



**A COMPARATIVE STUDY OF INVESTMENT BEHAVIOR OF RETAIL
INVESTORS IN TÜRKİYE AND PAKISTAN**

DOCTORAL THESIS

Fareeha Javed Qureshi

Eskişehir 2022

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DOCTORAL THESIS

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ÖZET

TÜRKİYE VE PAKİSTAN'DAKİ BİREYSEL YATIRIMCILARIN YATIRIM DAVRANIŞINA İLİŞKİN KARŞILAŞTIRILMALI BİR ÇALIŞMA

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Yatırım davranışı, yatırım kararlarını belirleyen özelliklerden oluşur. Bu çalışmanın amacı, Türkiye ve Pakistan'daki bireysel yatırımcıların yatırım davranışlarını araştırmak ve karşılaştırmaktır. Çalışma, çevrimiçi bir anket aracılığıyla toplanan anket verilerine dayanmaktadır. Çalışmada, Finansal Okuryazarlık, Yatırımcının Öz Güveni, Risk İştahı, Yatırım Felsefesi, Yatırım Deneyimi ve Yatırım Tercihleri arasındaki farkı araştırmak için bağımsız örneklem t-testi kullanılmıştır. Çalışmada, bireysel yatırımcıların davranışlarında ülkeler arasında bazı önemli farklılıklar olduğu bulunmuştur. Ayrıca, bir araştırma modeli oluşturularak söz konusu tüm değişkenlerin Yatırım Seçenekleri ile ilişkisinin ampirik olarak test edilmesi için Yol Analizi kullanılmıştır. Yol Analizi, dışsal ve içsel değişkenlerin ilişkilerinin gücünün ülkeler arasında büyük farklılıklar gösterdiğini ortaya koymuştur. Çalışma kapsamındaki beş değişkenin tümünün, yani Finansal Okuryazarlık, Risk İştahı, Yatırım Felsefesi ve Yatırımcının Öz Güveninin, her iki ülkede de Yatırım Tercihlerinin iyi bir tahmincisi olduğu belirlenmiştir. Finansal Okuryazarlık, Yatırımcının Öz Güveni, Risk İştahı, Yatırım Felsefesi ve Yatırım Deneyiminin Yatırım tercihleri üzerindeki toplu ilişkisi ve bunların birleşik etkisinin yatırım davranışına nasıl yansıdığı konusunda çok yetersiz literatür bulunduğundan, bu çalışma bu alandaki öncü çalışmalar arasında yer almaktadır.

Anahtar Kelimeler: Yatırım davranışı, Finansal okuryazarlık, Yatırım seçenekleri, Yatırım felsefesi, Risk iştahı

ABSTRACT

A COMPARATIVE STUDY OF INVESTMENT BEHAVIOR OF RETAIL INVESTORS IN TÜRKİYE AND PAKISTAN

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Investment behavior comprises of the characteristics that stimulate investment decisions. The purpose of the current study is to investigate and compare the investment behavior of retail investors in Türkiye and Pakistan. The study relies on survey data collected through an online questionnaire. An independent sample t-test is used to investigate the difference in Financial Literacy, Investors' Confidence, Risk Tolerance, Investment Philosophy, and Investment Experience and Investment Choices. It was found that there are some key differences in the behavior of retail investors across both countries. Further, a research model was created, and Path Analysis is used to empirically test the relationship of all mentioned variables with Investment Choices. Path Analysis reveals that the strength of exogenous and endogenous variables' relationship varies widely across countries. All five variables under the study i.e., Financial Literacy, Risk tolerance, Investment Philosophy and Self Confidence proved to be a good predictor of Investment Choices in both countries. The study is among the pioneer ones as very scanty literature is available on the collective relationship of Financial Literacy, Investors' Confidence, Risk Tolerance, Investment Philosophy, and Investment Experience on Investment choices and how their combined effect reflects on investment behavior.

Keywords: Investment behavior, Financial literacy, Investment choices, Investment philosophy, Risk tolerance

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1. INTRODUCTION

The impact of different factors on investment behavior has received close attention from researchers, consultants, personal financial planners, and investors in the last few decades. This may be due to the uncertainties in the financial world, inefficient markets, and the increased variety of complex financial products. When the global financial crisis of 2007-2008 hit major financial centers, people were wondering what happened overnight. Fundamentals somewhat failed to explain the sudden changes (Colander et al., 2009) and market irrational behavior lead to the need to re-examine the causes behind such setbacks (Gärting et al., 2009).

Financial markets are perceived as human interactive environments encompassing complex rational and irrational behavior. In an attempt to unfold the reasons behind irrational behavior, it is argued that investor attitude is influenced by intuition, judgments, rumours, herd behavior, and media coverage of the stock (Bennet et al., 2012). Considering this, behavioral economists are challenging the assumptions of “rationality” by arguing that “Sometimes some of the agents act like humans” (Thaler, 2015). In addition to this, intuitive judgment may mislead investors. Sometimes investors are less aware of their investment intentions, and they usually make decisions opposite to their risk tolerance level and the investment philosophy they hold. Therefore, the question of how personality, philosophy and demographic variables shape investment intentions is a debatable topic.

These claims compel the need for a better understanding of major factors behind investors’ behavior. Keeping in mind all these factors, comprehensive research is required to cover all the above-mentioned factors in a precise way and help investors to make investment choices in line with their investment philosophy.

Investment behavior has two major components i.e., investment habits and investment decisions. In other words, investment behavior covers characteristics that stimulate investment decisions. In a similar fashion, an individual’s behavior and psychological factors like beliefs, preferences, and psychological biases play a vital role in financial decision making (Lodhi, 2014; Mitroi, 2014). Investors try to assess the risk and return of all possible investment choices to develop an investment portfolio in line with their level of risk, personality, and available options. Risk attitudes and investment objectives should match. Otherwise, investor ends up in a state of distress (Hoffmann & Post, 2017). In addition to this, investors’ perception also changes with behavioral biases

(Javed et al., 2017). Pundits of behavioral finance claim that pure economic models make a lot of false predictions. Biases like mental accounting and self-control pose threats to rational decision-making. In other words, as intuitive judgments are spontaneous, biases occupy a certain position in logical reasoning (Kahneman, 2003).

The process of decision-making should also be discussed from a psychological perspective (Thaler, 2015). Thus, understanding the behavior of (retail) investors is critical determining factors that may affect their decision-making process (East, 1993). The purpose of this study is to identify such determinants while particularly focusing on the attitude of investors towards risk, the role of demographics, and the inner confidence of investors, which may shape investors' personality. Investors' personality plays an important role in choosing specific investment tools (Aren & Dinç, 2015).

In short, every investor is different, with different financial goals, different levels of risk tolerance, personal situations, and different desires. By identifying such differences, investors could be clustered into identical groups by combining certain common factors. As mentioned above, it is also possible that certain investors show similar behavior due to similarities in socio-economic conditions and psychological factors while other groups of investors may react differently because of those factors. These differences may occur at the regional level as well. There is a need to identify those factors that can help stakeholders, i.e., government, regulatory institutions, banks, investment companies, etc. to develop a deep understanding of certain investment behaviors to tailor their ways of conducting business and executing regulations in a more effective manner. Such factors therefore can also facilitate retail investors to diversify their portfolios and make investment decisions more easily and efficiently.

Although many studies had been conducted on investment behavior, the studies which explore the collective relationship of factors shaping investment strategy and how these factors are reflected in investment behavior are limited in numbers. In studies, most of the work revolves around a single country, using a particular survey instrument covering one or two variables at a time (Nicolini et al., 2013). In developing countries like Pakistan, the combined effect of these variables is yet to be found (Awais et al., 2016). It is therefore desirable to understand whether the behavior of investors in one country could be generalized to other regions. As claimed by Nicolini et al. (2013), a unique national environment may compel researchers to study investment behavior in

each country individually. Considering this, it is much needed to check the perception differences of investors among countries to get a comparable measurement criterion.

Therefore, this study attempts to get an insight into retail investors' behavior in two different countries i.e., Pakistan and Türkiye. The factors which may influence investment behavior include financial capability related to financial knowledge (Atkinson et al., 2010; Gallery, Newton, and Palm 2011; Reddy, R. et al., 2013; Xiao et al., 2015) financial experience (Pellinen et al. 2011; Hani, Heru, and Isworo 2020); investor personality reflecting money/ investment attitude (Pak and Mahmood 2015; Nandan and Kumar 2016) and risk attitude ((Septi, Ainia, and Lutfi 2019; Shadnan 2016) as well as demographic variables (Shaikh 2019; Thanki and Baser 2019; Kumar and Goyal 2016) . Understanding the behavior of (retail) investors is critical to determine factors that may affect investment intentions. This study aims to investigate similarities and differences in terms of investment behavior of investors of Pakistan and Türkiye in detail.

2. LITERATURE REVIEW

2.1. Investors' Behavior

It is the behavior that distinguishes social sciences from natural sciences. Given the unpredictable nature of the human brain, it is not surprising that in the same situation and with the same social as well as educational background, one can exhibit radically different behavior than the others. The same holds true in finance, where every investor has his/her own investment philosophy. Investors act according to their style of thinking.

“Behavior” is a key concept in the field of social sciences. Psychology is known as “The Science of Behavior” (Bergner, 2011). According to Levitis, Lidicker, and Freund (2009); out of 26 standard dictionaries, online resources, and textbook groceries, only seven definitions seem to provide a precise definition of the word “behavior”. In order to get a meaningful explanation of “behavior”; Levitis, Lidicker, and Freund (2009) used a survey instrument. After analyzing the responses of 176 respondents, they reached the conclusion that “Behavior” is triggered by stimulus and is an internally coordinated response of individuals and groups. The response (action/lack of action) depends on whether it comes from outside or inside (Levitis, Lidicker, and Freund, 2009).

In fact, the concept of rationality and irrationality in investment decisions makes the situation even more complicated. The importance of the concept of “Rationality” could not be undermined, but it has many flaws while describing unusual events like speculative bubbles and currency crises, etc. (Colander et al. 2009; Gärling et al. 2009; Lusardi and Tufano 2015). In this regard, traditional finance sometimes remains silent and does not offer an explanation for some basic concerns like why do individuals trade differently?; Why do some investors make extraordinary returns and others fail to make even an average return?; How do they perform differently while choosing different portfolios with the same amount of investments? etc.” (Subrahmanyam, 2007). These gaps cast doubt on the theory of efficient markets. Robert J. Shiller (1981) challenged the concept of “Efficient Markets” by opening a new discussion in the field of economics and finance. He argued that mere objective reasoning does not work in explaining unusual events and changes in stock markets (Shiller, 1981).

After the financial crises of 2006-2007, investors are still committing errors in real estate businesses and housing sectors. Unlimited flow of information (Schwarzkopf, 2006), psychological reasoning underlying investing decisions, and investors' emotions (Shiller, 1981), as well as changing investment patterns (De Giorgi, 2011) are some of

the reasons due to why speculative markets are not easily predictable. Surprisingly, individual; and institutional investors react differently to these factors. As behavior is influenced by internal and external cues, decision-making styles and level of self-confidence play their part while seeking answers to the above-mentioned questions.

On the other hand, traditional finance proponents argue that behavioral research is mostly conducted on an ad hoc basis and for a specific sample. The response to the argument of traditional finance proponents by behavioral scientists can be summarized as follows: Behavioral models are based on evidence from experiments. Since the proof is based on cross-sectional data gathered across nations, investors may rely on these models for additional references. Thus, investors can rely on these models for further references because the evidence is based on cross-sectional data gathered across countries (Subrahmanyam, 2007).

The behavioral biases of investors can move the markets up or down and lead to significant fluctuations. Although econometric models are well developed and forecasting the markets is not impossible, the level of certainty associated with predictions is relatively low. In the same way, econometric models usually neglect unobservable variables by declaring them as error terms. In fact, such factors play important roles in the determination of overall prices in the market (Shiller J., 1981). By correcting investors' biases (error terms in traditional models) at a given moment, the detrimental impact of uncertainty on market forecasts could be reduced (Soros, 1987).

Narrative aspects in econometric models should be included as an essential element. Otherwise, a proper unbiased forecast could not be made. Strong personality, character, and memorable events create viral narratives. In research, explanations and narratives are not just developed for persuasion but are also a crucial aspect of the model's identity. One of the examples of these narratives and their effects on investors' judgment is a narrative that "Gold is the safest investment". The background on which this narrative was built in the second world war and the great depression. Inefficient markets exist because of behavioral differences among investors and their choices of investments. People depart from traditional decision-making models in different ways.

Michael M. Pompian has extensive work in the field of behavioral finance. He pointed out that investment biases in some clients are basically so deep-seated that their repeated mistakes must be stopped to save them from drastic consequences of poor decisions. It is, therefore, very important to discuss in detail why clients are making

specific investment choices, which types of behaviors are shaping specific decisions; and when clients need to modify their investment behavior. Three broad categories of these deviations could be labeled as “Attitude Towards Risk”, Non-Bayesian Expectation Formulation” and “Sensitivity to frame a decision problem” (Shliefier, 2000). Investment decisions, therefore, rely on investment behaviors (R. Agarwal, 2021; Mak & Ip, 2017a; Praba, 2011; Shaikh, 2019).

Investment behaviors include all the steps from planning to execution of investment plans. An investment strategy is about investment planning and setting investment goals. According to the Oxford Handbook of International Financial terms, “Investment strategy is a systematic plan to allocate investable assets among investment choices (such as stocks, bonds, real estate, commodities, deposit certificates, etc.). These plans consider factors like economic trends, inflation and interest rates, age, risk attitudes and risk tolerance level, short and long-term growth objectives (Moles & Terry, 2012). Keeping this in mind, Pompian & Longo (2004) suggested a four-step process to choose investment plans. These steps include asking the client to take personality tests, evaluating the responses to determine personality type, assessing risk-tolerance, and executing investment programs.

The theory of planned behavior (TPB) as developed by Ajzen (1991) well explains the motivations behind specific behavior. According to this theory, behavioral intentions could be predicted based on three dimensions. Thus, actual behavior could be explained in terms of attitude, subjective norms, and perception of individuals toward self-control (ability to perform). These three dimensions, as a result, could well explain the variation in actual behavior. The theory has been used by many researchers to check its validity and has been well supported by empirical evidence in different fields.

In a study conducted in Britain (East, 1993), the theory was applied to explain the behavioral intention of investors in the industries i.e. regional electricity companies, electricity generating companies, and British telecom. The research intended to predict the investment intentions of the shareholders in terms of the number of applications received for issued shares. The results revealed that in each case the shares applications for newly issued shares were accurately predicted based on measured intention. However, it was early work in the field with lots of limitations. For example, while it takes into consideration the normative influences, it ignores the temporal gaps between “action” and

“intentions”. It also ignores the economic aspects that may impact a person's decision to engage in an activity.

In developing countries, the research related to the theory of planned behavior (TPB) in the context of the financial environment is limited. For example, in a study conducted in India, the theory was adapted to explain the investment intentions of prospective investors and it proved itself to be well adjusted in investment scenarios. Two additional variables i.e., financial knowledge and personality traits were introduced to analyze the validity of the theory. According to the results, attitude played the role of a partial mediator in the relationship between investment intentions and financial knowledge. Subjective norms also had a positive effect on investment intentions, but the relationship was not strong. Financial self-efficacy played a dual role in defining the relationship between personality traits and investment intentions (Akhter & Das, 2017).

TPB is also used with an Islamic finance perspective in Pakistan to investigate the factors that motivate investors to choose “Islamic hire purchase” as an option to finance automobile purchases. Hire Purchase is a credit agreement in which possession of goods is handed over to the buyer on installment and ownership of goods is handed over after the last installment. The results revealed that three dimensions of TPB well explain the intentions behind Islamic higher purchases. Religious beliefs, Islamic product prices, and knowledge of Islamic products act as moderators between the dimensions of TPB and the intentions of investors to use higher purchase (Ahmed et al., 2019).

Comprehensively, the literature emphasizes the factors influencing investment behavior in four broad categories i.e., financial capability, Investors’ personality, Investment decisions/choices/intentions, and investment philosophy upon which Investors develop investment strategies. Financial capability is a mix of financial understanding, investment philosophy, understanding of the availability of investment options, and investment goals (Potocki & Cierpiat. W, 2018; Xiao et al., 2015). Financial literacy plays a significant role in selecting various investments (Gallery et al., 2011; Kannadhasan, 2015; Karaa & Kuğu, 2016; Mien & Thao, 2015). Sometimes Financial knowledge acts as a moderator between investment intentions and investment behavior and enhances their relationship in a positive way (Sabir et al., 2021; Shadnan, 2016; Shusha, 2017).

Along with financial literacy, personality when defined in terms of risk tolerance level, highly influence investment decisions (Bangesh et al., 2019; Kanten et al., 2018;

Pak & Mahmood, 2015; Rai et al., 2021). A complicated mix of demographics influences an individual's investing decision (i.e. gender, region, occupation, income level, and education (Hassan Al-Tamimi & Anood Bin Kalli, 2009; Pak & Mahmood, 2015; Salem, 2019). Demographic variables are also significantly related to financial risk tolerance and financial literacy of individual investors (Shusha, 2017); while some studies show some dialectical results and even deny the role of demographic variables in this context (Hendrawaty et al., 2020; Rosemary & Peter, 2016; Thanki & Baser, 2019). Other characteristics, such as confidence level, investing philosophies, and psychological factors, have a substantial link with investment behavior, although the strength of the relationship varies by gender, age, and experience (Jain, 2012; Karaa & Kuğu, 2016; Muradoglu & Harvey, 2012; Rosemary & Peter, 2016; Salem, 2019; Yang, 2013).

For this purpose, in this study relevant hypothesis was constructed as follows:

H₁: Retail investors' Behavior across Türkiye and Pakistan is different.

2.2. Investment Intentions/Investment Choices

Individual investment behavior comprises of how the investors judge, predict, analyze, and review the procedures for decision making. It includes investment psychology, information gathering, research, and analysis of financial problems. Investment behavior is a psychological and emotional process. Investments habits answer the questions like: Do people save and invest on a regular basis? Do they make decisions on their own or consult family members, peers, or professional consultants? Do they diversify their investments? How often do they revise their portfolios etc. and investment choices? (Gumanti, 2009).

An investment strategy guides an investor to take decisions based on goals, risk tolerance, and future capital needs. According to Benjamin Graham, the risk is one of the major factors that shape investment strategy. Investment objectives of individual or retail investors refer to their financial goals and are related to what they want to achieve with their portfolio of investments (Myers, 2022).

E. De Giorgi (2011) claims that investors follow two steps. First, they select goals according to the risk tolerance attitude and then they build strategies to achieve the goals. When investors are loss aversive, they invest wealth to achieve long-term goals while they adopt a high leverage strategy to achieve short-term goals. However, when investors are not clear about their specific goals or feel confused, they adopt safe strategies to

achieve their goals. They have a reference point in their mind to which they compare risk-return outcomes (E. De Giorgi 2011).

Rosemary and Peter (2016) suggest that investment goals are also influenced by demographic variables. The findings of their study exhibit that employment status and income level have a significant impact on the investment goals of investors, while marital status, stock market experience, and age have no significant impact (Rosemary and Peter 2016). A study about the relationship of preferences with investment behavior revealed that there is a difference between lower-income and high-income groups in terms of investment choices. Lower-income groups prefer safer investments as compared to high-income groups (Geetha and Ramesh 2011). Referring to another study, demographic factors are significant predictors of investment behaviors (Mak & Ip, 2017b).

Demographics, investment decisions, and financial literacy was collectively examined in a study conducted in Türkiye in 2015. The study concluded that various factors play their part to help the investors to choose among investment alternatives. Except negative relationship of foreign currency (as an investment choice) with other investment alternatives i.e., mutual funds, bonds and stocks, no relationship was found between others. Respondents who scored less in financial knowledge and are risk avoiders proved to be among those who choose foreign currency as an investment opportunity (Aren & Aydemir, 2015).

Risk perception cast a mediation effect between decisions and psychological factors. Investors shape their decision not only according to the information available but how it is presented by lowering their ability to bear the risk (Riaz & Hunjra, 2012).

Another study about the investment behavior of retail investors revealed that in countries like Pakistan, investors hesitate to invest in capital markets. They mostly prefer to invest in real estate, the types of investments that ensure capital gains and long-term protections, or in investments like foreign currency, gold, etc. The stockholding portion of individuals is influenced by awareness, social interaction, financial literacy, informational and transaction cost (Ali et al., 2012).

However, in the research, there is a very limited study on Investor personality, financial literacy, self-confidence, risk tolerance, self-assessment of risk, and Investment choices, in the context of Pakistan and Türkiye. This study will be among the pioneer studies in this regard.

For this purpose, in this study the relevant hypothesis was formulated as follows:

H₂: Investment Philosophy affects Investment Choices of retail investors.

2.3. Financial Literacy

Financial literacy is one of the major factors that influence investment behavior. Devastating financial crises has increased the importance of financial literacy (Vitt et al., 2005). Because of the world's uncertainties, financial literacy is now required by everyone, connected to any segment of society, to comprehend the complexity of the financial world. Investment in financial literacy can increase the certainties associated with desirable outcomes along with increasing positive returns on investments (Guiso et al., 2013). At least once in a lifetime, people require adequate planning to take complex decisions i.e., Purchasing a house, retirement plans to life insurance policies. Hence two types of investment philosophy prevail in one society at a time. Sometimes it is considered as a necessity e.g. purchasing insurance policies to abide by the law of society etc. and sometimes investment is considered as desire e.g. the willingness of investors to invest income in financial and non-financial products to increase wealth (Boughton & Jackson, 2020). Poor choices with limited market knowledge may lead to unacceptable standards of living resulting in economic anxiety. Therefore, financial literacy does not only help to evaluate different investment choices but gives a logical basis to investors to curve investors' philosophy according to his/her desires. Financial understanding thus leads to establish logical expectations about investment returns (Zait and Berteau 2015).

