesis 4 predicted that risk-taking behavior acts as a mediator between the relationship between individuals' financial self-efficacy and their intention to invest. The result in Table 3 indicated a significant total effect (β = .277 p=0.003) between financial self-efficacy and investment intention with a 95% confidence interval at lower (.0921) and upper (.4618) levels. The indirect effect was confirmed through a two-tailed significance test with a coefficient of β =0.091 and does not contain 0 at a 95% confidence interval between the lower level (.0097) and the upper level (.1816) respectively. The result also found the value of direct effect significant (β = .186, p=0.028) with 95% confidence between the lower and upper limits. Thus, it proved the partial mediating risk-taking behavioral effect

between self-efficacy and intention to invest, and hence, H4 is supported.

Table 3

Mediation analysis

Path	Direct effect	Indirect effect	Total effect
FINLT-- RISBEH0—INVINT	(β = -.189, p=0.030) LLCI=.0179 ULCI=.3601	β = .0928 LLCI=.0085 ULCI=.1867	(β = .281 p=0.004) LLCI=.0908 ULCI.4728
FINSELF0-- RISBEH0—INVINT	(β = .186, p=0.028) LLCI=.0203 ULCI=.3516	β = 0.091 LLCI=.0097 ULCI=.1816	(β = .277 p=0.003) LLCI=.0921 ULCI=.4618

Conclusion and Recommendation

Numerous scholars have explored various behavior-driven factors affecting individual investment intention in the stock market (Adnan et al., 2020); Ibrahim & Arshad, 2018; Shiva, et al., 2022; Jain, et al., 2022) in different countries. However, limited literature sheds light on the financial literacy of individuals and their financial self-efficacy as an independent variable in the context of behavioral biases among Pakistani investors. Moreover, it's imperative to study the mediating role of risk-taking behavior among Pakistani investors because people are more tilted towards loss aversion and risk tolerance owing to the uncertain political and financial conditions prevalent in the country.

The research revealed that financial literacy significantly and positively affects investment intention (HI). This is in line with (Amari & Jarboui, 2015) who indicated that financial literacy leads to building positive financial attitudes in individuals. (Lim et al., 2018) stated that higher financial knowledge demonstrates favorable financial investment. The findings of the study indicated that people's financial self-efficacy significantly and positively affects their intention to invest (H2), similar to the findings of Asandimitra and Kautsar (2019) and Akhtar and Das (2019), who indicated that the individuals' financial self-efficacy is a significant factor in determining their financial behavior. Similarly, their self-efficacy positively affects their intention to invest (Husnain et al., 2019; Pangestika & Rusliati, 2019). Our findings showed that the relationship between people's financial literacy and their intention to invest is significantly mediated by risk-taking behavior (H3), their financial self-efficacy, and their intention to invest (H4). Our findings are in accordance with the findings of Akhtar and Das (2019), who surmised that high-risk-taking individuals demonstrate larger intentions to invest. Similarly, Nandan and Saurabh (2016) posited the mediating effects of individuals' risk-taking between their personality traits and their short and long-term intentions to invest.

Practical Implications

Our work is useful to financial specialists in the stock market. Furthermore, institutions dealing with financial and economic policies can also benefit from our findings for drafting better strategies and ensuing financial decisions. Our work has highlighted the importance of the role of the individuals' financial acumen, financial self-efficacy, and risk-taking attributes that contribute to their intentions to invest, especially in the stock market. The Pakistani government is intent on developing its capital market by appealing to its citizens to partake in investment opportunities. In this regard, relevant Pakistani officials could use our work to run financial literacy programs, related to the numerous investment fields for this aim, including similar initiatives for their Stock markets. This research is beneficial for academic institutions by properly providing knowledge and guidelines to their students

regarding stock market investment to start their careers in stock markets. This research clarified that financial literacy and financial self-efficacy are a must for making investments as they enable investors to take calculative risks and make the decision easy for them to invest in stock markets.

Theoretical contribution

This study emphasized on TPB role that considered intention as a significant determinant of individual behavior (Ajzen, 1991, (Ajzen & Fishbein, 1980)). The intention actually reflects the willingness of individuals, which describes their level of determination to engage in certain behaviors (Ajzen, 1991). It has, however, been scantly utilized to probe individuals' intentions to invest, specifically regarding the stock markets. Ajzen (1991) and Zampetakis et al. (2013) advised/directed research scholars to work on adding more variables to broaden and deepen the original TPB model to improve further its predictive power. Following Zampetakis et al. (2013) recommendations, this research expands the TPB model by including various background factors i.e. financial self-efficacy, financial literacy, and risk-taking behavior to investigate investment intention in a much better possible way.

Moreover, this research has used financial self-efficacy and financial literacy as independent variables affecting investment intention, which gives an extension to the research body of knowledge and clarifies that it will increase the investor's potential to make better financial analysis, i.e. both technical and fundamental, thereby participating more in financial securities. This research model has empirically tested risk-taking behavior as a mediating variable and concluded that financial self-efficacy and financial literacy increase individual potential to take calculated risks which further leads toward making positive intentions regarding investment in the stock market.

Recommendations of the study

Our work establishes the notion that particular constructs related to individuals' ability, such as their financial literacy and financial self-efficacy, greatly impacted their intentions to invest, thereby suggesting that an increase in these was likely to intensify their prospects of investing in the stock market. Advisors, specifically financial ones, urge their clients to undergo pieces of training fostering their financial acumen with in-depth knowledge before partaking in stock market activities, which would guide them and motivate them to become more involved in investment decision-making. The government's financial advisors and stock brokers could do this by organizing financial events and seminars, so investors will be able to understand stock market trading and be aware of its inherent risks.

Most retail investors get inspiration and motivation from other informal sources, and hence, make investment decisions in the stock market without any formal training. Due to a lack of knowledge, they make wrong investments, face loss, ultimately lose motivation, and exit from the market. It is suggested that an Appropriate education program before any investment could likely reduce this problem.

It is also experienced that some people authorize their brokers to trade on their behalf. It is suggested that the public must learn through various available online and offline platforms, and should analyze personally each trade technically or fundamentally for themselves to advance their own financial understanding in order to be better prepared and more confident in the future.

Limitation and future direction

While interpreting the findings of our research, we are aware of its certain limitations, which should be taken into consideration. First, the findings of this study are applicable to the Pakistani stock market only. Further research can be conducted across other Asian countries to get better insights. Second, a small sample of data was collected due to the focus on individual investors only. Future studies can target corporate investors and

potential individual investors with different demographic characteristics. Further, various other behavioral and psychological variables can be included in the model to investigate investment intention. More importantly, the researcher has collected cross-sectional data in this study, however, a longitudinal data arrangement can provide better or different insights if conducted in the future.

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