There is no widely accepted definition of Financial Literacy. According to PACFL (2009), financial literacy is: "The ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being". Financial literacy hence is a component of human Capital (Huston 2009). Lusardi along with other research partners did a lot of work on financial literacy and presented different definitions on the bases of the work done. She published 4 papers between 2007 and 2008. In her publication entitled Debt literacy, financial experience and over-indebtedness (Lusardi & Tufano, 2015), she defined financial literacy as "knowledge of basic financial concepts, such as the calculations related to compound interest, knowing the difference between nominal and real values, and the basic understanding of risk diversification". Although there is no unanimously agreed definition of financial literacy, there are number of studies that claimed to evaluate financial literacy by using latent variable. The number of items that are used to measure this concept ranges from 5 to 43. Some researchers had used complex

and variety of concepts like insurance, saving and retirement plans, credit instrument knowledge, credit card, budgeting, and inflation while others used single category to measure this variable.

In a study by Huston in 2010, literature review was conducted related to all relevant studies up to year 2010 to develop a systematic measure of financial literacy. For this purpose, he analyzed 71 studies which were published in academia articles and conferences. He identified 4 key content areas i.e., Money, Resource's protection, Borrowing and Investing. According to him, the major obstacle to develop a reliable measure for financial literacy is the absence of standardized conceptualization and researchers' consensus upon a definition. However, there is still a need to develop a scale that can measure financial literacy with consistency (Huston, 2010). Given the limitation of a comprehensive definition in the extended literature, current study uses the concept of financial literacy as the capability to comprehend the implications of interest, inflation, risks, and diversification. This measurement helps to link financial literacy to a country's demographic and socioeconomic situation (Guiso et al., 2013).

Financial literacy is also an important measure that reveals the intention of investor decision making process. It is, in fact, a practical approach, including the application of financial knowledge to investing decisions. Financial literacy is divided into subjective and objective categories. The factors that affect financial literacy are discussed as internal factors and include ability to manage financial resources, awareness about available financial options and execution of investment plans. A positive relation is found between objective financial literacy and financial satisfaction. (Xiao et al. 2015). In a survey published in federal reserve bulletin in 2003 it was noticed that households that have low investment index score also scored low on financial knowledge index (Hilgert et al., 2003). Financial literacy is also found low even in advance countries however it is much lower in developing and Low-income countries (Xu & Zia, 2012).

To examine the behavior of mutual fund and other complex fund investors, a systematic framework was developed to explore the effect of various demographic, social and contextual factors on financial literacy and its association with investment choice decisions (Gallery et al. (2011). The results indicate perceptions and choices of investors are directly influenced by financial literacy. Making informed investment decisions requires individuals to have adequate financial knowledge and understanding of various investment products and associated risks. Hence, it is not unusual for people to lose their

wealth while underestimating the cost they pay as interest on amounts they borrow from banks and other lenders (Bell and Lerman 2005).

Financial Literacy is also a key concept of financial capability. Financial Capability is term used to define ability of individuals to manage financial resources with the best use of their knowledge i.e., applying knowledge into practice. It explains how one can handle its funds with the viewpoint of gaining maximum present and future benefits from limited financial resources. Financial capability is thus defined as “The internal capacity to act in one's best financial interest under specific socioeconomic and environmental circumstances. It encompasses knowledge (literacy), attitudes, skills, and behaviour of consumers with respect to understanding, selecting, and using financial services, and the ability to access financial services that fit their needs (Yoong et al., p. 03, The World Bank, 2013)". Nations that can cope uncertainty with confidence have more risk tolerant respondents compare to the countries where people are more uncertain about financial decisions. Researchers also tried to unfold the relationship between demographic variables and financial literacy. Demographic factors like age, gender, occupation, socioeconomic status etc. highly effect the financial understanding of general population (Kadoya and Khan, 2020).

Financial literacy sometimes plays a role of moderator between risk tolerance and demographic characteristics of investors (Shusha, 2016). Level of Financial literacy and risk perception are important factors in choosing investments (Aren & Zengin, 2016). In a study of 456 university students in Greece, it was concluded that male students who keep and maintain the records of their expense account and whose father is well educated scored fairly high on the financial literacy scale. Such students can also cope well against financial shocks (Philippas & Avdoulas, 2020). Financial Knowledge, financial decisions and financial practices are associated with each other. There is positive relationship among all these variables. Financial knowledge also effects behaviour of consumers however the relationship is not always positive (Hilgert et al., 2003). Being trapped by overconfidence and information bias, investors sometimes behave against their own investment philosophy. Thus, they end up into undesirable losses. According to a study on 300 investors of Pakistan stock exchange a negative relation between financial literacy and behavioral biases was found. The study also claimed that in Pakistan the level of financial literacy in male respondents are high as compared to females (Rasool & Ullah, 2020).

Relationship between Financial literacy and financial experience is also found in literature. A Positive relationship between financial experience and financial literacy was observed. Education programs in High schools however have limited effect on financial literacy (Frijns et al., 2014). A study conducted in Chile tried to explore the impact of financial literacy and impatience on poor decisions taken by people. Along with other areas, the study focused particularly on retirement savings and investing behavior. It was revealed that impatience is a strong predictor of investment selection while financial literacy is less associated with sensitivity of information required to take decisions (Hastings & Mitchell, 2020). In Literature it is evident that people who have low level of financial literacy try to depend on debts and use expensive debt products like credit cards more frequently because they cannot interpret the effect of interest rate accurately i.e., underestimate the negative impact of fee payments on financial gains (S. Agarwal et al., 2009). To increase financial satisfaction consumer awareness and financial satisfaction enhancement programs are recommended by Xiao et al. (2015), in their study conducted on 26,900 people in US. According to the findings both subjective and objective financial literacy improve with increase in age. On the other hand, young respondents between age group 18-24 did not perform well in financial capability aptitude test. Therefore, it is recommended that the government, policy makers and regulatory institutions should consider these patterns as an essential element while shaping financial literacy programs. Spreading financial awareness in young citizens could be beneficial to society in the long run. Similarly, policy makers should design policy instruments by keeping in mind the financial ability of their target groups.

It is vital to comprehend causes that create obstacles in effective investment choices (Huston, 2010). Financial literacy is an important variable to understand why people take suboptimal decisions. One of the arguments is that many people do not have essential understanding of financial and economic concepts and they lack the skills to do basic computation (Hastings & Mitchell, 2020). According to a study done in India (J. Grable et al., 2020) past behavior of investor does not shape its present intentions to invest. However, financial literacy had played its part to reduce the social pressure that influence investment decisions. With age, the optimal financial decision capacity of people decreases. The impact of age on financial mistakes is analyzed in research carried out by Agarwal et al. 2008 by using 10 types of credit transactions. The results suggest that middle aged group performed better by making fewer mistakes as compared to old,

aged people and youngsters. The relation pattern is like a u-shaped curve where respondents around age 53 performed better by interpreting the impact of interest, credit transactions and other borrowing costs. However, learning can play its part to overcome this short coming.

Financial literacy seems to increase with increase in basic knowledge like mathematical skills. A study considered 2025 high school students in Netherland to investigate the factors which are associated with financial literacy. It was found that the students who have low grades in school and scored low in mathematical subjects have low level of financial literacy. Family background like students with mothers who do not hold university degree, where discussions with peers and family members about financial matters is not done frequently and those students with low score on SES also showed low level of financial literacy (Amagir et al., 2020). There are some evidence that unfold the relationship among financial knowledge, society, peers, media information, social behaviours and social learning opportunities. Society teaches financial skills to individuals, directly and indirectly. It is also observed that with whom subjects live significantly influence financial literacy and financial knowledge transfers through social interactions (Gomes et al., 2020; Gutter et al., 2010).

In a s survey published in federal reserve bulletin in 2003 it was noticed that households that have low investment index score also scored low on financial knowledge index (Hilgert et al., 2003). Financial literacy is also found low even in advance countries however it is much lower in developing and Low-income countries (Xu & Zia, 2012).

As mentioned above, it is very difficult to measure level of financial literacy directly. Thus because of the complexities regarding the definitions of latent variables, a great deal of variation still exists in how researchers measure financial literacy. They attempted to use different scales to measure financial literacy. Volpe, Chen, and Pavlicko (1996) developed a 10-item multiple choice scale for this purpose. The scale was not widely used in previous studies on financial literacy because it attempted to measure financial literacy only with 2 dimensions, i.e., Investments, and Performance. They then extended the scale to 36 items in 1998 by including savings and debt aspects. The scale that used confidence and perceived knowledge as an internal part of literacy received criticism on the basis that individuals themselves are not good perceivers of their own financial knowledge and abilities.((Lusardi & Mitchell, 2011).

Due to human instinct, uncertainty affects individuals' capability to think so that they act differently in real situations as compared to simulated environments. A scale developed in 2006 by Annamaria Lusardi and Olivia Mitchell to measure financial literacy has been used in many studies. However, the current study is using the 10 item-scale developed by Knoll and Houts in 2012 and revised in 2020 (Houts & Knoll, 2020). It is a modified scale based on Lusardi and Mitchell's scale. The scale covers different aspects of financial literacy in a more comprehensive manner. It has been tested on 12140 respondents in 2010 and 1483 respondents in 2019 and the results supported that this scale is highly reliable (Houts and Knoll 2020).

For this purpose, in this study relevant hypotheses were constructed as follows:

H_{3a}: Financial Literacy Influences the relationship of Investor's Self-Confidence and Investment Choices.

H_{3b}: Financial Literacy Influences the relationship of Investor's Experience and Investment Philosophies.

2.4. Experience, Philosophy and Information Gathering

Previous studies on the relationship between Financial Experience and Investment Philosophy provide some mixed results. Experience tends to give a road map by allowing investors to evaluate their investment options based on their investment philosophy (Trutmann et al., 2021). Similarly, past experiences of investors shape their intentions to make future investments. The intensity of this influence seems to vary among different age groups and by the nature of investment tools. Young investors tend to get more upset by financial shocks as compared to old investors especially when there is high unemployment in the society (Malmendier, 2021). Mak and Ip suggest that investment experience is a psychological factor that influences present decisions of investors in the light of the results obtained in the past (Mak & Ip, 2017a). Similarly, Senda and others found that experience affects investment decisions (Senda et al., 2020).

Investor overconfidence also tends to increase with experience and education. The results are claimed by a quantitative study that used responses of 309 mutual fund investors. Experience is measured on two levels. Those with less than two years of experience in investment were regarded as "novice" investors, while those who had experience above two years were regarded as "experienced". Gender seemed to remain silent with respect to the self-attribution bias (individuals' tendency to attribute successes

to personal skills and failures to factors beyond their control), yet men were discovered to be more overconfident than women (K. C. Mishra & Metilda, 2015).

Related to over-reaction to market news, both females and males were found to use the information in the same fashion while making financial decisions (Jamil & Khan, 2016). However, new information and new modes of investments are more quickly adopted by men as compared to women. Women were found to have less information about digital currencies like bitcoins regardless of socio-demographics and personality characteristics. Experience with digital technology, in contrast, does not have additional explanatory power on this disparity (“The Gender Gap in ‘Bitcoin Literacy,’” 2019).

Level of overconfidence tends to decrease, as investors get more experience (Gervais and Odean 2016). It happens due to two factors; the time spent in stock markets and amount of investments. Experienced investors are more prone to the disposition effect than the inexperienced investors (Da Costa et al. 2013). Literature also elaborates that when taking decisions about investments, novice investors search more for information and are more careful in gathering information. Investors with more experience rely mostly on their past experiences and thus take into account limited but more relevant factors which they consider important (Alrabadi, Al-Gharaibeh, and Ziad 2011).

When it comes to investment decisions, experience plays a mixed role. A study carried out by Chin et al. in 2007 about Chinese investors found that inexperienced investors make poor decisions due to overconfidence compared to experienced investors.

A contrasting view however claims that more financial blunders are made by investors who have low knowledge although they are experienced (Agarwal et al. 2008). Investors use different social media platforms to make investment decisions. They choose information sources according to their knowledge. The quality of social media choices influences their financial understanding. For example; internet, family, close friends and media news are different sources of information for students which refine their financial knowledge (Karaa and Kuğu 2016b; Ozdemir, Sari, and Irwandi 2021).

Students try to enhance their financial literacy by using different social media platforms before making final decision about investments. One of the positive aspects of social media platforms like Tiktok, Twitter etc.as well as digital banking and financial technology is that students get updated information about investment choices (Hensly, White, and Cruse Lindsey Reichlin 2021). Thus, the decision-making ability of an investor to choose specific types of investment also seems to be affected by his/her habit

to use internet, social media, and to discuss with family members and friends about financial matters.

One way to modify knowledge is to increase experience by practically investing in financial products. Another way to enhance financial understanding is through discussions with experienced investors. Both ways may help investors to increase their understanding of financial products in a positive way (Hilgert and Hogarth 2003). However, caution should be exercised when relying on the information of others because not everyone has advanced knowledge to comprehend the information provided on media by experts and financial analysts. Thus, investors may misinterpret such pieces of information.

A study on 188 state employees were conducted in Sri Lanka to explore the effects of demographic factors on investment decisions. Occupation, gender, and age are found to be directly associated with investment objectives; while investment experience, monthly income, qualification, and age were found to be related with risk tolerance and duration of investment (Subramaniam, V.A. and Velnampy, T., 2016). Those individuals who find it difficult to initiate any new investment transaction do not easily build trust on media or other professional sources. However, they seek pieces of advice from professionals to whom they have personal access. Gender casts an influence on information gathering abilities of investors. Income level is influential on investors' information gathering ability and also on confidence. Confidence also enhances the ability to gather investment information (Yang, 2011).

Behavior of investors in stock markets is influenced by variables such as religious factors, social influence, and attitude towards investment. Religiosity and social influence stimulate investment intentions, while no direct relationship is observed between investment behavior and religious thinking of investors. In countries like Pakistan, the moderating role of financial literacy with respect to the relationship between these variables and investment behavior is also observed (Senda, Rahayu, and Tri Rahmawati 2020). Individual investors may develop herding behavior when they follow the market by neglecting their own choices and investment goals. In such situations, financial literacy acts as a moderator between the past investment experience and overconfidence (Sabir et al., 2019).

Since the above-mentioned studies emphasize that investment experience of individual investors provides a sound base for investment decisions, the study includes

experience as a research variable by considering it as one of the important factors that influences financial investment behavior.

For this purpose, in this study relevant hypotheses were constructed as follows:

H_{4a}: Investors' Experience affects Risk Tolerance Level of retail investors.

H_{4b}: Investors' Experience affects Investment Philosophy of retail investors.

H₅: Investment Philosophy affects Investment Choices of retail investors.

2.5. Investor Personality

Personality is a combination of some unique and distinct attributes that define overall characteristics of individuals. The study of the psychology of personality, called personality psychology, attempts to explain the tendencies that underlie differences in behavior. Trait theories of personality emerges in early 1900s. Gordon Allport identified 4000 personality traits which are combined by Raymond Cattell's 16 personality factors known as "16P". These factors were scored on two dimensions (From High to Low). After that, Hans Eysenck's added a third dimension to Cattell's 16P factors and proposed a "Three-Factor Theory". However, it was a complex explanation of investor personality, which was not easy for others to generalize (Matthews & Gilliland, 1999).

The year 1936 is a remarkable year in terms of defining and analyzing personality through a set of questionnaires developed by Menner, Allport, and Odbert (1936). The researchers introduced the "Big Five Model". They identified five distinct personality traits i.e., Openness, Extroversion, Conscientiousness, Neuroticism and Agreeableness. Each of these five personality traits has a range (two extremes). Those personality traits seem to affect investment choices. For example, investors who score high on neuroticism tend to choose risky investments (Aren and Dinç 2015; Aren and Nayman Hamamci 2020; Liu et al. 2021).

Many studies conducted by researchers of behavioral finance tend to describe investors on the dimensions of the Big Five Model. However, investor's personality is more difficult to assess on these dimensions. One of the major problems was the assessment of risk an investor is willing to take. "Barnewall Two-way Behavioral Model" was proposed by MacGruder Barnewall in 1987. He categorized investors as active and passive investors. As the names suggests, passive investors are those who inherited wealth or earn it through their profession or by risking money of others rather than their own. On the other hand, active investors are those who have achieved significant wealth, or earned

well, during their own lifetime. Risk tolerance and occupation are two factors that influence characteristics of active and passive investors. It is the risk tolerance behavior that defines investor personalities with reference to specific traits named as conservative, moderate, growth and aggressive investors.

Kathleen Gurney (1988), who was a member of the Financial Psychological Association introduced classification on the basis of money preferences and their reactions to financial decisions. She divided investors into nine types. The nine personality types are: Hunter, Perfectionist, Safety Players, Optimist, Entrepreneur, High Rollers, Producers, and Money Players.

Michel Pompian suggested 4 types of investor personality under the umbrella of CFA institute (Pompian 2008). Pompian's categorization helped others understand what the distinct features of investors personality are. He proposed a simple but effective strategy to recommend investment plans to investors according to their will and needs. Based on behavior, he divided investors into four categories: Passive Preservers, Independent individuals, Friendly Followers, and Active Accumulators. He proposed a methodology called "Behavioral AlphaTM" to classify investors. According to him, active or passive investors could be identified on the basis of their attitudes. After identifying whether an investor is active or passive, risk tolerance level should be checked. The last step is the identification of biases that a client may hold. By following these comprehensive steps, specific personality types could be identified. Understanding investors' personality on the basis of their risk tolerance, the biases they hold, their investment philosophy and investment objectives not only helps consultants to suggest a personalized portfolio for client, but also reduces the chances of negative surprises in times of economic turmoil. However, he also warns consultants that personality is dynamic in nature, so before initiating any new investment transaction over time, one should revisit the assessment obtained previously (Pompian 2008, 2012, 2016; Pompian and Longo 2004;).

Other common factors that may modify investor personality include demographics, investor's confidence level, past financial decisions, influence of peers, advisors, and family, psychological biases an investor holds in a certain time period, the level of risk tolerance, the knowledge and understanding about investment options as well as experience (Akhtar & Das, 2020; Aren et al., 2021; Chen et al., 2019; Dickason &

Ferreira, 2018a, 2018b; N. Khan et al., 2021; Mak & Ip, 2017b; Oehler et al., 2018; Michel M Pompian, 2016; Sarwar et al., 2020; Vanwalleghem & Mirowska, 2020).

Personality is one of the most relevant factors that explain the reason behind particular investment behavior (Frantz et al. 2021). Personality also influences investment strategies in the form of investment patterns. These strategies directly affect investment outcomes. Investment patterns like choice of long-term and short-term investments are changed with contrasting degree of personality attributes like conscientiousness, openness, agreeableness, and extroversion etc. Openness and extroversion are two major attributes almost common in those investors who choose to invest in the long-term and gain positive returns by adopting this strategy (Chen et al. 2019).

Personality traits have a strong impact on decision-making capacity of individuals and the method of investment. Personality traits act as a moderator between risk tolerance and investment decisions (Pak and Mahmood, 2015). The influence of personality traits on the investment decisions is stronger as compared to other demographic variables (Chitra and Sreedevi 2011).

Due to increasing complexities in financial markets, investors sometimes get confused about their investment decisions. It is not surprising to know that investors' personality leads investors to formulate investment strategies, which later influence the investment habits. For instance, the decision whether to invest for short term or long term is significantly influenced by personality (Chen et al., 2019; Tauni et al., 2017).

The study of Khan and others supports the argument that psychometric factors and investment decisions are significantly related. Financial self-efficacy and personality traits determine investment behavior, while emotional and cognitive biases modify this behavior. As a result, correct identification of biases might increase self-efficacy (Khan, Usman, and Farooq Jan 2021).

When it comes to unfold the role of gender in the context to investor personality, mixed results are found. In some studies, investor personality does not seem to be affected by gender (Balachandra et al., 2019; Cuong & Jian, 2014; Durand et al., 2019). On the other hand, some researchers argue that gender plays an important role in investment decisions (Jamil and Khan 2016; Lan et al. 2018; Pompian and Longo 2004b). Conversely, Senda and others found no relationship between gender and investment decisions. While gender and qualification do not seem to have any impact investment decisions (Senda, Rahayu, and Tri Rahmawati 2020).

According to Jamil and Khan (2016), males and females differ in terms of investment decisions. Males are clearer about their investment goals as compared to female investors. However, long-term and short-term investments are equally ranked by both genders. Regarding risk tolerance, males are more risk tolerant than females (Jamil & Khan, 2016).

Sources of information also play their role by modifying the relationship of personality traits and stock trading. Experts and consultants' advice cast different impact on investors having different personalities. Some investors with same traits like "openness" and "neuroticism" become more active and increase the frequency of trading when they get information from experts and financial advisors (Tauni et al., 2017).

Lathif (2019) analyzed the relationship between personality attributes like openness, agreeability, emotional stability and extraversion and investment intentions and revealed that openness and agreeability are two major attributes that influence short term intentions of investors (Lathif, 2019).

Nevertheless, investor personality has different traits and gender is only one of them and more comprehensive plans could be developed to satisfy investors (Pompian and Longo, 2004b).

2.6. Risk Tolerance

Risk tolerance is a psychological element of decision making. Under financial uncertainty, risk is defined as the estimation of probability of possible outcomes and their chances of occurrence (Tversky & Kahneman, 1992). Risk attitude is defined as "the emotional and psychological components that affect an individual's perception and reaction to risk" (Linciano & Soccorso, 2013). The terms "risk attitude", "risk appetite", "risk perception" and "risk tolerance" are often used interchangeably.

Risk tolerance has three levels. The investors who avoid risk and want to invest in safe investment opportunities are called risk averse investors. Those investors who want to get maximum returns by investing in volatile investments are called aggressive or risk loving investors. Between these two extremes fall risk neutral investors, who neither take extreme steps nor ignore opportunities if they think the investment will be enough worthy in the future (Tsaur, 2013).

Risk taking behavior is directly related to demographic variables. Socioeconomic status as well as educational background influences the intensity of risk-taking attitude of

investors (Lamba and Raheja 2014). In addition to this, financial literacy along with demographic variables affects risk taking attitude. Thus, financial literacy of investors should be considered in relation to demographic variables to explain risk tolerance (Hendrawaty et al. 2020; Muktadir-Al-Mukit 2020; Shusha 2017).

To further investigate the claim that financial risk tolerance varies with demographical structure of respondents, a study conducted in India explored the relationship of demographic variables and financial risk. The study found that age and education is not significantly related to financial risk tolerance; while gender, marital status, occupation, and income along with personality type have a positive relationship with risk tolerance behavior (Jamil and Khan 2016). Similarly, another comparative study that used data collected from respondents of two European countries claimed that culture in different societies plays a vital role in risk tolerance attitude (Cera et al. 2020).

In the early literature, it is mentioned that investors are sometimes confused about their risk tolerance level. According to Morse, self-reported risk tolerance level and risk level of chosen investment are not related. Also, no relationship was found between extraordinary moves some investors take while making decisions and their risk tolerance level (Morse, 1998). Yet, the degree of risk an investor can tolerate plays a significant role in understanding why investors choose specific investments and risk tolerance shapes strategies related to investment choices (Awais et al., 2016).

Income level and demographics impact upon risk tolerance. Dohmen et al. (2006, 2011) test the influence of various socio-demographic factors on the individual risk attitude. Participants' age, gender and height are identified as the main influencers of the general risk attitude. With increasing age, risk aversive behavior increases. Moreover, female investors are more risk aversive than male investors (Ji, 2011). However, Financial risk tolerance is difficult to measure directly and measuring it has become challenging (Yoa & Curl, 2011). For these reasons, proxies are used. Grable and Lytton. Ruth H. in 1999, developed a very precise scale comprised of 13 items inspired by the Modern Portfolio Theory. Based on literature review they first developed 50 items. After working for a number of years (from 1993 to 1999), they successfully modified the scale. By measuring scale validity and items' reliability, they reduced the scale to 13 items. Hence, Grable and Lytton scale validity proves to be high in many studies (Kuzniak et al., 2015). Marinelli, Mazzoli, and Palmucci (2017) checked the consistence of the items

in this scale on 2,374 investors and added a self-assessment question to the scale as a proxy for the subjective measure of risk tolerance.

Investors' risk-taking behavior is sometimes affected by subjective risk-taking attitude. Thus, it changes with the risk/return of alternative investments choices. A person who is a risk-taker and innovator have a greater propensity towards investment intention. (Akhtar and Das 2019, 2020). On the contrary, an experimental study claims that risk aversion seems to have no impact on decision making (Lambert et al, 2012).

Overconfidence stimulates risk tolerance when previous returns of investments are under consideration. Overconfidence along with subjective and objective measure of risk tolerance thus significantly influence the risk-taking behavior of investors. However the intensity of relationship changes with respect to alternate investment options and nature of investment (Nosic & Weber, 2010).

Dorn and Huberman (2010) examined the relationship of stock volatility and risk tolerance. They concluded that risk avoiders aim to maintain the volatility of their whole portfolio over a period of time in such a way that when they sell stocks (they already hold) and buy new investments, the overall composition of portfolio remains the same in terms of risk. Thus, investors follow the stocks that are consistent with their risk bearing nature.

The moderating role of risk perception is also found in literature. Shadnan's study about financial literacy and investment decision showed that risk acts as a moderator on the relations among financial decisions, financial literacy, and financial knowledge. It is mentioned that investment decisions of investors who belong to lower income groups are more influenced by their perception towards risk (Shadnan, 2016).

Risk attitude plays a significant role in shaping investment intentions (Abul 2019; Cuong and Jian 2014). Risk propensity and three dimensions of Ajzen Theory of Planned Behavior (Ajzen, 2011) i.e., attitude, subjective norms, and perception of individuals toward behavioral control also proved to be significant predictors of behavioral intentions for stock investors. (Alleyne and Broome, 2011).

In the light of the above-mentioned literature, we employ risk tolerance along with other variables as a predictor of investors' behavioral intentions to make investment choices.

For this purpose, in this study relevant hypotheses were constructed as follows:

H_{6a}: Investors' Risk Tolerance level affects Investment Choices of retail investors.

H_{6b}: Investors' Risk Tolerance level affects Investment philosophy of retail investors.

2.7. Self-Assessment of Over Confidence

Over Confidence is defined as a state of mind in which an individual over rates his/her abilities to perform well in an increasingly challenging environment. An over confident person may develop an excessive belief in his/her decision- making skills by ignoring the conditions that could cause adverse impact on outcomes in contrast to what he/she is expecting (Kusnandar et al., 2019). Over confidence is measured by self-assessment questions in several studies (Asaad, 2015; F. Khan et al., 2019; Kusnandar et al., 2019).

How investors' confidence and competence affect investment decision making was examined on 30 inexperienced investors by Kusnandar and others (2019). It was concluded that overconfidence is significantly related to decision making and novice investors are over enthusiastic while assessing their abilities to invest in the market (Kusnandar et al., 2019).

A study conducted on 1,119 university students in Türkiye claimed that University students feel overconfident while interpreting financial information they receive in the form of news and other qualitative/quantitative data. The major reason behind such type of behavior is that university students are in a phase of knowledge development and gaining financial independence as they make their own decisions related to financial matters (Karaa & Kuğu, 2016).

Investors who are overconfident frequently overestimate their abilities and make guesses with more confidence. They tend to trade more frequently and end up with lower returns. Social media enhances this speculative behavior in overconfident investors. Especially young male adults are found to be more overconfident than others while doing financial transactions (Barber & Odean, 2002, 2013).

To examine the role of gender on overconfidence, a study was carried out by Barber and Odean in 2006. Data of 37,664 households were collected from a brokerage firm. Frequency of transactions, types of investments and net return performance of households was evaluated by taking gender as proxy variable for over confidence. They noticed that men are more overconfident than women because of high frequency of their trading and thus in doing so they end up into low returns (Strahilevitz et al., 2011).

A study conducted in 2013 in Palestinian Stock Exchange on 400 respondents showed that overconfidence influences investment decisions. Out of 400 investors, 69.25% investors were found to view them better decision makers than they really are. (Nada, 2013).

A twostep study was conducted in Germany in 2013 to develop a reliable tool to measure over-confidence. The authors concluded that gender is not significantly correlated with overconfidence (Michailova & Katter, 2014). Likewise, Jamil and Kahn (2016) found that gender plays no significant role in shaping confidence level of investors, but it is experience and clarity of goals that make decisions' quality of both groups different.

The relationship between financial behavior in terms of credit instruments and confidence with respect to satisfaction was studied by Atlas et al. (2019). They named subjective knowledge as confidence and concluded that confidence leads to proactive financial decisions (i.e., investor use credit card more frequently) while over confidence not only distract the investor's decision-making ability but also influence behavior in negative way. However subjective knowledge and objective knowledge collectively are important for investor's financial satisfaction.

The current study will also be helpful for investors in modifying their investment behavior. When someone act spontaneously against any action, reaction is generated but when someone logically behave and show planned behavior against an action, the reaction turns into "response". This is what the current study aims; converting action to responses to make investor understand why they are taking specific actions and how to modify their selection of investment choices wisely.

As a result, investment choices could be judged based on the risk tolerance level, objective financial literacy, and investment intentions. More specifically, stock and types of bank deposits selection is influenced by subjective financial literacy and extraversion personality traits of big-five model. (Aren et al., 2021; Aren & Zengin, 2016).

There are many antecedents of individual investor's behaviors. Some factors may have a major influence while others may have a influence on the individual investment behaviors. It is therefore important to increase public awareness about available investment options, so that people can use their limited financial resources in more efficient manners. Thus, there is still a need to explore and understand the role of

Financial Literacy, Experience, Risk Tolerance, Investment Philosophy and Confidence in shaping investment behavior.

For this purpose, in this study several relevant hypotheses were constructed as follows:

H₇: Investors' Self-Confidence affects Investment Choices of retail investors.



3. DATA AND METHODOLOGY

The current study tends to compare the investment behavior of the retail investors in Türkiye and Pakistan. Details about the sample, sample composition, pilot survey statistics, data collection method, descriptive and inferential analysis of data along with the reliability and validity measures of the instrument used in the study are discussed in detail in this section.

3.1. Sample

As the economy of Pakistan and Türkiye is not fully documented, the study kept into consideration the banked population of both countries. According to the report of the World Bank entitled “The Unbanked” (2018), the unbanked population in the world is almost 1.7 billion. The share of women in the unbaked population is high, i.e., 980 million women do not possess any type of a formal or informal account. Almost 30 percent of the unbanked adults are between the age 15 and 24 (World Bank 2018; The Unbanked).

Although the population of Pakistan is 220 million and the population of Türkiye is 85 million, the population that under the definition of banked population of Pakistan and Türkiye narrows down the difference. The banked population in Türkiye is almost 68%* i.e. 58.19 million (*The Fintech market in Turkey the fintech sector and its potential and financial health in Turkey*, 2019) and in Pakistan the statistics is 55% (110 million). whereas the unbanked population of women in Türkiye is 60% (*The Fintech market in Turkey the fintech sector and its potential and financial health in Turkey*, 2019) and Pakistan is 80%.

The Population composition of age in both countries is almost the same i.e., age group 18-64 represents largest segment of population. Our sample did not consider:

- Population below 18 years
- Unbanked population

The population of Pakistan in the age bracket 15-64 is above 60% while it is 67.9% in Türkiye. For this reason, the sample takes into the consideration the respondents above 18 years. Another reason is, in Pakistan, National Identity Card (CNIC) is not issued to persons under 18 years of age. Minors can open accounts in any financial institute or banks etc., but they are joint accounts with guardian/Parents. In Pakistan,

11.00% of population comprises the age of 15-19^{1,2,3}. Table 3.1.1. presents the key population statistics of both countries. Other details about the population of Pakistan and Türkiye are briefly attached in Appendix 1.

By considering the above information, purposive sampling method is used. The sub target population of this study is retail investors of Türkiye and Pakistan with some basic financial knowledge or investment experience in a variety of products including stocks/shares, foreign currency, mutual funds, term deposits, insurance etc. Present study tends to analyse the investment behavior of different individuals with different employment/work backgrounds, age, income level, gender, marital status and academic qualification. The research relies on the primary data gathered through a structured questionnaire. In Pakistan data was collected through a private research firm. In Türkiye, the questionnaire was translated to Turkish language and then distributed to respondents with the help of data collecting firm. Data is collected between Oct 2020 to April 2021. Investors working in financial companies, trading on stock exchanges, clients of brokerage firms and banking customers who have any kind of investment accounts, saving accounts and term deposit certificate are part of the sample. As the study is analyzing investment choices as the dependent variable, expert opinions, central bank surveys and investments banks financial reports are used to get the information about the variety of investment choices.

Table 3.1.1. *Population statistics of Pakistan and Türkiye*

Country	Pakistan	Türkiye
Population	220.89 million	84.34 million
Literate Population	60.1%	96.7%
Age wise population groups (%)		
0-14 years	34.84%	23.93%
15-64 years	60.83%	67.07%
Above 65	4.34%	6%
Economy	Lower Middle Income	Upper Middle Income

¹ <https://data.worldbank.org/indicator>

² <https://data.tuik.gov.tr/>

³ <https://www.sbp.org.pk/>

3.2. Questionnaire

A structured questionnaire was developed after reviewing the related literature and several rounds of online discussions with 3 professors, 2 personals working on top positions in Nokia Pakistan. One person Working as a Financial Analyst in PSX (Pakistan Stock exchange) and another person working as MD in Skill Development Council Islamabad Pakistan. This step is done to develop content validity. A questionnaire covering 7 constructs was developed by combining different scales and then circulated for pilot survey. The items included in the questionnaire were already pre-tested and validated in several studies in the past. The 43 Item questionnaire along with all the coding and explanations is attached in Appendix 2 and 3 respectively.

Initially the data of 83 respondents was collected for pilot study. As a general rule, 30 or more respondents/ data points are enough for pilot study (Johanson & Brooks, 2010; Thabane et al., 2010). Among 83 respondents, 3 responses were duplicated and 5 were incomplete. Hence, complete responses were 75. After cleaning the data by removing missing values, outliers, and duplicate entries, responses were analyzed using SPSS. Coding of responses was done in Excel. Amos and SPSS were used to analyze the data. Validity tests and reliability tests were applied. Validity is used to check the accuracy of measure, while reliability tells the consistency of results.

Demographic information related to country, gender, marital status, income level, occupation and qualification was asked in section 1. In the next section, Experience was measured based on years of experience in investment and the variety of investments instruments (Frijns et al., 2014). Investment philosophy was assessed with questions related to sources of information, time horizons of investments and willingness to choose variety of investments. To measure Financial Literacy, the overall literacy score is calculated by combining individual scores of 10 items extracted from Houts and Knoll's financial literacy scale developed in 2019. Risk tolerance items were 13 and score is calculated by combining all individuals item scores on the basis of risk tolerance i.e., lower score is given to risk avoiding situations whereas options indicating higher risky possibilities received maximum score. Self-confidence about investors' own abilities was assessed by using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Regarding investment choices, several options from the literature were selected (Aren & Dinç, 2015; Geetha & Ramesh, 2011; Morse, 1998; Michael M. Pompian & Longo, 2004). According to Grana, which is a newly formed real estate company, there

are seven investment opportunities available in Pakistan. Foreign exchange, Gold, Term deposits, Saving schemes, Shares, Bonds, Real Estate. Few Islamic banks are offering Islamic bonds according to religious preferences of Pakistan's retail investors. ETFS (exchange traded funds) are another choice. Investment choices were given scores based on preferences selection e.g., respondents were asked to select the given investment choices based on their highly preferred choice. 1st preferred choice was given 100 percent weightage, second preferred choice was given 2/3 weightage and 3rd preference was given 1/3rd weightage. Then these scores were combined to calculate final scores of investment choices variable.

Moreover, the questionnaire is specifically designed by keeping in mind the following subjective measures:

- It can be applicable to people of Pakistan and Türkiye with different education and income levels as well as different levels of financial experience. The pilot survey results confirmed that questionnaire items can be successfully applied to diverse populations within countries. Scales from already tested published studies are implied within the survey to avoid waste of time and resources.
- The questionnaire is developed by keeping in mind the definition of all constructs used in the study. Within a single construct, questions are carefully designed to cover a wide variety of concepts especially with respect to general behaviors, attitudes, and knowledge.
- As 5-point Likert scales is used to measure investors level of self-confidence, detailed instructions are provided to choose the options (such as *strongly agree should be selected as 5 through to strongly disagree be selected as 1*).
- The questions measuring philosophy cover the concepts regarding how individuals get information to shape their philosophy, the time horizon of investment they prefer to choose and their willingness to invest in diversified portfolio.
- With respect to financial literacy, basic questions about interest rate, inflation, credit card fees, choices of investment and understanding of respondents about the time value concept was asked by keeping in mind that data is to be compared among respondents of two countries.
- As the data was collected online, investment choices are limited to quite familiar and common choices to remove the ambiguity of “understanding and selection”,

by keeping in mind the minimum qualification requirement to fill the questionnaire.

- Each of the core questions provides useful information. The language of questions was kept simple i.e., no complex terminology is used to make the questionnaire easily understandable. Questionnaire details are given in Table 3.2.1. while Appendix 3 is about the coding used for the questionnaire options.

Table 3.2.1. *Scale used and Questionnaire Items Description*

Variables	Scale used
Financial Literacy	Houts and knoll, 2019. (10 items scale)
Experience	Nanda and Moa'mer, 2013, Metilda and Mishra, 2015 (2 Questions)
Risk Tolerance	Grable and Lytton, 1999 (13 item), Self-Assessment Question 01 (Gilliam et al., 2010; Marinellie et. al. in 2017)
Self Confidence (Assessment level)	Asaad 2015; Khan, Shah and Bangesh, 2019 (5 item)
Philosophy and Goals	Great west Life Assurance Company (5 items)
Demographic Variables	6 Questions
	1: Morse, 1998 (on the basis of Risk)
	2: Aren and Aydimer, 2015; Pompian and Longo, 2004
	1 Question
	(Investment choices are categorized based on Risk and then given weights i.e., 1st preference is given 100% weight, 2nd preference is given 2/3rd weight and 3rd preference is given 1/3rd weight).
Choices/Intentions	For investment Choices Experts opinion, central bank surveys and investments banks financial reports are used to get information about investment choices context from literature.

3.3. Pilot Study

A pilot study was conducted to check the accuracy of the scale. A pilot study is a piece of work carried out independently as a “check-up” for main study (In 2017; Lancaster, Dodd, and Williamson 2004). The purpose of a pilot survey is to refine the options and language of questionnaire after receiving feed backs from different

respondents. Pilot study is a type of preliminary study that also helps to check reliability of scales used for each variable. Pilot survey assists to refine target audience and give lead to identify more specific sample. It also serves in identification of the difficulties faced by the respondents to understand wording as well as any errors/flaws in questionnaire (Srinivasan and Lohith 2017, p. 43).

3.3.1. Descriptive Statistics

Descriptive statistics reveals about the composition and features of the data. The descriptive statistics of pilot data revealed that males' respondents have major share in sample i.e., 59/75 males, while the respondents having qualification masters and above were dominating. 50% of sample was comprised of the age group between 26 to 54. The occupation variable has "employee" as a highly reported trait. The income groups up to \$2504 is dominating the samples. The other details are set out in Table 3.3.1.

Table 3.3.1. (Continued)

Descriptive Analysis of Pilot Study

Variables	Frequency	Percent
3a: Gender		
Female	16	21.3
Male	59	78.7
Total	75	100.0
3b: Marital Status		
Married	37	49.3
Unmarried	36	48.0
Discovered/widow	2	2.7
Total	75	100.0
3c: Age		
18-25	24	32.0
26-54	38	50.7
55-64	9	12.0
65-above	4	5.3
Total	75	100.0

(continued)

Variables	Frequency	Percent
3d: Education level		
Less than High School (less than 12 years)	3	4.0
Senior High School (colleges, 12 years)	7	9.3
University (Bachelor 2-4 years)	32	42.7
Masters/PHD	33	44.0
Total	75	100.0
3e: Average Monthly Income		
Under Rs 55000	31	41.3
Rs 55001 to Rs 210,000	28	37.3
Rs 210,001 to Rs 320,000	12	16
Rs 320,001 to Rs 425,000	1	1.3
425001 and above	3	4
Total	75	100
3f: Occupation		
Employer	11	14.7
Employee	32	42.7
Self-employed	15	20
Students/scholarship holders	17	22.7
Total	75	100

Note: The above table represents the descriptive statistics of variables Gender, Marital Status, Age, Education, Income Level and Qualification used in Pilot survey.

The figures from 1a to 1f represents the bar graphs frequency distribution of “Demographic” variables. A bar graph/chart is “a graphical representation of categorical data with rectangular bars having heights or lengths proportional to the values that they represent”. The graph provides visual information of different categories in a variable.

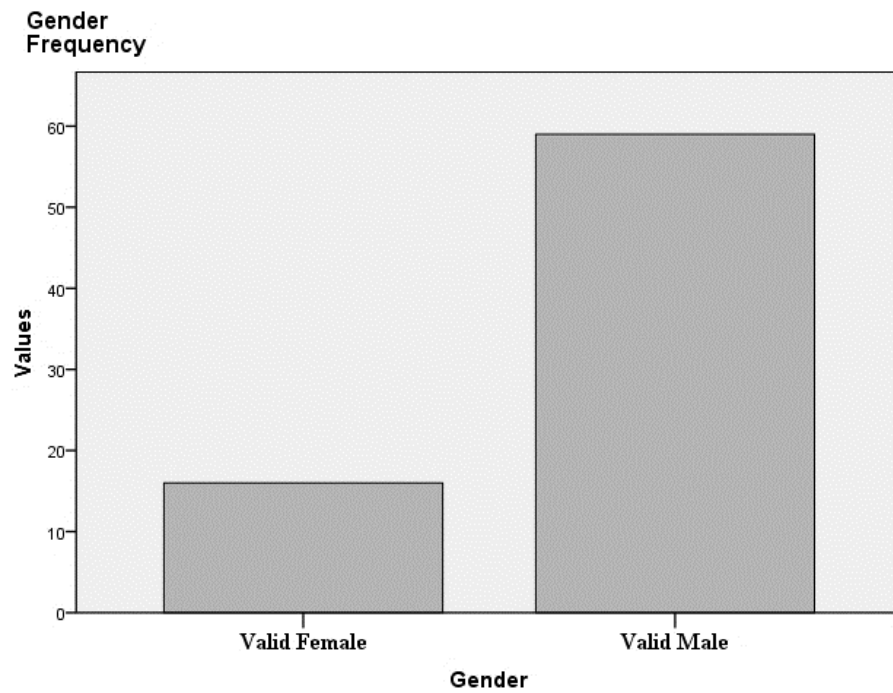


Figure 3.3-1: *Frequency representation of Gender*

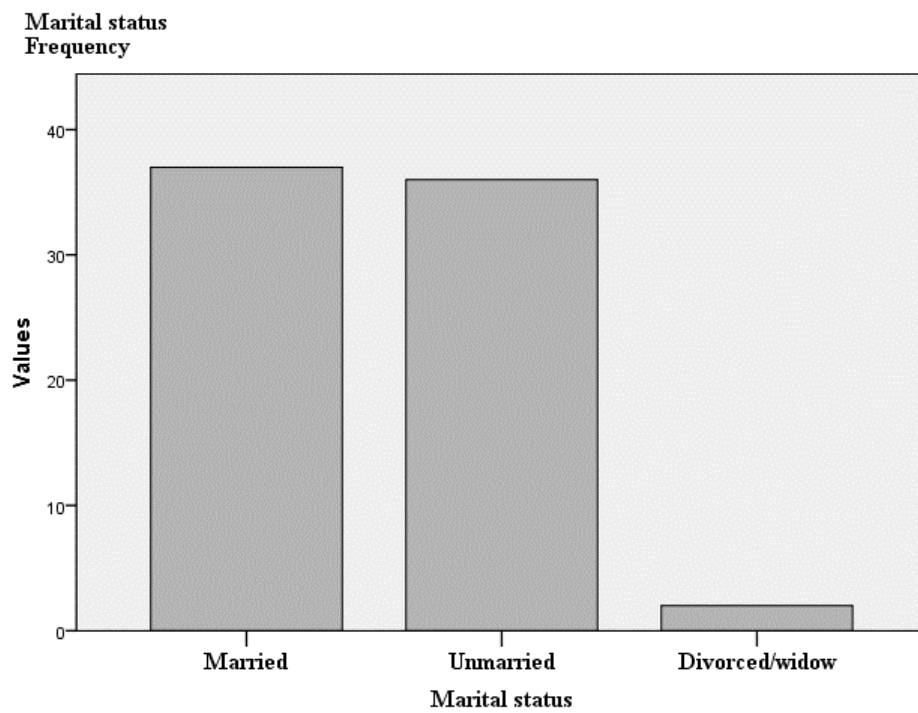


Figure 3.3-2: *Frequency representation of Marital Status*

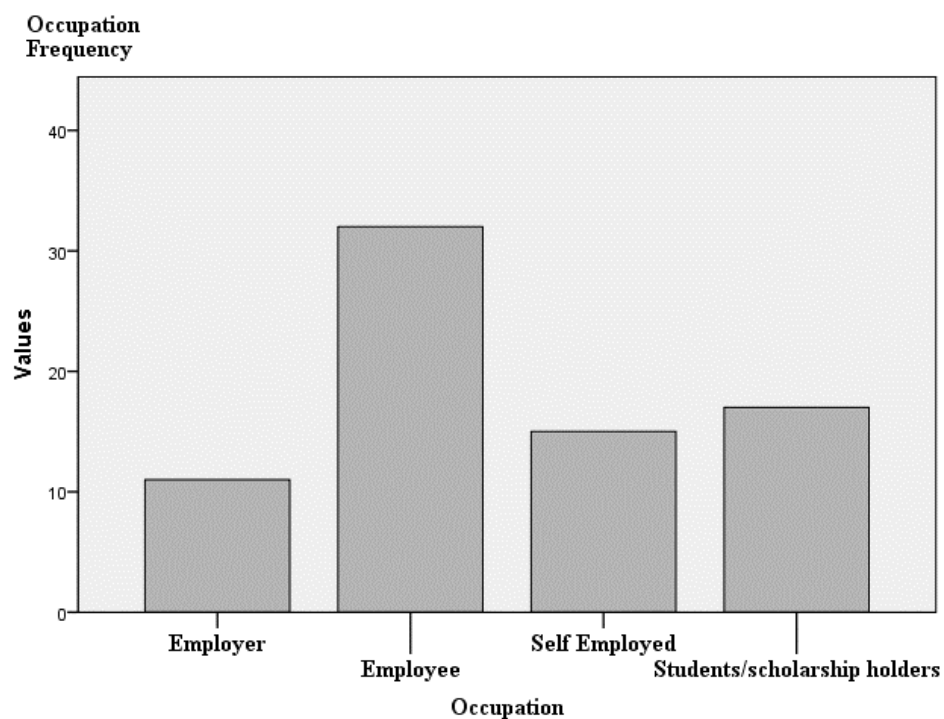


Figure 3.3-3: Frequency representation of Occupation

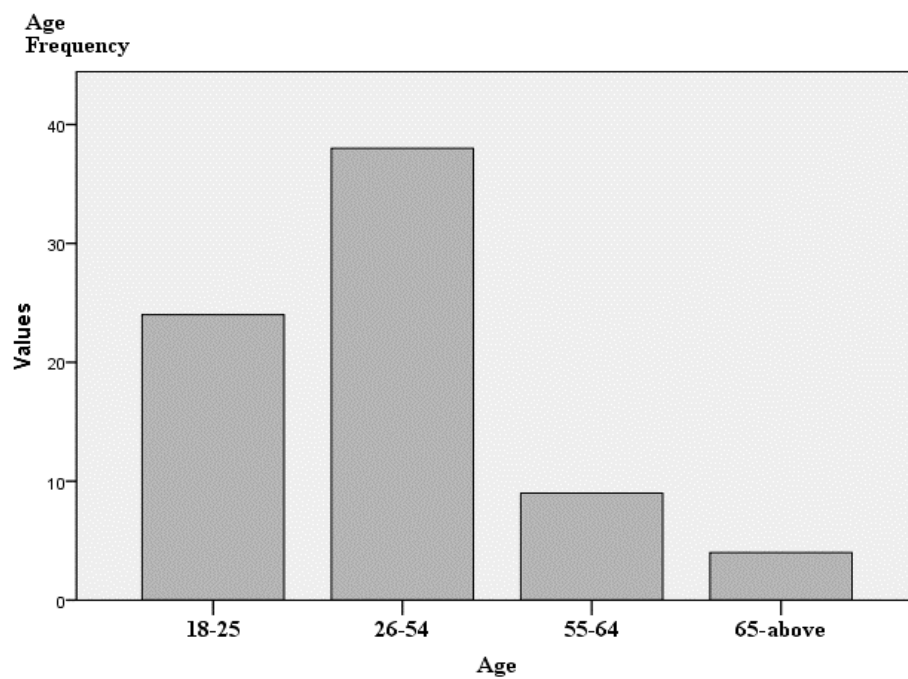


Figure 3.3-4: Frequency representation of Age

**Average Monthly Income
Frequency**

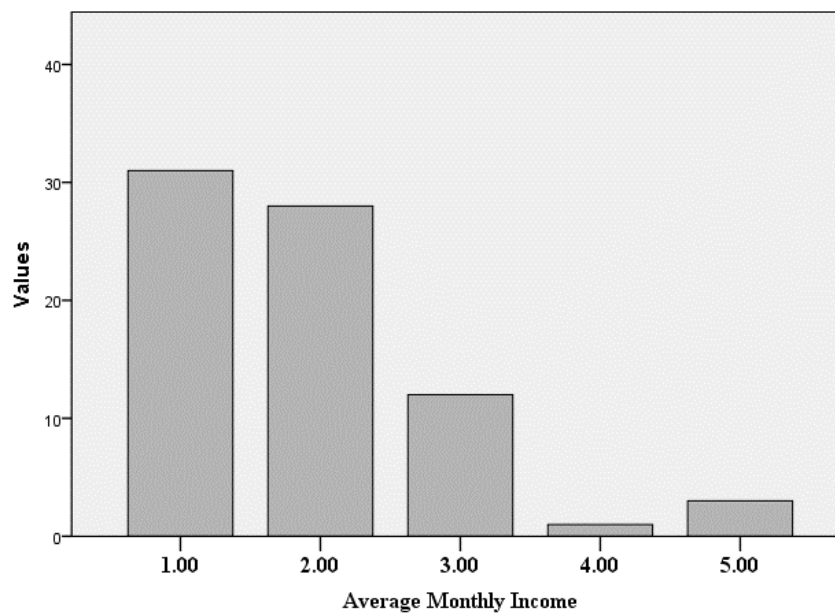


Figure 3.3-5: Frequency representation of Monthly Income

**Education level
Frequency**

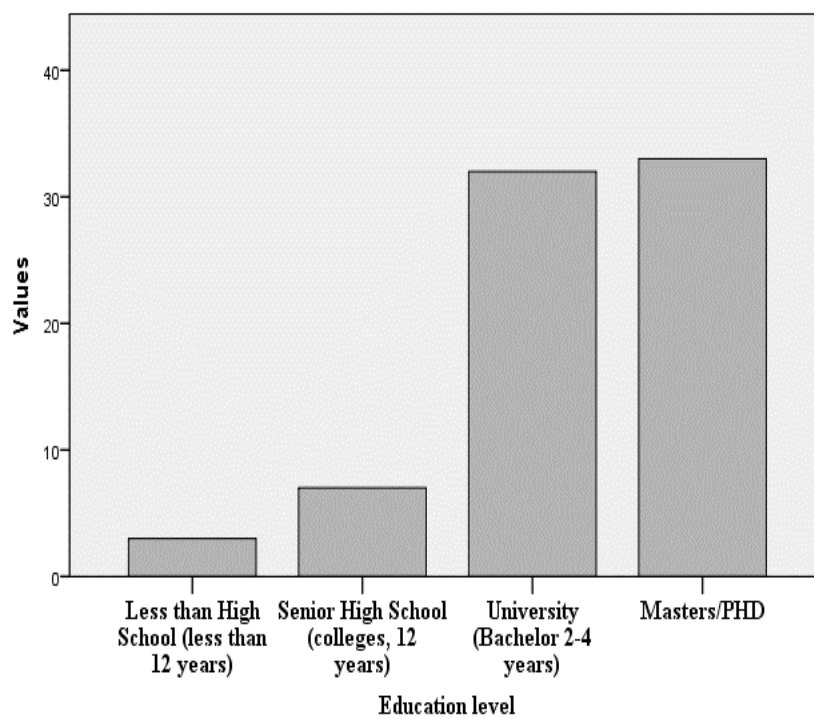


Figure 3.3-6: Frequency representation of Monthly Income

Table 3.3.2. presents the mean values along with skewness and kurtosis values of main variables in study. For medium-sized samples ($50 < n < 300$), a general rule is that if an absolute z-value (also known as z-score) is below 3.29 at the alpha level 0.05 than accept the null hypothesis that sample data is normality distributed (Finch, 1992). A z-score provides information on how far the data point is from the mean. In table 3.3.2, z-scores for all variables are in range. So, the null hypothesis that the data is normally distribution, is accepted.

Table 3.3.2. *Descriptive Analysis of Pilot Survey*

variables	<i>N</i>	Min.	Max.	Mean	Std. Dev.	Skewness <i>a</i>	Std. Error <i>b</i>	z-score* (<i>a/b</i>)	Kurtosis <i>c</i>	Std. Error <i>d</i>	z score** (<i>c/d</i>)
Investment choices	75	3.67	15.67	9.18	3.31	.367	.277	1.32	-.87	.548	-1.58
Experience	75	.00	5.00	2.09	1.51	.420	.277	1.52	-1.02	.548	-1.85
Financial literacy	75	.00	9.00	5.08	2.21	-.065	.277	-0.23	-.93	.548	-1.70
Self - Confidence	75	5.00	25.00	17.10	3.93	-.672	.277	-2.43	.82	.548	1.49
Risk Tolerance	75	13.00	42.00	26.77	6.99	.117	.277	0.42	-.45	.548	-0.82
Investment Philosophy	75	8.00	22.00	14.71	3.51	.310	.277	1.12	-.77	.548	-1.41

The variables of Investment choices, Financial Literacy, Risk Tolerance, Investment Philosophy, Self Confidence and Experience are continuous variables. Total Score of Experience is calculated by adding the score of years of experience and the variety of products an investor, invested in past. The sample is made up of investors having relatively moderate level of experience ($M = 2.09$, $SD = 1.51$) with moderate risk tolerance level ($M= 26.77$, $SD= 6.99$). The Financial Literacy mean value is 5.08 ($SD=2.21$). Self-confidence score, however, are tiled slightly toward left ($M=17.10$, $SD=3.93$) showing that investors in sample overestimates their abilities to predict the financial markets with less moderate aggressive philosophy ($M=14.72$, $SD =3.51$). This may be due to the presence of young investors in sample (the most frequent age group in the sample ranges from 26-54, as depicted in table 3.3.1.).

3.3.2. Inferential Analysis

In order to verify whether a designed instrument is meaningful enough to measure the underlying concept with accuracy, validity and reliability of the instrument is checked (Antony et al., 2012; Mccroskey, 1992; Neuendorf, K., 2011; Revelle & Condon, 2018). There are three types of validity: Content, Criterion and Construct. The Content validity is a subjective assessment of an instrument and is checked with the help of literature and experts. It tells whether the items underlying the construct covers the important aspects or not. Criterion validity is used to check whether the construct used gives somewhat consistent results with the construct used in the past to explain similar concept i.e., “measure of interest related to measure of established validity”. For example, the financial literacy scale covers the inflation, interest, and diversification concepts to measure literacy of investors. However, it is difficult to measure the criterion validity accurately in social sciences because of its “relative” nature. Construct validity on the other hand occurs when operational definition matches the actual measurement. It is a type of internal validity. Construct validity in facts describes how well the items/experiment/test measures what it claims to measure. Correlation between the items are sometimes used to check construct validity (Srinivasan & Lohith, 2017). Reliability however informs about the consistence of results obtained from specific measurement instrument. Cronbach coefficient Alpha is a useful criterion to measure instrument reliability (Ercan et al., 2007).

- To check the internal consistency of a scale, three methods are useful:
- Inter Item Correlation, “ r ”
- Cronbach’s Coefficient Alpha. “ α ”
- Item Total Correlation

The Tables from 3.3.4. and 3.3.5. to 3.3.9. contain information about the reliability and validity of different constructs/concepts used in the study. Although the quality of information obtained from Cronbach coefficient alpha is sensitive to sample size used i.e. the alpha obtained from large sample have a propensity to produce more precise estimate of population (Javali et al., 2011; Yurdugül, 2008), it gives somewhat a good idea to gain an initial understanding of the accuracy of instrument (Aminu & Mohd Shariff, 2015).

Table 3.3.3. *Questionnaire Items’ Reliability for Pilot Data*

Case summary		
Cases	<i>N</i>	%
Valid	75	100.0
Excluded	0	.0
Total	75	100.0

Table 3.3.4. *Reliability Statistics*

Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	No. of Items
.628	.736	45

Table 3.3.4. reveals that the overall Cronbach Alpha for questionnaire is .628. The acceptable range of Cronbach Alpha ranges from .6 to 1, where .6 is acceptable (G. Pontekotto and E. Ruckdeschel 2007; Hays, Hayashi, and Stewart 1989; Khidzir, Ismail, and Abdullah 2018; Ursachi, Horodnic, and Zait 2015). The total item to each item correlation between .2 to .7 is recommended (Henrysson, 1963). The item total correlation is a measure of the reliability of a multi-item scale and a tool for improving such scales. It is “the correlation between an individual item and the total score without that item”. Item total correlation value (if $p < 0.05$) between 0 and .19 implies that the items measuring the concept are not discriminating well. Values between .19 to .8 indicates good discrimination.

The last column of these tables presents the correlations, reliability and validity of Experience, Investment Philosophy, Financial Literacy, Self Confidence and Risk Tolerance respectively. Item-Total Correlation separately.

Table 3.3.5. Reliability and Validity of Experience

Reliability		6 items						0.662
Items	Years of Experience	Pearson correlation						Total Score Experience (Validity measure)
		Stocks	bonds	Mutual funds	Gold	Real Estate	Others	
Years of Experience	1	.383**	.044	.385**	.522**	.223	-.021	.506**
Stocks		1	.033	.567**	.505**	.124	-.235*	.563**
bonds			1	.012	.096	.002	.141	.229**
Mutual funds				1	.341**	.186	-.231*	.524**
Gold					1	.297**	-.073	.661**
Real Estate						1	-.081	.367**
Others (Foreign Currency, digital currency, term deposits)							1	-.003

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.3.6. Reliability and Validity of Experience

Reliability		6 items					0.566
Pearson correlation							
Items	Purpose	major goal	anticipate use	investment philosophy	investment decisions	Source of information	Item-total validity
purpose	1	.314**	.428**	.292*	.088	-.101	.519**
major goal		1	.291*	.164	.108	-.010	.487**
anticipate use			1	.275*	.158	-.042	.538**
investment philosophy				1	.129	.083	.463**
investment decisions					1	.116	.377*
Source of information						1	.149

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Table 3.3.7. Reliability and validity of Self-Confidence

Reliability	5 items					0.715
Pearson correlation						
Items	SC1	SC2	SC3	SC4	SC5	Item-total correlation
belief to predict market accurately (SC1)	1	.627**	.374**	0.224	.238*	.518**
Rate competence more than actual (SC2)		1	.293*	0.151	.263*	.481**
I rate my decisions better than actual (SC3)			1	.430**	.408**	.542**
Overconfident while assessing abilities (SC4)				1	.365**	.400**
I overestimate my ability to make investments (SC5)					1	.438**

** Correlation is significant at the 0.01 level (1-tailed). * Correlation is significant at the 0.05 level (1-tailed).

Table 3.3.8. Reliability and Validity of Financial Literacy

Reliability	10 items										0.602
Pearson correlation											
Items	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	Item-total validity
Inflation and rate of return (F1)	1	.201*	.245*	.319**	.336**	.332**	-.086	.022	.007	.044	.444**
Interest rate and bond prices (F2)		1	.298**	.191	.276**	.228*	.061	.185	.111	.061	.481**
Investment offers highest return in long run (F3)			1	.437**	.292**	.144	.031	.305**	.032	.002	.522**
Highest fluctuation of prices F4)				1	.554**	.113	.134	.187	-.006	-.022	.554**
Risk and diversification (F5)					1	.217*	.292**	.034	.160	-.016	.620
Mutual funds expected return (F6)						1	-.248*	.099	.450**	-.026	.422**
Whole insurance vs term insurance (F7)							1	-.147	-.192*	.136	.102**
Interest paid on loan and time length (F8)								1	.226*	-.088	.288*
House/real estate price (F9)									1	-.158	.261**
Credit card interest payment (F10)										1	.081

* Correlation is significant at the 0.05 level (1-tailed). ** Correlation is significant at the 0.01 level (1-tailed).

Table 3.3.9. Reliability and Validity of Risk Tolerance

Reliability														.856
Items	Pearson correlation													Item-total validity
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	
Risk habits (R1)	1	.418**	.017	.303**	.448**	.337**	.268**	.456**	.335**	.265*	.305**	.323**	.324**	.530
Chance game (R2)		1	.315**	.238*	.368**	.416**	.332**	.463**	.374**	.335**	.341**	.497**	.292**	.629
Vacation and lose job (R3)			1	.319**	.120	.413**	.345**	.374**	.328**	.226*	.240*	.210*	.261*	.493
Unexpectedly received (R4)				1	.515**	.310**	.388**	.432**	.257*	.400**	.407**	.276**	.271**	.586
Easy invest (R5)					1	.222*	.335**	.397**	.216*	.234*	.212*	.426**	.240*	.521
Risk,” definition(R6)						1	.180	.394**	.448**	.365**	.225*	.245*	.469**	.575
Fluctuating market scenario (R7)							1	.489**	.348**	.315**	.502**	.460**	.184	.612
Best/worst-case returns (R8)								1	.599**	.327**	.494**	.470**	.289**	.736
Money (R9)									1	.241*	.433**	.484**	.354**	.629
\$2,000 free fund (R10)										1	.404**	.295**	.417**	.543
Inheritance of money choices (R11)											1	.250*	.276**	.604
Investment choices (R12)												1	.241*	.582
How much you invest? scenario(R13)													1	.520

3.4. Survey of the Study

After conducting the pilot survey, data for the study was collected through an online survey both from Pakistan and Türkiye. Online survey is a good technique to save time and cost (Duffy et al., 2005). After the approval of the questionnaire by the Ethics Committee of Anadolu University, a Google Form was used to circulate the questionnaire in both English and Turkish language. At the beginning of the survey, the research objectives were briefly described, and participant consent was requested. Complete 592 responses were collected. From Pakistan 364 responses were gathered, however after filtering the data, complete responses were reduced to 343. From Türkiye, out of 260 responses 249 complete responses were analyzed. Descriptive and inferential statistical analysis was performed to test the significance of differences between the investors of Pakistan and Türkiye. Our total sample has 592 respondents. Usually a sample size > 300 or respondents to item ratio 10:1, is considered enough (Konstantina Vasileiou et al., 2018; Lenth, 2001; Osborne & Costello, 2004; Yurdugül, 2008). Hence the sample size is adequate for data analysis.

A central purpose of the present study was to compare and investigate the pathways by which variables affect investment behavior of retail investors in both countries. For this, two methods were used. The t-test was used to examine the differences in demographic variables to find out whether “the associated population means are significantly different”, while structural path model was used to analyze the paths for linear relationship between the main variables under study.

3.4.1. Descriptive Statistics

The following tables exhibit sampling composition in terms of demographic variables (Table 3.4.2. to 3.4.4.). The study sample comprises of 592 retail investors with variety of backgrounds, age, qualification, experience. TR (n1) section represents the sample statistics of Turkish retail investors. Descriptive statistics under heading PK(n2) represents sample of retails investors of Pakistan. The last section of table 3.4.1 with heading Total (N) represents full sample. Almost 61% (152/249) of Turkish respondents are males while 76% (260/343) of the respondents from Pakistan are males. Overall, the sample is comprised of 412 (69 %) males and 180 (31 %) females. Respondents of age group 26-55 are dominating, indicating that the majority of the respondents are young or

in the middle age. Almost half (49.85%) of the respondents are employee, 57.60% have university degree below Ph.D./MS level and above high school. Almost 52% of the respondents fall in income group Rs. \$351 to \$3510.

Table 3.4.1. *Case Processing Summary Full Data*

Demographics	Gender	Marital Status	Age	Qualification	Income	Occupation
N	592	592	592	592	592	592
Percent	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%



Table 3.4.2. Descriptive Statistics of Demographic Variables (Türkiye)

Türkiye (n1 = 249)	Gender	Marital Status		Age		Qualification		Income		Occupation		
Frequency	Male	152	Married	92	18-25	87	< High School	3	0-\$350	35	Employer	22
	Female	97	Unmarried	151	26-55	156	High School	42	\$351-\$1370	167	Employee	145
			Divorced/	6	56-64	4	University	162	\$1371-\$2075	27	Self Employed	54
			others		64+	2	MS/PhD	42	\$2076-\$2760	16	Student	28
									\$2760-above	4		
Mode		1		2		2		3		2		2
Std. Deviation		.489		.525		.518		.622		.795		.795
Skewness		.456		-.140		-.215		-.289		1.288		.635
Std. Error of Skewness		.154		.154		.154		.154		.154		.154
Kurtosis		-1.807		-.929		-.847		.559		2.442		-.030
Std. Error of Kurtosis		.307		.307		.307		.307		.307		.307
Minimum		1		1		1		1		1		1
Maximum		2		3		3		4		5		4

Table 3.4.3. *Descriptive Statistics of Demographic Variables (Pakistan)*

Pakistan (n2 = 343)	Gender	Marital Status		Age		Qualification		Income		Occupation		
Frequency	Male	260	Married	216	18-25	111	< High School	2	0-\$350	70	Employer	109
	Female	83	Unmarried	117	26-55	171	High School	54	\$351-\$1370	143	Employee	150
			Divorced/	10	56-64	48	University	179	\$1371-\$2075	86	Self Employed	72
			others		64+	13	MS/PhD	108	\$2076-\$2760	33	Student	12
									\$2760-above	11		
Mode		1		1		2		3		2		2
Std. Deviation		.429		.547		.778		.690		1.009		.817
Skewness		1.210		.946		.677		-.307		.611		.458
Std. Error of Skewness		.132		.132		.132		.132		.132		.132
Kurtosis		-.539		-.154		.217		-.489		-.019		-.467
Std. Error of Kurtosis		.263		.263		.263		.263		.263		.263
Minimum		1		1		1		1		1		1
Maximum		2		3		4		4		5		4

Table 3.4.4. *Descriptive Statistics of Demographic Variables (Full Data)*

N = (n1 + n2) = 592	Gender		Marital Status		Age		Qualification		Income		Occupation	
Frequency	Male	412	Married	308	18-25	198	< High School	5	0-\$350	105	Employer	131
	Female	180	Unmarried	268	26-55	327	High School	96	\$351-\$1370	310	Employee	295
			Divorced/	16	56-64	54	University	341	\$1371-\$2075	113	Self Employed	126
			others		64+	13	MS/PhD	150	\$2076-\$2760	49	Student	40
									\$2760-above	15		
Mode	1		1		2		3		2		2	
Std. Deviation	.460		.552		.689		.667		.929		.830	
Skewness	.854		.458		.688		-.257		.856		.471	
Std. Error of Skewness	.100		.100		.100		.100		.100		.100	
Kurtosis	-1.275		-.882		.762		-.156		.656		-.221	
Std. Error of Kurtosis	.201		.201		.201		.201		.201		.201	
Minimum	1		1		1		1		1		1	
Maximum	2		3		4		4		5		4	

Figures 3.4-1 to 3.4-6 represent the demographic variables in terms of countries and categories in variables.

The data is almost virtually identical to those of the pilot survey. Banked population statistics related to gender and age are also showing almost same trend as mentioned in the World- Banks reports “The Unbanked” (The World Bank, 2018).

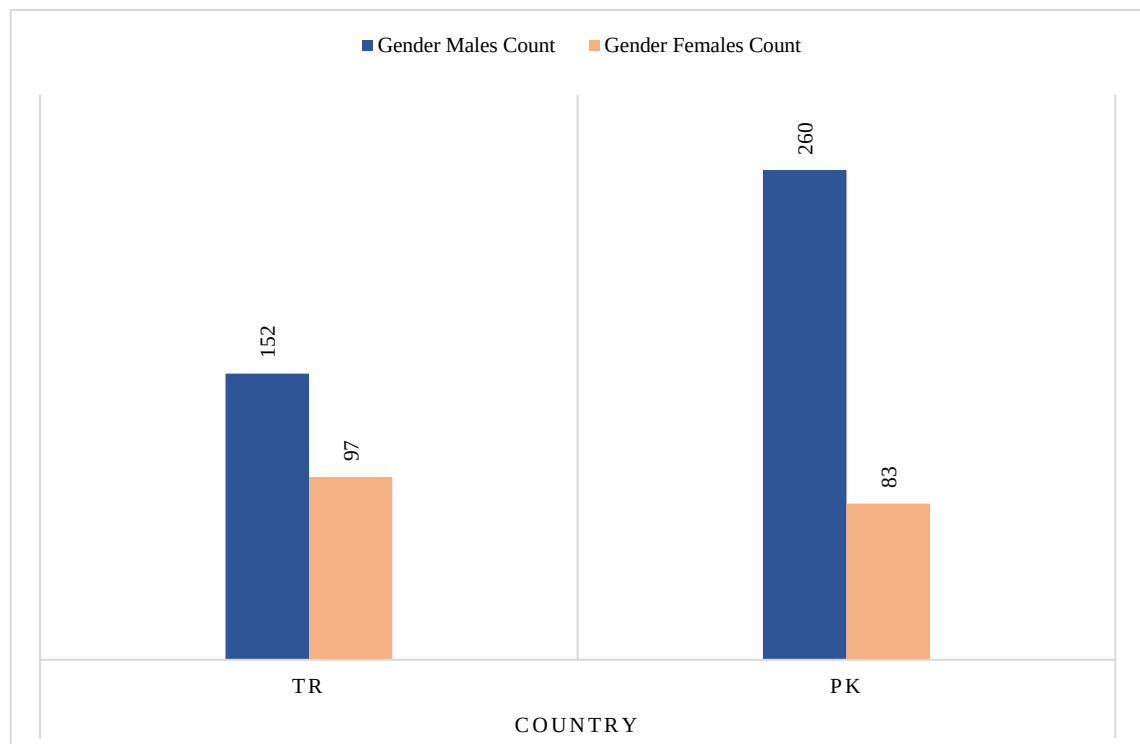


Figure 3.4-1: Bar chart of Gender across countries

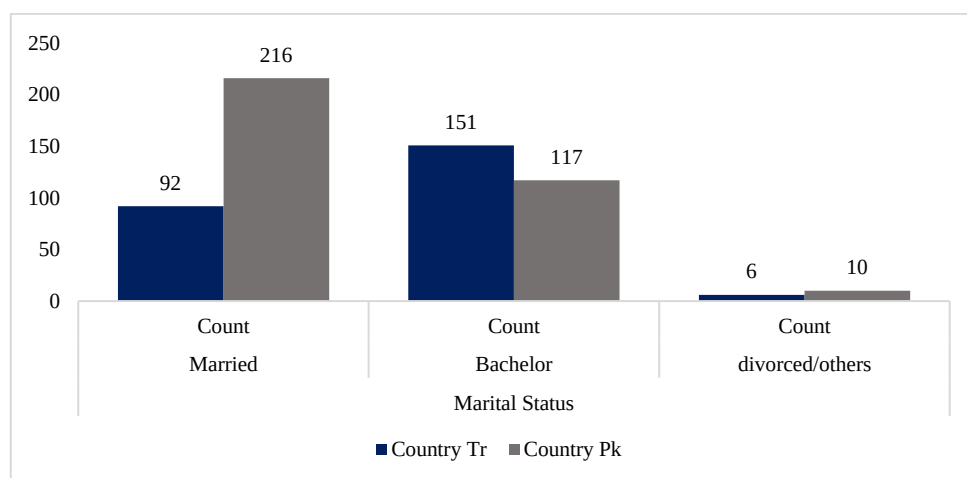


Figure 3.4-2: Bar chart of Marital Status across countries

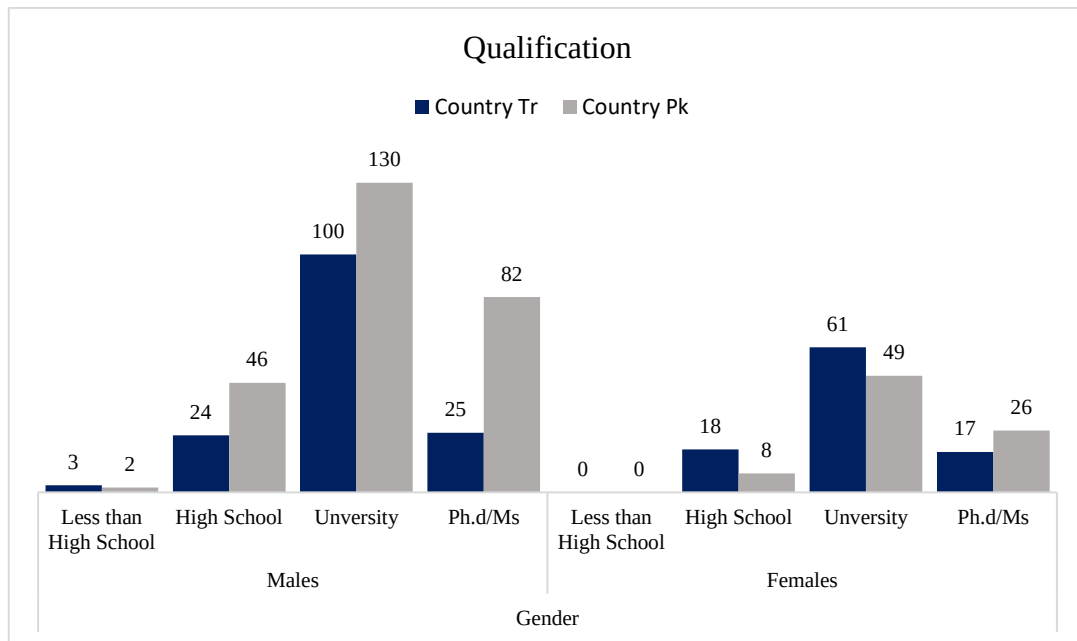


Figure 3.4-3: Bar chart of Qualification across countries

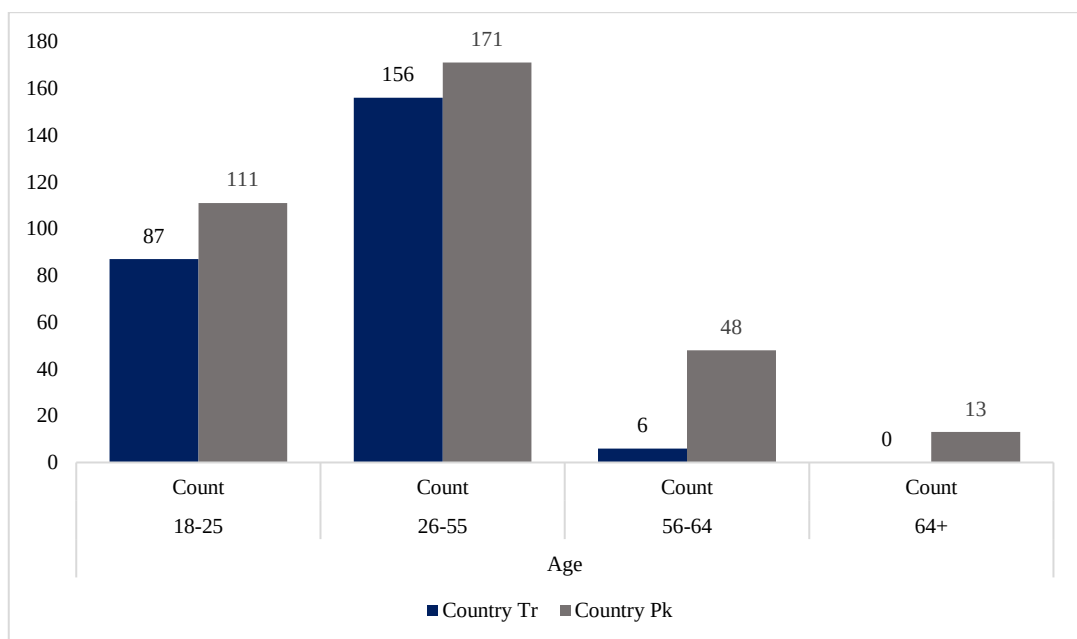


Figure 3.4-4: Bar chart of Age across counties

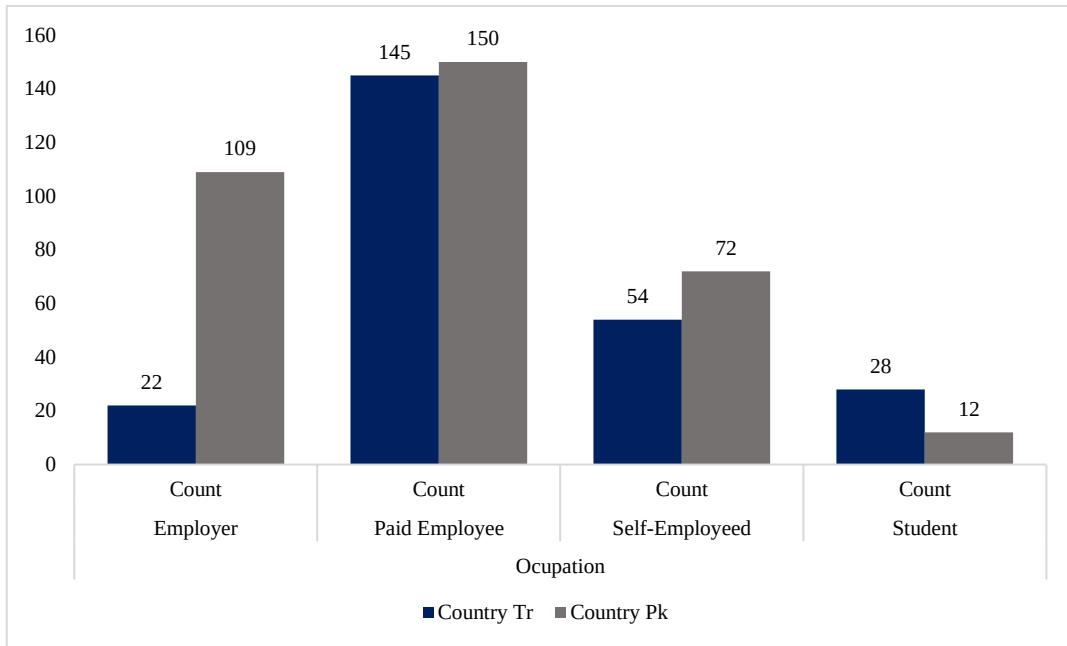


Figure 3.4-5: Bar chart of Occupation across counties

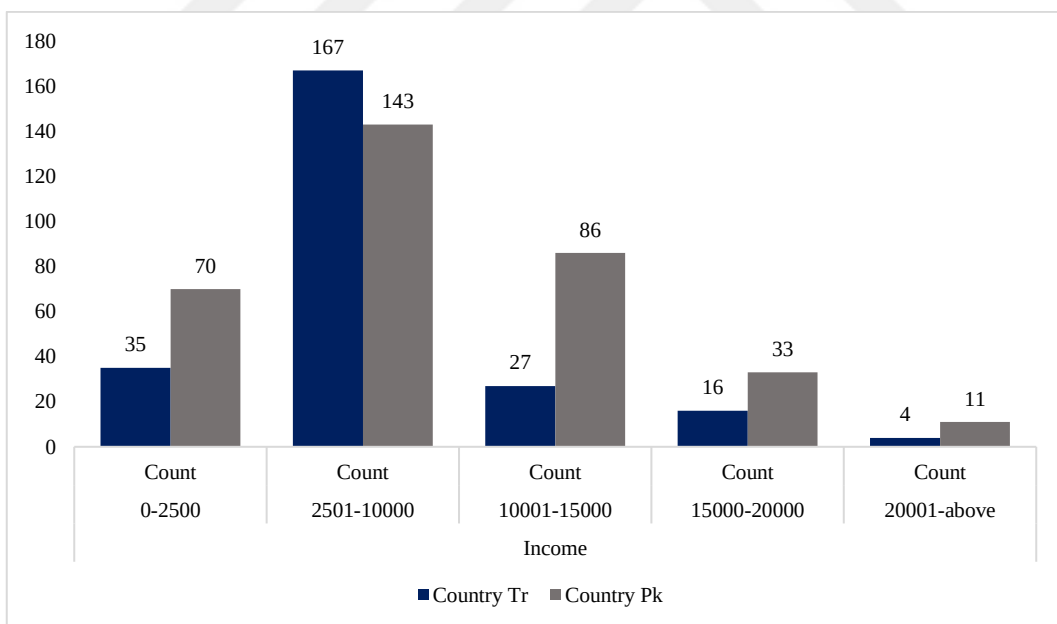


Figure 3.4-6: Bar chart of Income across countries

The following tables (From 3.4.5. to 3.4.7.) are about investment preferences. P1, P2 and P3 represent first, second and third preference respectively. They reveal that the most frequently chosen first preference of respondents in overall sample is stocks/shares (23.6%) followed by Gold/Gold Accounts (18.9%) and Real Estate (16.7%). The most frequently chosen second preference is also stocks/shares, but the percentage dropped to

18.9% followed by mutual fund (13%) and gold (12.5%). However, the 3rd preference shifted to Mutual funds (14.7%) followed by foreign currency (14.5%) and Treasury bills/ government bonds/ corporate bonds (12.5%). Country-wise preferences are reported in table 3.4.8.

Table 3.4.5. First preference

Investment Options	Frequency	Percent	Cumulative Percent
Real Estate	99	16.7	16.7
Gold/Gold Account	112	18.9	35.6
Account in Local Currency	39	6.6	42.2
Foreign Currency/Account in Foreign Currency	24	4.1	46.3
Islamic Financial Products	20	3.4	49.7
Treasury bills/ government bonds/ corporate bonds	55	9.3	59.0
Stocks of Shares	140	23.6	82.6
Others	29	4.9	87.5
Mutual Funds	74	12.5	100.0
Total	592	100.0	-

Table 3.4.6. Second preference

Investment Options	Frequency	Percent	Cumulative Percent
Real Estate	68	11.5	11.5
Gold/Gold Account	74	12.5	24.0
Account in Local Currency	40	6.8	30.7
Foreign Currency/Account in Foreign Currency	65	11.0	41.7
Islamic Financial Products	59	10.0	51.7
Treasury bills/ government bonds/ corporate bonds	57	9.6	61.3
Stocks of Shares	112	18.9	80.2
Others	14	2.4	82.6
Mutual Funds	77	13.0	95.6
No preferences	26	4.4	100.0
Total	592	100.0	-

Table 3.4.7. Third preference

Investment Options	Frequency	Percent	Cumulative Percent
Real Estate	53	9.0	9.0
Gold/Gold Account	42	7.1	16.0
Account in Local Currency	33	5.6	21.6
Foreign Currency/Account in Foreign Currency	86	14.5	36.1
Islamic Financial Products	68	11.5	47.6
Treasury bills/ government bonds/ corporate bonds	74	12.5	60.1
Stocks of Shares	62	10.5	70.6
Others	56	9.5	80.1
Mutual Funds	87	14.7	94.8
No Preference	31	5.2	100.0
Total	592	100.0	-

Table 3.4.8. Most frequently chosen Choices overall in both countries

Investment Options	Country			
	Türkiye	Percentage	Pakistan	Percentage
Real Estate	89	11.91	131	12.73
Gold/Gold Account	169	22.62	59	5.73
Account in Local Currency	56	7.50	55	5.34
Foreign Currency/Account in Foreign Currency	125	16.73	50	4.86
Islamic Financial Products	11	1.47	136	13.22
Treasury bills/ government bonds/ corporate bonds	35	4.69	151	14.67
Stocks of Shares	108	14.46	206	20.02
Others	47	6.29	52	5.05
Mutual Funds	49	6.56	189	18.37
No Preference	55	7.36	0	0.00

Table 3.4.8 provides information about the most frequently selected choices by combining the data of all preferences. The most frequently selected choice by Turkish retail investors is “Gold/Gold Accounts”, followed by Foreign Currency/Account in Foreign and the least frequent selected choice is Islamic Financial Products. The most

frequently selected choice by Pakistani retail investors is “Stocks of Shares”, followed by Mutual Fund and the least frequently selected choice is “Foreign Currency/ Account in Foreign Currency”.

As seen in Table 3.4.9, the most frequently chosen first preference of retail investors in Türkiye is Gold/Gold accounts (36.5%), followed by Stocks/shares (24.3%) and Real estate (13.7%). In Pakistan, the most frequently chosen first preference of retail investors is Stocks/shares (34.0%), followed by Mutual Funds (20.1%) and real Estate (25%). The most frequently chosen second preference and third preference of retail investors in Türkiye are Gold/Gold accounts and Foreign Currency, while they are stocks/shares and Mutual funds respectively in Pakistan. Figures 3.4-7 to 3.4-9 represent the plotted data based on individual preferences and countries.

Table 3.4.9. Investment Preferences based on countries

Preferences	First (P1)				Second (P2)				Third (P3)			
	Türkiye		Pakistan		Türkiye		Pakistan		Türkiye		Pakistan	
	Freq.	Cum%	Freq.	Cum%	Freq.	Cum %	Freq.	Cum %	Freq.	Cum %	Freq.	Cum %
Options												
Real Estate	34	13.7	65	19	25	10	43	12.5	30	12	23	6.7
Gold/Gold Account	93	51	19	24.5	50	30.1	24	19.5	26	22.5	16	11.4
Account in Local Currency	13	56.2	26	32.1	27	41	13	23.3	17	29.3	16	16
Acct. in Foreign Currency/ Foreign Currency	15	62.2	9	34.7	45	59	20	29.2	65	55.4	21	22.2
Islamic Financial Products	1	62.7	19	40.2	4	60.6	55	45.2	6	57.8	62	40.2
Treasury bills government bonds/ corporate bonds	8	65.9	47	53.9	16	67.1	41	57.1	11	62.2	63	58.6
Stocks of Shares	59	89.6	81	77.6	25	77.1	87	82.5	24	71.9	38	69.7
others	21	98	8	79.9	9	80.7	5	84	17	78.7	39	81
Mutual Funds	5	100	69	100	22	89.6	55	100	22	87.6	65	100
No Preferences	0	-	0	-	26	100	-	-	31	100	-	--
Total	249	-	343	-	249	-	343	-	249	-	343	

Note: Freq= frequency.

To adjust the table percentage column is not added but Percentage could be calculated by subtracting corresponding cumulative frequency of options from cumulative frequency of previous option.

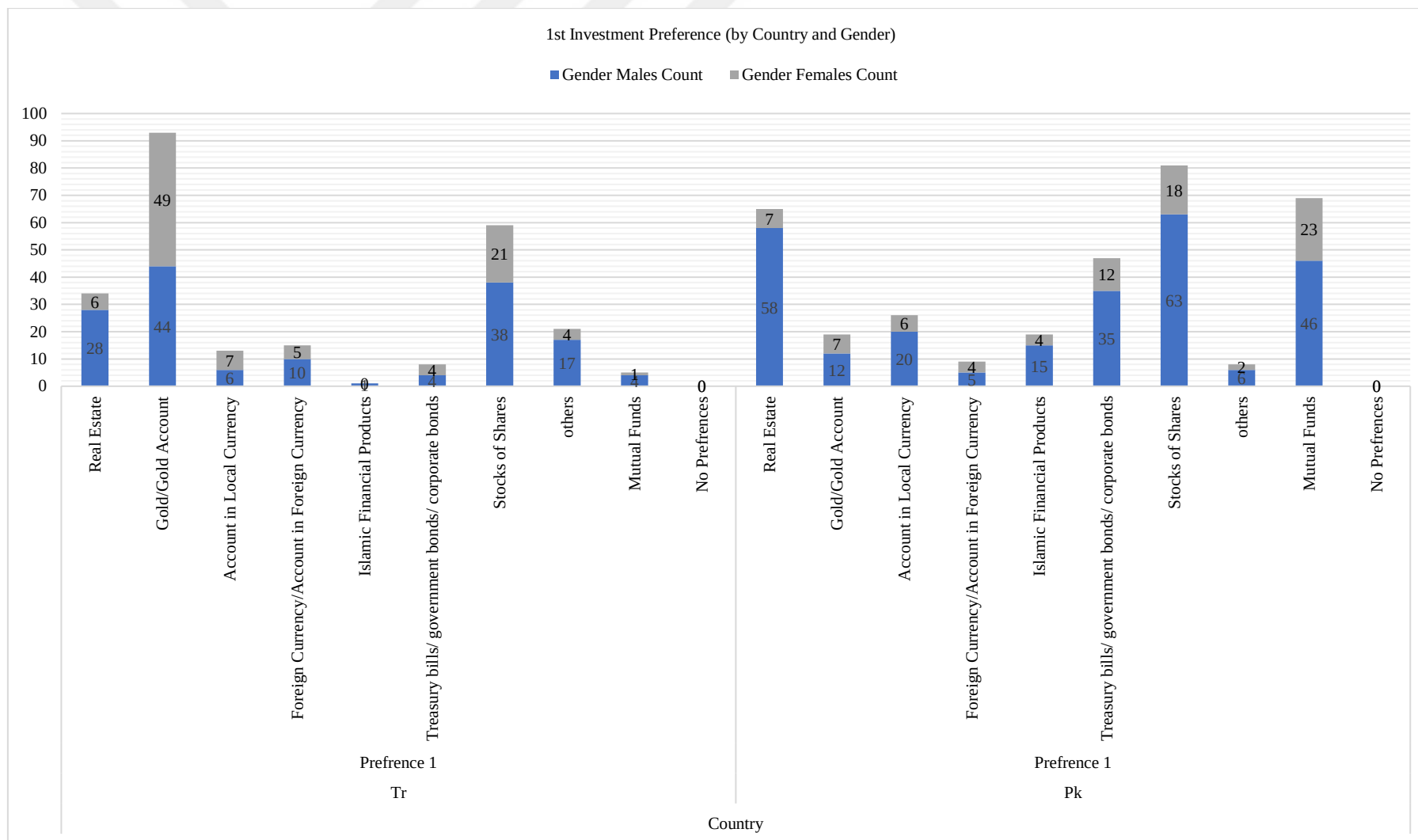


Figure 3.4-7: First preference along with Country and Gender

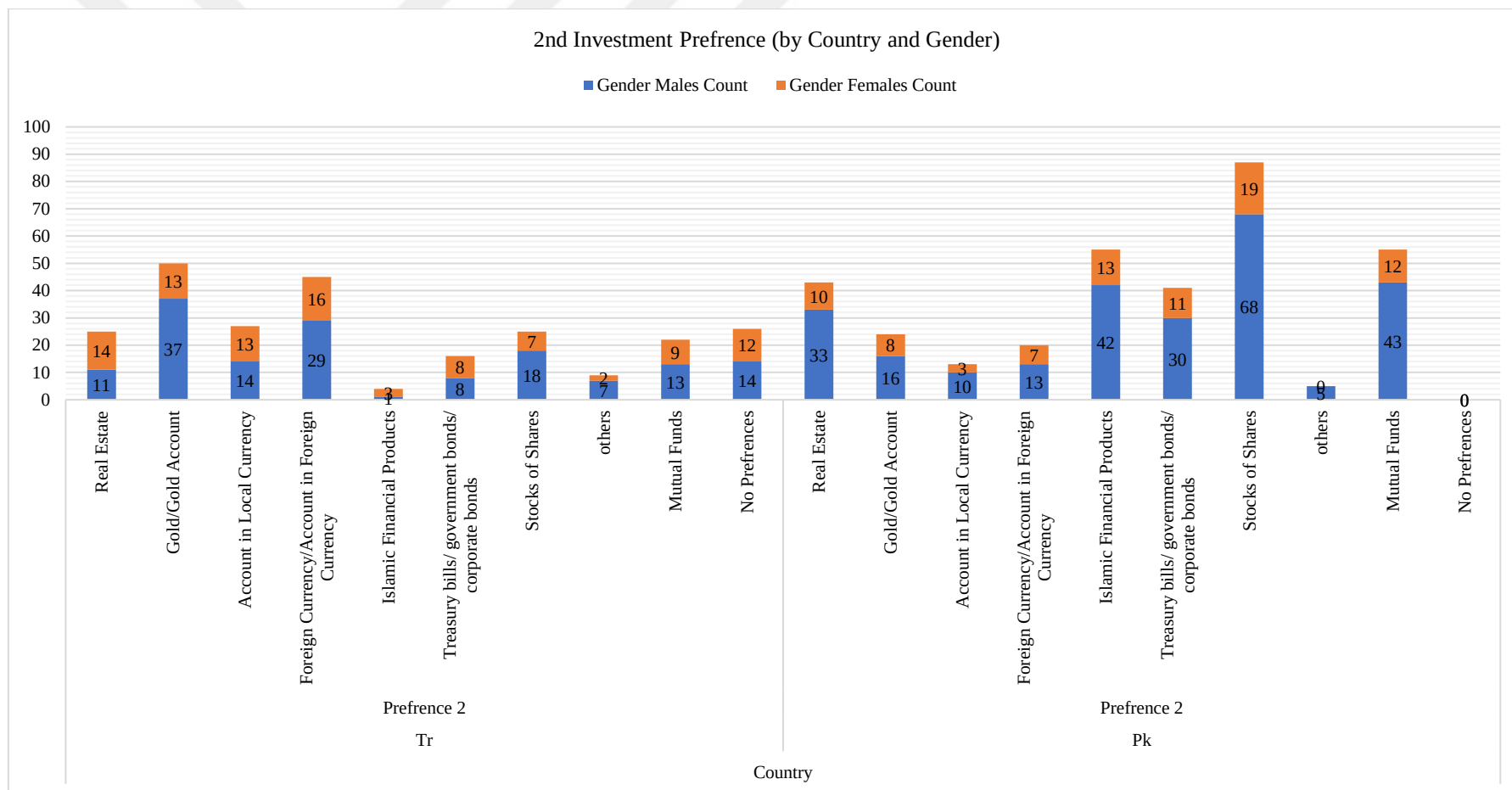


Figure 3.4-8: Second preference along with Country and Gender

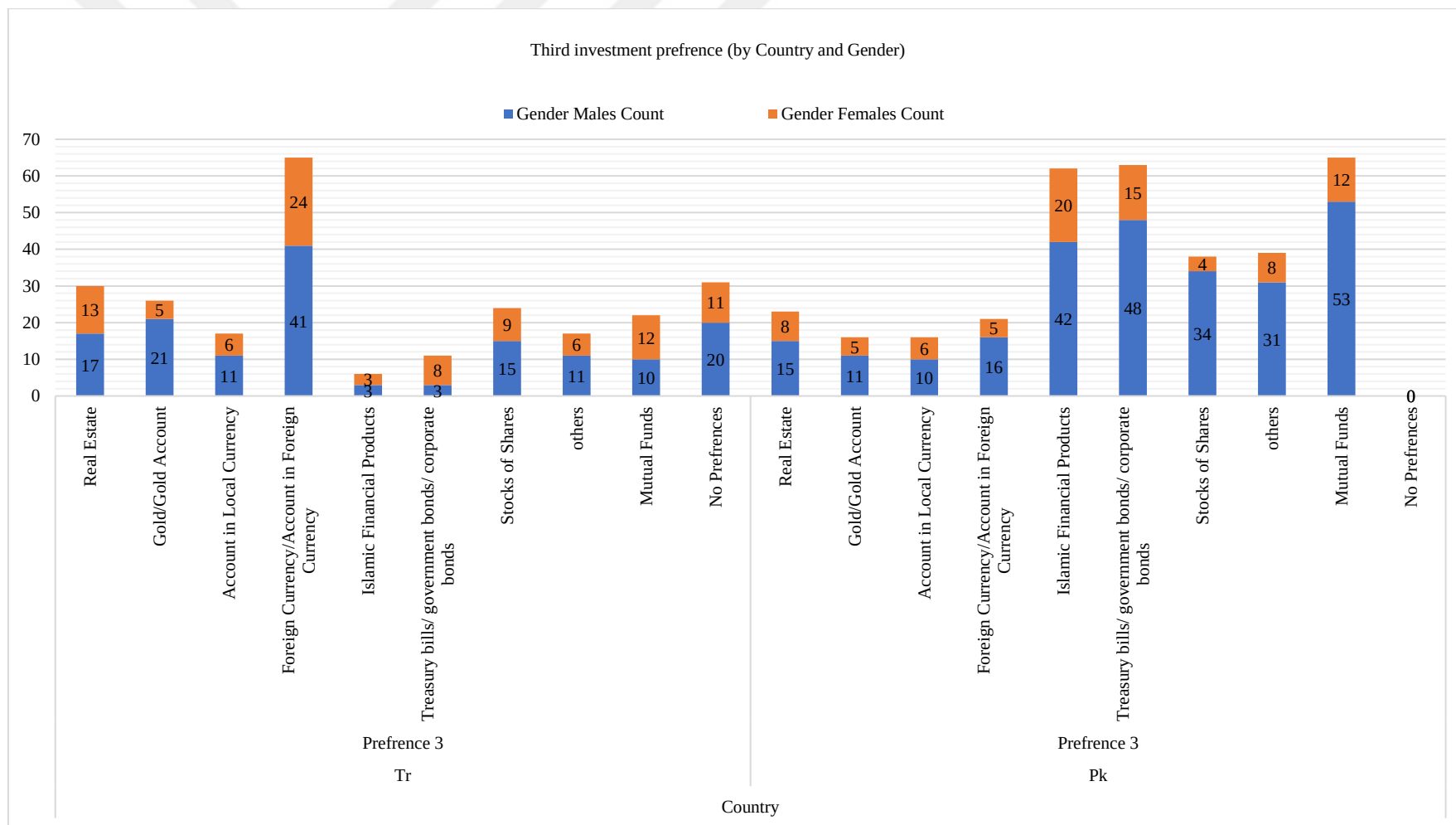


Figure 3.4-9: Third preference along with Country and Gender

3.5. Assessment of Normality and Multicollinearity

Path analysis assumes that the residuals of the variables are normally distributed. For large samples i.e. $n > 300$, normality assumption is met when the absolute skewness and kurtosis values are between ± 2 and ± 7 (R. Mishra et al., 2019). Skewness is a measurement of symmetry of distribution and kurtosis measures how much the scores cluster in the peak and tail of distribution (the vertical or horizontal distance from axis). In the current sample, all values of Skewness and Kurtosis are in the normality range.

VIF is used to check multicollinearity. The cut-off point is 5, but the values close to 3 or lower than 5 are preferable (Srinivasan & Lohith, 2017). In the current sample, VIF values are smaller than 3. Thus, there is no problem of multicollinearity, which is one of the most important assumptions of path analysis.

Table 3.5.1. *Descriptive Statistics of Main variables*

Statistics		Self Confidence	Risk Tolerance	Financial Literacy	Investment Philosophy	Experience	Investment Choices
Mode		3.60	29.00	8.00	15.00	5.00	14.00
Mean		3.21	28.36	6.26	14.67	4.89	13.64
Std. Deviation		.851	5.56	2.12	3.54	1.80	3.10
Skewness		-.422	.072	-.874	.258	-.012	-.369
Std. Error of Skewness		.100	.100	.100	.100	.100	.100
Kurtosis		-.337	.162	-.049	-.060	-.722	-.595
Std. Error of Kurtosis		.201	.201	.201	.201	.201	.201
VIF		1.226	1.638	1.240	1.624	1.533	1.226
Minimum		1.20	13.00	0.00	6.00	1.00	3.00
Maximum		5.00	44.00	10.00	24.00	8.00	18.00
N	Valid	592	592	592	592	592	592
	Missing	0	0	0	0	0	0
Range	Absolute Skewness		± 2				
	Absolute Kurtosis		± 7				

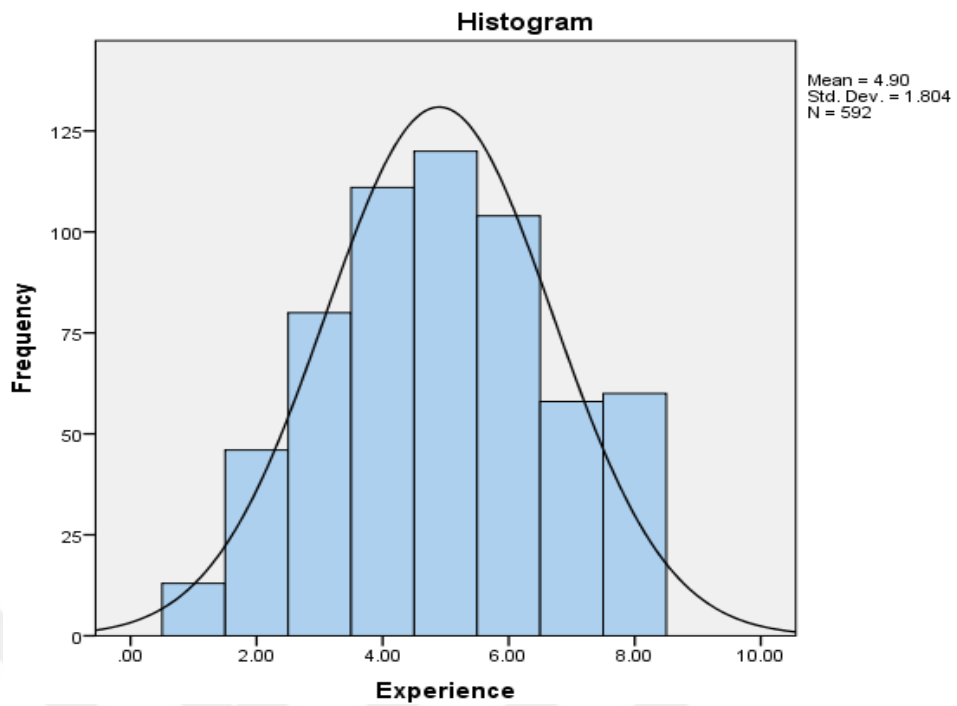


Figure 3.5-1: Histogram of Experience

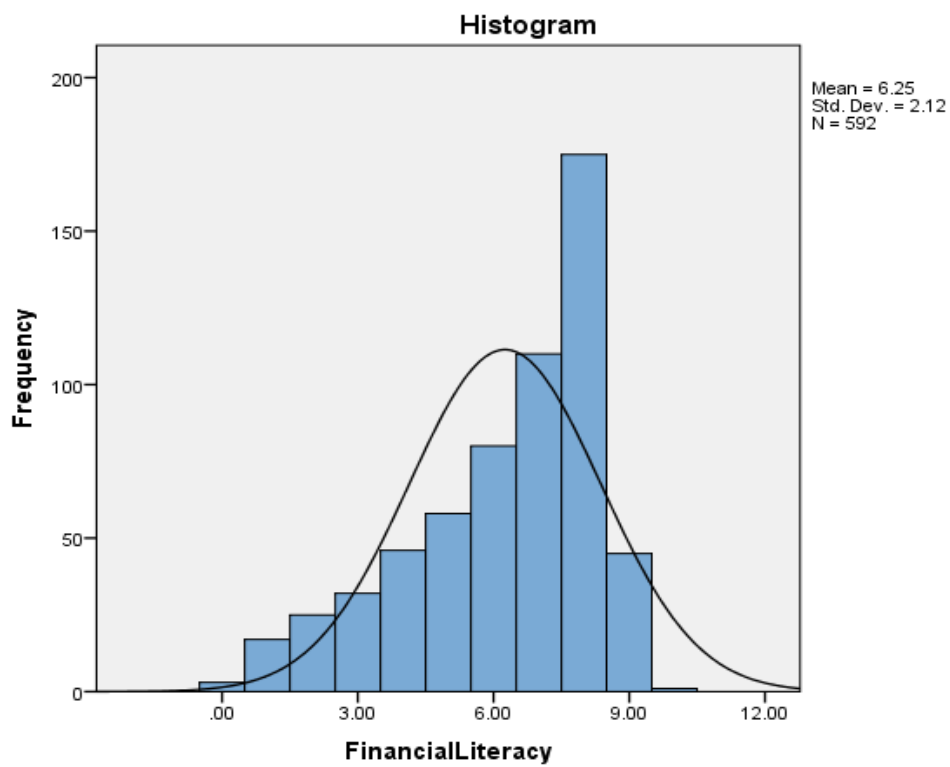


Figure 3.5-2: Histogram of Financial Literacy

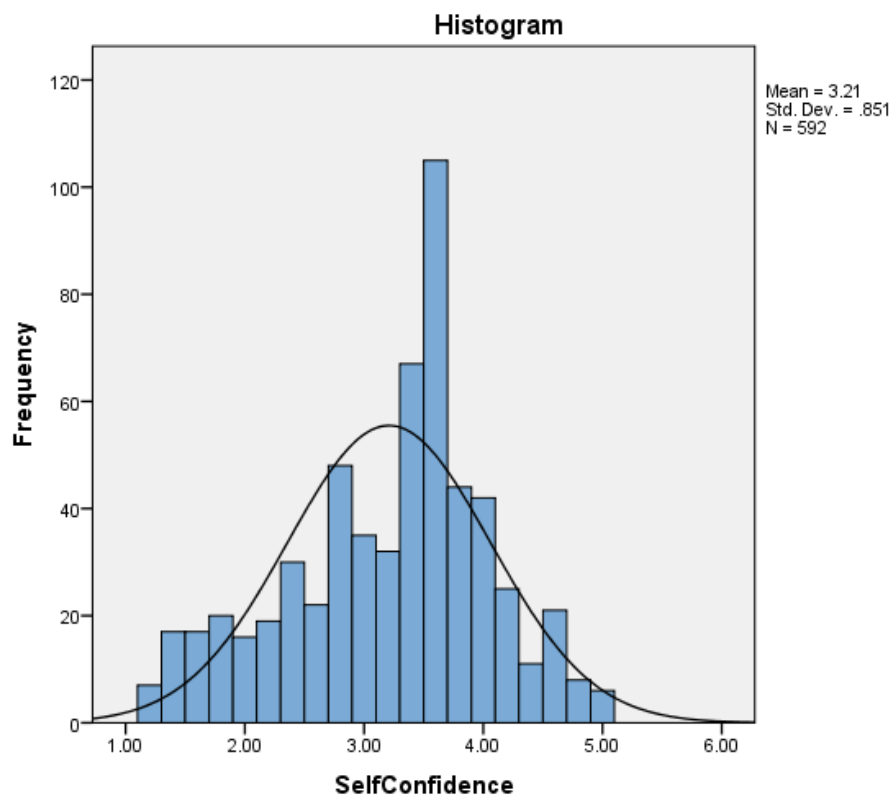


Figure 3.5-3: Histogram of Self-Confidence

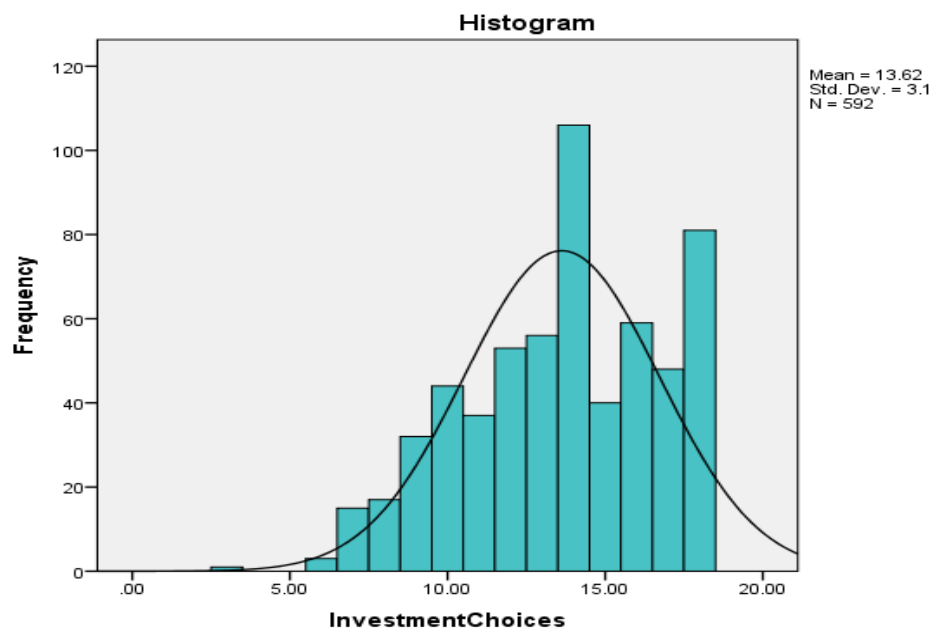


Figure 3.5-4: Histogram of Investment Choices

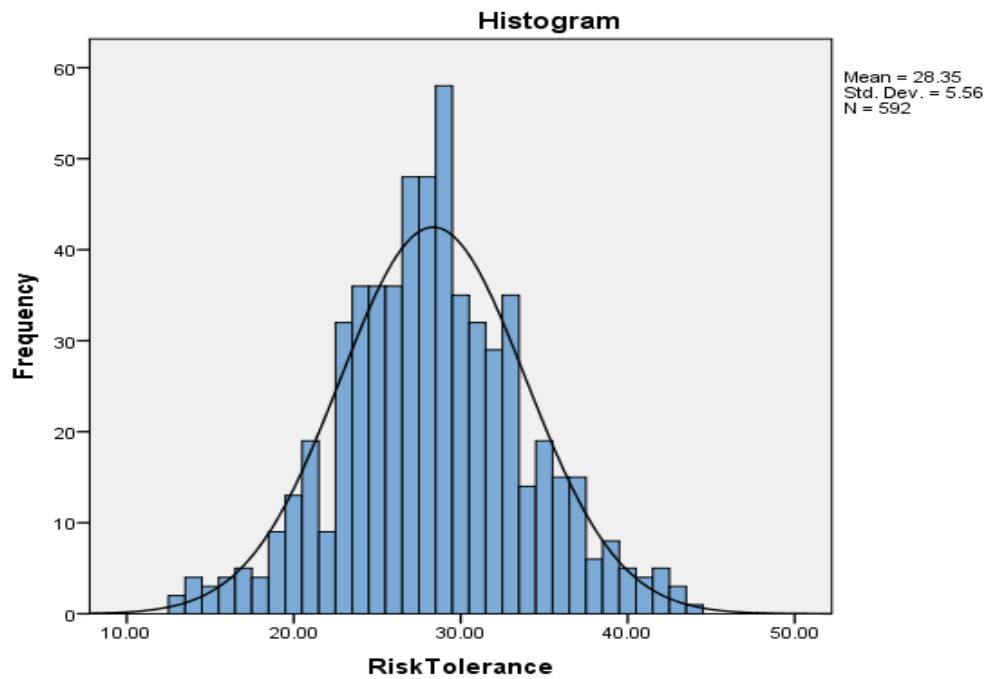


Figure 3.5-5: Histogram of Risk Tolerance

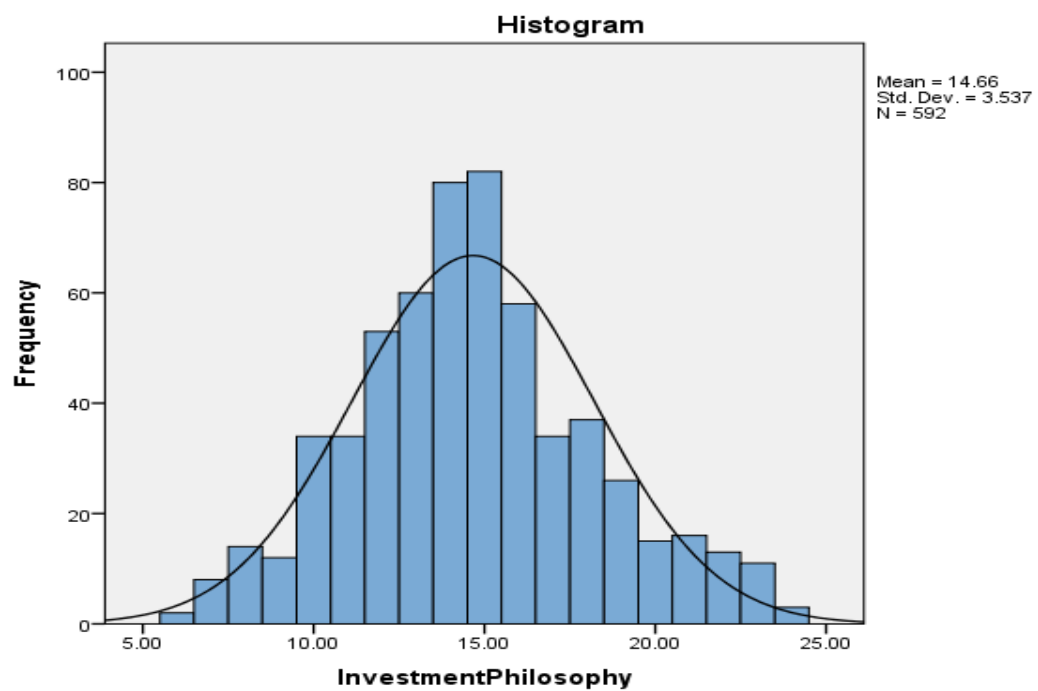


Figure 3.5-6: Histogram of Investment Philosophy

For the main variables i.e., Experience, Financial Literacy, Assessment of Confidence, Risk Tolerance, and Investment Choices, descriptive statistics were analyzed. Pearson's correlation (r) was checked for association among the variables (Table 3.5.1). The Study uses multi group path analysis to explain the pattern of relationship derived from literature. The approach helps to verify whether the direct and indirect links are invariant across multigroup (Miconi et al., 2017) i.e., in this study between investors' of Türkiye and Pakistan (figure 3.9-1 and 4.3-1 as presented in the path analysis section of this study).

Descriptive statistics reveal that in the overall sample, the investors under study have experience in variety of investment options. Minimum score of experience is reported as 1 and maximum score is 8 % ($M = 4.90$, $SD = 1.80$). However, more than 60.6% of respondents scored 4 or above. The mean score of Self-Confidence is 3.25, slightly tilt towards higher end (minimum score is 1 and maximum is 5). Figures 6a to 6b represent data of main variables in graphical form. The mean value of Financial Literacy is 6.26 which is in line with the findings of few research done Pakistan and Türkiye. In existing studies, Financial literacy mean score in Pakistan was found to be 69% (Fatima 2019; S. Suhail et al. 2020) and in Türkiye almost 52.9 % to 60% was reported (Coskun et al., 2019; Düzakın & Yılmaz, 2021). The difference in current study data may be due to the differences in Investment Experience and Self-Confidence (high values of self-Confidence is assumed to be overconfident) of the samples investigated. The mean value of Investment Experience ($M = 5.13$) of investors of Pakistan is slightly higher as compared to Türkiye ($M = 4.62$). Overall mean value of Philosophy= 14.76, Risk Tolerance= 28.36. Pakistani investors have slightly high-risk tolerance level ($M = 28.69$) as compared to Turkish investors ($M = 28$). Investment Choices scores was calculated in two steps. In the first step by giving weights to 1st, 2nd and 3rd preferences i.e., maximum weight is given to 1st preference and minimum to 3rd. In the second step, the weighted scores of each individual respondents were added to get the total score of Investment Choices. The average score of Investment Choices is 13.64.

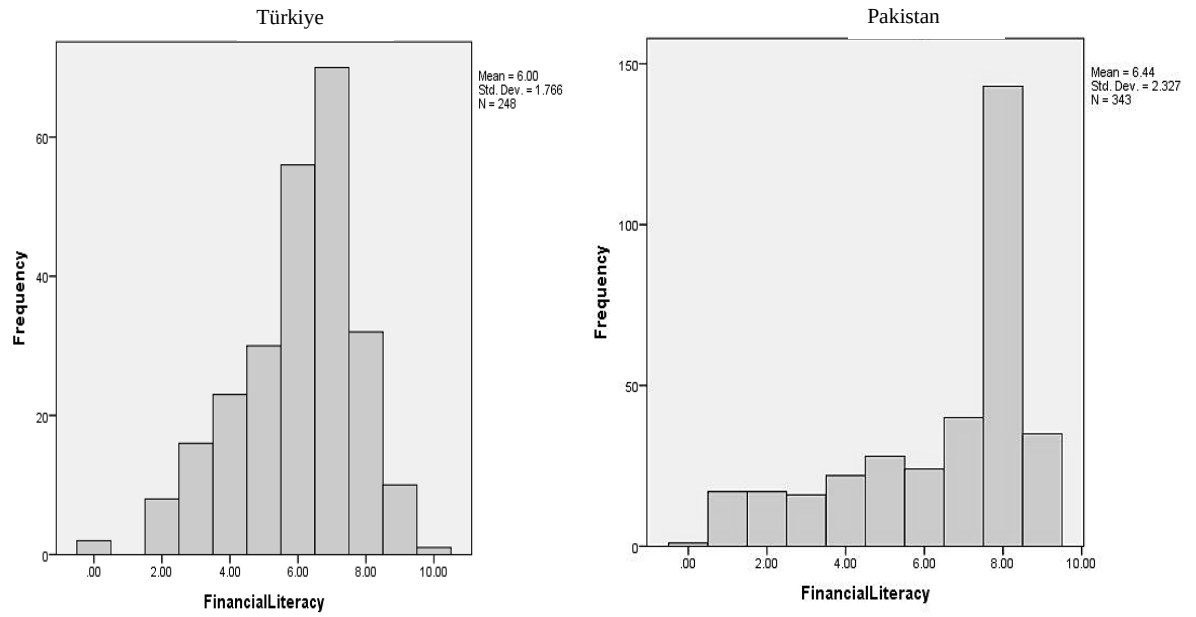


Figure 3.5-7: Financial Literacy scores Türkiye and Pakistan

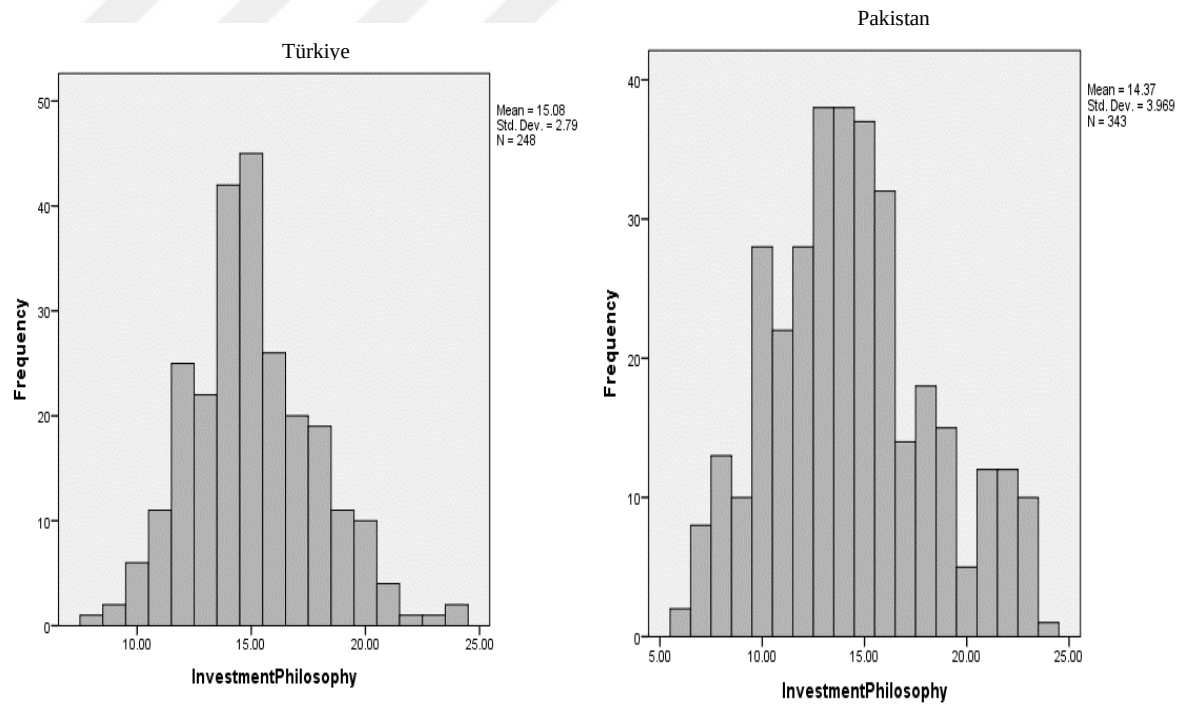


Figure 3.5-8: Investment Philosophy Scores Türkiye and Pakistan

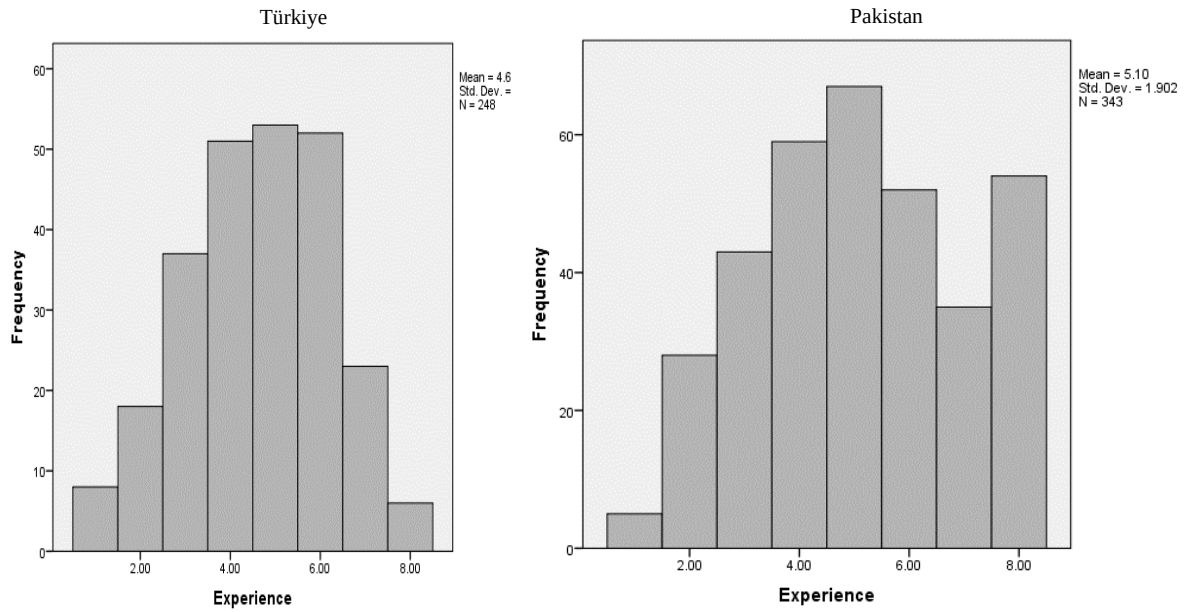


Figure 3.5-9: Investment Experience Scores Türkiye and Pakistan

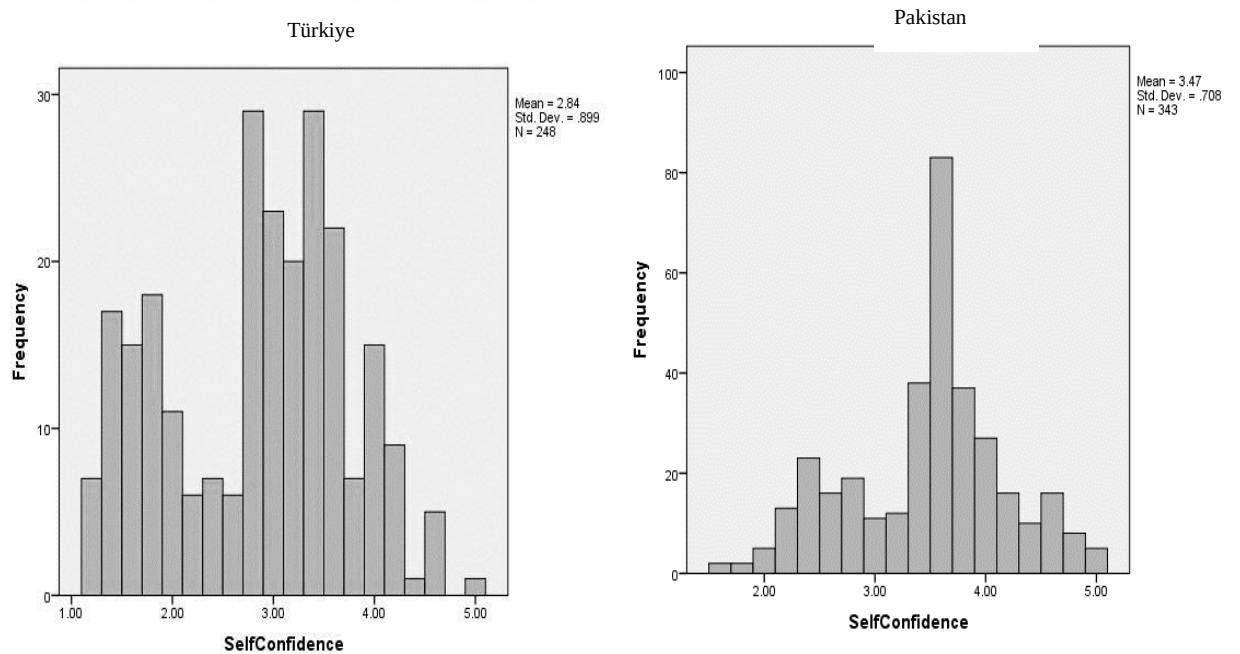


Figure 3.5-10: Self-Confidence scores Türkiye and Pakistan

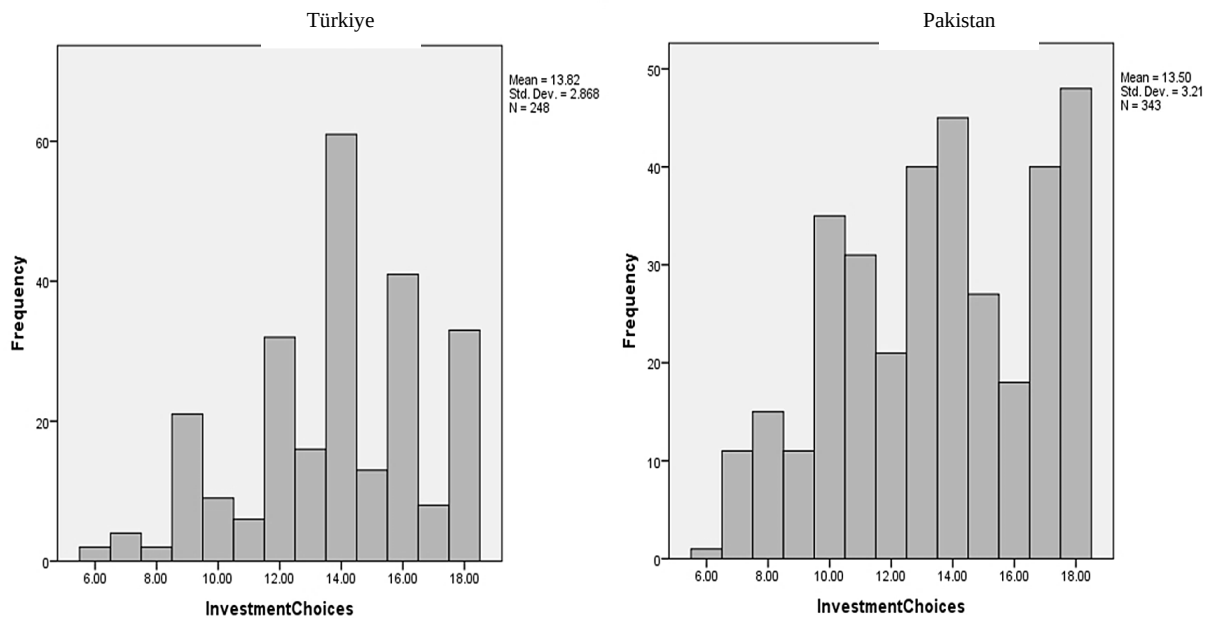


Figure 3.5-11: *Investment Choices Scores Türkiye and Pakistan*

3.6. Questionnaire Reliability

To assess the internal consistency of the items in questionnaire, Cronbach Alpha Coefficient (α) is considered as a good reliability measure. It is a measure of scale reliability. In psychology and social sciences the values $>.6$ is acceptable (G. Pontekotto and E. Ruckdeschel 2007). However, the value of α also depends on the number of items in a construct (Ercan et al., 2007; Javali et al., 2011). Alpha is most frequently used but it is not the most accurate reliability coefficient (Brunner & Süß, 2005; Cho, 2016). So composite reliability (CR.) is also calculated.

A composite reliability score is also used to check inter relationship of observed items. It is calculated by dividing the number of items (n) to sum of squared loadings of items. The value ranges from 0 to 1. The desirable values are between .7 to .9, however a value above .6 is acceptable (Ab Hamid et al., 2017). For inter item correlation values between .15 to .50 are acceptable , (Clark and Watson 2015, p. 176). In cross cultural studies, an issue of non-equivalence is also observed. There are some items that are adequate for one country, but not performing well in other country although the overall performance of the whole data is good (Byrne & van de Vijver, 2010). Table 3.6.1 reveals information about Cronbach alpha, CR., and inter-item correlation of main variables.

Table 3.6.1. *Cronbach's α , Composite Reliability and Interitem Correlation*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.721	.772	6
Variables	CR: Composite Reliability	Interitem correlation
Self Confidence	0.862	.443
Investment Philosophy	0.644	.350
Financial Literacy	0.605	.294
Risk Tolerance	0.755	.225
Experience	0.719	.231
choices	.659	.169
Total	.781	.361

3.7. Independent Sample t-Test

Independent Sample t-test is used to compare the means of two groups when the sample has well defined groups. It helps to determine whether the group means in a sample is statistically significant and is true representation of population.

One of the major assumptions of t-test is normality of independent variables. Table 3.5.1 presents information about normality regarding Skewness and Kurtosis. All the variables seem to be normally distributed in the sample of the study.

The current study used Independent Sample t-test to compare means between:

- a) Gender (between Males and Females)
- b) Countries (Between Türkiye and Pakistan)

Thus, the alternative hypotheses with respect to Gender differences are *as follows*:

H_{1a}: There is a significant difference in Investment Choices of the males and the females.

H_{1b}: There is a significant difference in the level of Self-Confidence of the males and the females.

H_{1c}: There is a significant difference in Investment Experience of the males and the females.

H_{1d}: There is a significant difference in Investment Philosophy of the males and the females.

H_{1e}: There is a significant difference in the level of Financial Literacy between males and Females.

H_{1f}: There is a significant difference in the level of Risk Tolerance of the males and the females.

Levene's Test is used to test the "equality of variances for a variable in two or more groups" to check the significance of difference of mean values between the samples and population". Levene's Test for population assumes that "all associated groups have equal population variances".

Table 3.7.2 presents the t-test statistics of gender comparison. The first part of Table (3.7.1) presents group statistics based on males and females. Table 3.7.2 has values of Levene's test. All p values are greater than 0.05 hence the equivalence of variance is assumed. For instance, the Risk Tolerance $F(2, 590) = .037, p = .847 > 0.05$ indicates that null hypothesis of equivalence of variance i.e., sample mean is true representation of population mean can't be rejected. The second part is about the t-test for "Equivalence of Sample Means". It reveals that at 5% confidence interval, except Investment Philosophy ($p = 0.791$), a significant difference is present in mean score of other variables along gender. Males retail investors had slightly higher Self Confidence scores ($M = 3.30, SD = .83$) than female retail investors ($M = 2.98, SD = .847$), $t(590) = 4.27, p = .001$. similarly, male's retail investors are more experience ($M = 5.05, SD = 1.80$) than female retail investors ($M = 4.53, SD = 1.75$), $t(590) = 3.21, p = .001$. The results hold true for Risk Tolerance ($M = 28.90, SD = 5.48$ for males and $M = 27.07, SD = 5.54$ for females) and Financial Literacy ($M = 6.36, SD = 2.09$ for males and $M = 5.99, SD = 2.15$ for females). The mean score of Investment Choices shows marginal significant difference ($p = 0.51$) and slightly higher for males ($M = 13.78, SD = 3.11$) as compared to female respondents ($M = 13.24, SD = 3.05$).

Table 3.7.1. *Group Statistics based on Gender*

Variables	Gender	N	Mean	Std. Deviation	Std. Error Mean
Investment Choices	Males	412	13.78	3.12	.15
	Females	180	13.24	3.05	.22
Self-confidence	Males	412	3.31	.83	.04
	Females	180	2.98	.84	.06
Experience	Males	412	5.05	1.80	.09
	Females	180	4.53	1.75	.13
Investment Philosophy	Males	412	14.68	3.54	.17
	Females	180	14.60	3.52	.26
Financial Literacy	Males	412	6.36	2.09	.10
	Females	180	5.99	2.15	.16
Risk Tolerance	Males	412	28.90	5.48	.27
	Females	180	27.07	5.54	.41

Table 3.7.2. *Independent Samples Test for difference between Genders*

		Levene's Test for Equality of Variances				t-test for Equality of Means				
Variables		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Investment Choices	Equal variances assumed	.22	.64	1.95	590	.051	.54	.27	-.00	1.08
Self Confidence	Equal variances assumed	.59	.44	4.27	590	.000	.32	.07	.17	.47
	Equal variances not assumed	-	-	4.25	336.85	.000	.32	.07	.17	.47
Experience	Equal variances assumed	.22	.63	3.21	590	.001	.51	.16	.20	.83
Investment Philosophy	Equal variances not assumed	.00	.92	.26	343.01	.791	.08	.31	-.54	.70
Financial Literacy	Equal variances assumed	.95	.32	1.96	590	.049	.37	.19	.00	.74
Risk Tolerance	Equal variances not assumed	.03	.84	3.71	337.66	.000	1.83	.49	.86	2.80

Thus, the alternative hypotheses with respect to Country differences are as follows:

- H_{1a}: There is a significant difference in Investment Choices of the retail investors in Türkiye and Pakistan.
- H_{1b}: There is a significant difference in the level of Self-Confidence of the retail investors in Türkiye and Pakistan.
- H_{1c}: There is a significant difference in Investment Experience of the retail investors in Türkiye and Pakistan.
- H_{1d}: There is a significant difference in Investment Philosophy of the retail investors in Türkiye and Pakistan.
- H_{1e}: There is a significant difference in the level of Financial Literacy of the retail investors in Türkiye and Pakistan.
- H_{1f}: There is a significant difference in the level of Risk Tolerance of the retail investors in Türkiye and Pakistan.

Table 3.7.4 presents t-test statistics for comparisons of associated means across countries. All p values are less than 0.05 except for Risk Tolerance $F(2, 590) = 0.018$, $p = .803$), the null hypotheses of (Levene's test) equivalence of variance could not be accepted. The “Equivalence of Sample Means” reveals that at 5% confidence interval, except investment choices where p is greater than .05 ($p = .281$) and Risk Tolerance ($p = .159$), there is significant difference in associated mean score of other variables across Countries. It indicates that Investment Philosophy, Financial Literacy score, Investment experience and Self-assessment of confidence are significantly different in retail investors of Türkiye and Pakistan. While, for the risk tolerance, equivalence of variance hypothesis holds true. Despite the Mean value of Risk Tolerance is higher in Pakistani respondents ($M = 28.61$, $SD = 5.78$) as compared to Turkish respondents ($M = 27.97$, $SD = 5.21$) the difference is not significant at the 95% confidence level ($p > .05$). Same holds true for investment choices. ($M = 13.77$, $SD = 2.94$ for Türkiye and $M = 13.50$, $SD = 13.50$ for Pakistan).

Table 3.7.3. Group Statistics across Countries

Variables	Country	N	Mean	Std. Deviation	Std. Error Mean
Investment Choices	TR	249	13.77	2.94	0.19
	PK	343	13.50	3.21	0.17
Self-confidence	TR	249	2.84	0.90	0.06
	PK	343	3.47	0.71	0.04
Experience	TR	249	4.61	1.62	0.10
	PK	343	5.10	1.90	0.10
investment Philosophy	TR	249	15.06	2.80	0.18
	PK	343	14.37	3.97	0.21
Financial Literacy	TR	249	5.99	1.77	0.11
	PK	343	6.44	2.33	0.13
Risk Tolerance	TR	249	27.98	5.22	0.33
	PK	343	28.62	5.79	0.31

Table 3.7.4. Independent Samples Test for Difference between Countries

Levene's Test for Equality of Variances						t-test for Equality of Means				
Variables		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Investment Choices	Equal variances not assumed	7.62	0.01	1.08	558.94	0.28	0.27	0.25	-0.23	0.77
self Confidence	Equal variances not assumed	24.81	0.00	9.21	455.42	0.00	-0.63	0.07	-0.77	-0.50
Experience	Equal variances not assumed	7.34	0.01	3.36	575.08	0.00	-0.49	0.15	-0.77	-0.20
Investment Philosophy	Equal variances not assumed	31.39	0.00	2.49	589.51	0.01	0.69	0.28	0.14	1.24
Financial Literacy	Equal variances not assumed	34.32	0.00	2.68	588.82	0.01	-0.45	0.17	-0.78	-0.12
Risk Tolerance	Equal variances assumed	0.02	0.89	1.39	590.00	0.17	-0.64	0.46	-1.55	0.27

3.8. Path Analysis: Investment Behavior of Retail Investors in TR and PK

In the current study, path analysis is used to assess the investment behavior of retail investors in Türkiye and Pakistan. Although prior studies have investigated the behavior of retail investors in Türkiye and Pakistan separately, these relations have not been empirically examined together in both countries to the best of our knowledge. Moreover, no similar comparative study between Pakistan and Türkiye with respect to retail investor behavior seems to exist.

Path Analysis is a variation and extension of multiple regression Analysis (Stage et al., 2004). It is used to examine “chain of Influence” i.e., when “A” influence “B” and “B” influence “C” and so on. Thus, a cumulative effect is calculated for the dependent variable at the end of a path. Path Analysis is convenient for complex models and can be successfully applied to models having latent variables. It is a useful technique to compare and select the best model that fit the data well (Wardrop & Loehlin, 1987). It does not intend to determine causality but tries to find out if there exist any meaningful patterns in the data. Path analysis aims to determine what influences endogenous/downstream variables (the variable that is influenced/determined by other present variables in the statistical model), how the exogenous variables/source variables (the observed variable) interact i.e., their covariances, and which pathways are essential (decided in part by the exogenous variables' variances). Path analysis is also referred to as a multivariate multiple path analysis (Carey, 1998). Path Analysis can be used for the studies where one or more than one variable is supposed to mediate the relationship between two other variables. By using path diagram, path analysis gives estimates of the magnitude and significance of hypothesized causal connections among sets of variables in a visual layout. A path diagram serves as a visual tool to summarize the results of a path model. A path coefficient shows the direct effect of the “cause” variable on the “effect” variable (Kyndt & Onghena, 2014).

Path Analysis assumes that the endogenous variables are entirely determined or impacted by the exogenous factors. They are not free to change on their own, but only in reaction to the exogenous variables. It is based on a model testing approach, not a model building approach. Theoretical links however can help to develop understanding for good models, because the direction of casual paths is derived from theory (Stage et al., 2004; Streiner, 2005).

3.8.1. Hypothesis

In context of the current study, two main hypotheses were generated based on several supportive links from the literature, which are summarized below:

1. Financial Literacy is positively associated with Investment Experience (Frijns et al., 2014; Hogarth & Hilgert, 2002).
2. Financial Literacy and Investment Experience influence Risk Tolerance (Awais et al., 2016; Rahmawati et al., 2015)
3. Risk Tolerance and Investment Experience are positively related (Hoffmann & Post, 2017)
4. Investment Experience is directly linked with Investment Choices (Malmendier, 2021; Senda et al., 2020).
5. Risk Tolerance level directly influence the Investment Choices (De Giorgi, 2011; M. Pompian, 2008).
6. Risk Tolerance and Investment Experience positively influence the Investment Philosophy (Trutmann, Heinke, and Rieskamp 2021).
7. Investment Philosophy positively influence Investment Choices (Haws, 2021)

The hypothesis to be tested with Path Analysis were formulated as follows:

- $H_{o(a1)}$: Financial Literacy influences investment behavior of retail investors in Türkiye and Pakistan.
- $H_{o(a2)}$: Investment Experience influences investment behavior of retail investors in Türkiye and Pakistan.
- $H_{o(a3)}$: Risk Tolerance influences investment behavior of retail investors in Türkiye and Pakistan.
- $H_{o(a4)}$: Investment Philosophy influences investment behavior of retail investors in Türkiye and Pakistan
- $H_{o(a5)}$: Self Confidence influences investment behavior of retail investors in Türkiye and Pakistan.

Related to Effect size:

- $H_{o(b1)}$: The effect size of Financial Literacy differs significantly among the retail investors in Türkiye and Pakistan.

- $H_{o(b2)}$: The effect size of Investment Experience differs significantly among the retail investors in Türkiye and Pakistan.
- $H_{o(b3)}$: The effect size of Risk Tolerance differs significantly among the retail investors in Türkiye and Pakistan.
- $H_{o(c4)}$: The effect size of Investment Philosophy differs significantly among the retail investors in Türkiye and Pakistan.
- $H_{o(c4)}$: The effect size of Self- Confidence differs significantly among the retail investors in Türkiye and Pakistan.

3.8.2. Assumptions of Path Analysis

Path analysis is based on the following fundamental assumptions:

- 1) Multivariate normality (checked through Kurtosis values)
- 2) Linear association of variables in a model (checked through Pearson bivariate correlation)
- 3) Recursive (all arrows are in one direction)
- 4) Continuous endogenous variables

For univariate normality in large samples i.e. $n > 300$, normality assumption is met when the absolute skewness and kurtosis values are between ± 2 and ± 7 (R. Mishra et al., 2019). According to Byrne (2010), kurtosis is more relevant in the context of path analysis and SEM since skewness influences mainly mean values whereas kurtosis influences variances and covariances. Multivariate normality is assessed by analyzing the Mahalanobis distance. Mahalanobis distance is the distance of a data point from the multivariate mean. Cases with Mahalanobis d-squared (d^2) values are analyzed to detect multivariate outliers. For outlier detection, Byrne (2010) suggested that any data case whose Mahalanobis d^2 value departs substantially from the others within the dataset is most likely to be an outlier. Table 3.8.1 presents multivariate normality test results. The multivariate absolute CR value is 1.176 (at alpha .05, the CR < -1.96 or > 1.96 , the normality assumption holds true). However, the Mahalanobis squared distance for observation 26 (table 3.8.2) is relatively far too away from other data points. ($P1 \leq .000$). After deleting the outlier from the data χ^2 value reduced from 121.192 (21) to 103.649 (21).

Table 3.8.1. Test for Multivariate Normality

Variable (N=592)	min	max	kurtosis	CR
Financial Literacy	.000	10.000	-.058	-.290
Experience	1.000	8.000	-.727	-3.608
Risk Tolerance	13.000	44.000	.151	.749
Investment Philosophy	6.000	24.000	-.069	-.344
Self Confidence	1.200	5.000	-.345	-1.712
Investment Choices	3.000	18.000	-.600	-2.979
Multivariate			.947	1.176

Note: CR stands for critical ratio, chi-square = 121.192 (21)

Table 3.8.2. Mahalanobis Distances

Serial #	case number	Mahalanobis d-squared	p1	p2
1	26	32.971	0.000	0.006
2	41	20.426	0.002	0.4
3	263	18.469	0.005	0.59
4	277	16.594	0.011	0.886
5	76	15.902	0.014	0.925
6	65	15.896	0.014	0.851
7	135	15.844	0.015	0.762
8	198	15.671	0.016	0.707
9	582	15.656	0.016	0.586
10	204	15.084	0.02	0.725
...	...	...	...	...
...	...	...	...	...
...	...	...	...	...
99	319	9.052	0.171	0.562

Note: Top 10 values are presented only.

3.9. Correlation

A Pearson correlation table is given in Table 3.9.1. Correlation is a “measure of dependence between two random variables that can take values between -1 and 1”. A Pearson correlation coefficient (r) is computed to assess the linear relationship between variables. The table 3.9.1 reveals that there is a positive relationship between all variables.

A positive value assumes that when one variable increases the other variable also increases. However, correlation does not inform about the direction of variables relationship.

Table 3.9.1. *Correlations, Mean Values and Std. Dev. of the Variables*

Variables	Financial Literacy	Self Confidence	Experience	Risk Tolerance	Investment Philosophy	Investment Choices	Mean values	Standard deviations
Financial Literacy	1	.245**	.421**	.305**	.260**	.177**	6.25	2.12
Self Confidence		1	.391**	.332**	.217**	.272**	3.21	.849
Experience			1	.493**	.468**	.341**	4.89	1.80
Risk Tolerance				1	.539**	.470**	28.37	5.53
Investment Philosophy					1	.477**	14.66	3.54
Investment Choices						1	13.62	3.10

**Correlation is significant at 0.01 level (2 tailed)

Table 3.9.1 provides information about the bivariant correlation (r) of variables under study. For example, the correlation between Financial Literacy and Self Confidence ($r = .245$, $P < .001$), Experience ($r = .421$, $P < .001$), Investment Philosophy ($r = .260$, $P < .001$) and Investment Choices ($r = .177$, $P < .001$) showing weak positive, but significant relationship. A relatively moderately significant association is observed between Risk Tolerance and Investment Philosophy ($r = .539$, $P < .001$).

4. FINDINGS

After checking the assumptions of path analysis, a hypothesized model was created. The model is recursive and independent (having no reverse relation between exogenous variables). Self Confidence, Investment Philosophy, Investment Choices, Experience and Risk Tolerance are endogenous variables with error terms e_1 , e_2 , e_3 , e_4 and e_5 respectively, while Financial Literacy is the observed exogenous variable. Standardized path coefficients and unstandardized path coefficients are used to report the significance of the relationships between path variables.

In the model, 4 paths are estimated:

1. Financial Literacy, Experience, Self Confidence, and Investment Choices.
2. Financial Literacy, Experience, Risk Tolerance, and Investment Choices.
3. Financial Literacy, Experience, Investment Philosophy to Investment Choices.
4. Financial Literacy, Experience, Risk Tolerance Investment Philosophy to Investment Choices.

R squared value (R^2) explains the percentage of variance in the dependent variable that can be explained by the independent variable in the model (Eisenhauer, 2009). In the model (Table 4.1.1) R^2 value is .296, which implies that the predictor variables are accounted for approximately 30% of the variation in Investment Choices variable.

Financial literacy has no direct relation with any other variable except Investment Experience. In other words, Financial Literacy casts its influence in the model through Investment Experience. These findings are in line with the findings of Frijns, Gilbert, and Tourani-Rad (2014). A positive relationship between Financial Experience and Financial Literacy is found in the current model. Investors Self-Confidence increases with Experience and Financial Literacy (Financial Education) as suggested by Mishra and Metilda (2015).

Risk Tolerance is influenced by Financial Literacy and Experience. These findings are in line with the findings of Awais et al. (2016). According to Awais and others, individual investors make decisions based on their risk tolerance level. Experience combined with Financial Literacy increases Risk Tolerance. A smart investor learns from previous experience. However the intensity of the relationship changes with respect to alternate investment options and the nature of the investment (Nosic & Weber, 2010).

Risk Tolerance has a direct effect on Investment Choices, as pointed out by E. De Giorgi (2011) and Pompian (2008). Self Confidence also has a direct effect on Investment Choices.

In the current path diagram, Experience has a direct effect on Investment Philosophy. Experience and Investment Philosophy linkage is also mentioned in the literature. As suggested by Trutmann, Heinke, and Rieskamp (2021), Experience tends to provide a road map for investors to evaluate their investment options based on their investment philosophy.

Risk Tolerance does not have a direct influence on Investment Choices but cast an indirect influence in Investment Choices through Investment Philosophy and Self-Confidence.

In figure 3.9-1, the Path Diagram showing the direct relations between Investment Choices, Investment Philosophy and Self Confidence, as well as the indirect relations between Experience and Risk Tolerance are presented.

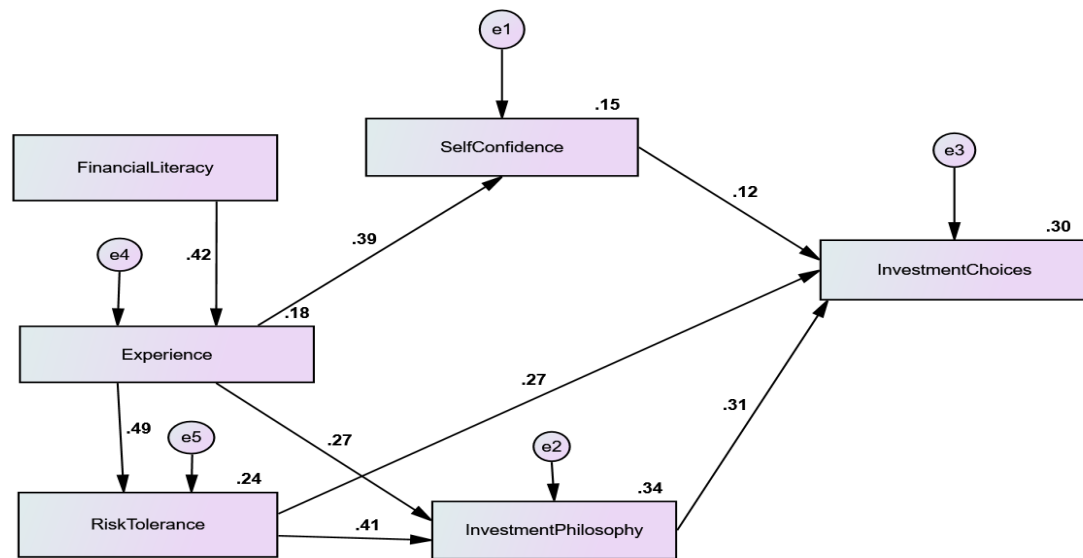


Figure 3.9-1: Path Analysis of Investor Behavior (Overall Model)

4.1. Model Fit Indices

The most widely used model fit indices in path analysis are *GFI*, *NFI*, *TLI*, *CFI*, *IFI*, *RFI*, *CMIN/Df*. The values above .90 are acceptable (Stage et al., 2004). The frequently used two measures *RMSEA* (The root mean square error of approximation) and *SRMR* (Standardized root mean square residual) provide information about residuals' spread. *RMSEA* assesses "How far the hypothesized model is from the perfect model". *SRMR* is "The difference between the observed correlation and the model implied correlation matrix". *RMSEA* has a cut-off value close to .05 is recommended although a value less than .08 is acceptable. The acceptable range for *SRMR* is between 0 and .08 (Hu & Bentler, 1999). The model fit indices of current path analysis indicated that all the values are in the acceptable range. *GFI* (Goodness of Fit Index) = .971, *NFI* (Normed Fit Index) = .943, *TLI* (Tucker-Liwise Index) = .900. *CFI* (Comparative Fit Index) = .953, *IFI* (Incremental Fit Index) = .954, *RFI* (Relative Fit Index) = .877. $X^2/df = (CMIN/Df)$

=4.936, *RMSEA*= .058 and *SRMR*= .0463. The baseline model met the criteria of adequate fit, as all the values are in the acceptable range (Appendix 4 presents model fit index criteria by Kyndt and Onghena (2014)). The Unstandardized and Standardized weights, Standard errors (*S.E.*), Critical Ratio (*CR*), p values and R^2 values of the baseline model are given in Table 4.1.1. The standardized weights column has path coefficients (slopes, β) for the regression of Experience on Self- Confidence and Investment Philosophy, Risk Tolerance on Investment Choices and Investment Philosophy, Self-Confidence, and Investment Philosophy on Investment Choices as well as Financial Literacy on Experience. Their Squared Multiple Correlation Coefficient (R^2) are also given. These values describe “the proportion of the variation in the dependent variable explained by the independent variables in the model”.

Table 4.1.1. The β , *S.E.*, *CR*, and R^2 values of the Baseline/ Default model

Variables and links			Unstandar- -zed weights	Standardized weights β	<i>S.E.</i>	<i>CR</i>	<i>P</i>
Experience	←	Financial Literacy	0.36	0.42	0.03	10.94	***
Risk Tolerance	←	Experience	1.52	0.49	0.11	13.33	***
Investment Philosophy	←	Experience	0.52	0.27	0.07	6.88	***
Investment Philosophy	←	Risk Tolerance	0.26	0.41	0.02	10.98	***
Self-Confidence	←	Experience	0.18	0.39	0.02	10.08	***
Investment Choices	←	Self- Confidence	0.43	0.12	0.13	3.36	***
Investment Choices	←	Investment Philosophy	0.27	0.31	0.04	7.56	***
Investment Choices	←	Risk Tolerance	0.15	0.27	0.02	6.51	***
Squared Multiple Correlations: (Full- Default model)							R^2
Experience							177
Risk Tolerance							243
Investment Philosophy							345
Self Confidence							153
Investment Choices							296

4.2. Direct and Indirect Effects

Table 4.2.1 presents standardized values for the direct and indirect effects of the baseline/default model. Financial Literacy has a direct (unmediated) effect on Experience only. In other words, when Financial Literacy goes up by 1 standard deviation, Experience goes up by 0.41 standard deviations. In addition, Financial Literacy has also an indirect effect on Self Confidence. The standardized indirect (mediated) effect of Financial Literacy on Self Confidence is .164. Financial Literacy has also an indirect effect on Risk Tolerance, Self Confidence, and Investment Choices (Effect values are presented in Table 4.2.1). Investment Choices has a direct effect on three variables i.e., the standardized direct effect of Risk Tolerance on Investment Choices is .266, Investment Philosophy is .311 and Self Confidence is .118. This is in addition to the indirect effect Risk Tolerance (.072), Investment Experience (.318) and Financial Literacy (.131) have on Investment Choices.

Table 4.2.1. *Effects of the Predictor Variables on Investment Choices*

a: Weighted correlations of Main Study Variables for the Total Sample						
Standard Direct Effect	Financial Literacy	Experience	Risk Tolerance	Investment Philosophy	Self Confidence	Investment Choices
Financial Literacy	1					
Experience	.421**	1				
Risk Tolerance	-	0.493**	1			
Investment Philosophy	-	0.267**	0.408**	1		
Self Confidence		0.391**	-	-	1	
Investment Choices	-	-	0.266**	0.311	.118**	1
<i>Note ***p < .001</i>						
b. Standardized Indirect Effects						
Variables	Financial Literacy	Experience	Risk Tolerance	Investment Philosophy	Self Confidence	
Experience	-					
Risk Tolerance	.208	-				
Investment Philosophy	.197	.201	-			
Self Confidence	.164	-	-	-		
Investment Choices	.136	.323	.127	-	-	

4.3. Country-wise Comparison

After checking the relationship of the variables of the study in the hypothesized model, the next step is to compare the country-wise models. Models for Türkiye and for Pakistan were developed and analyzed for this purpose. The regression weights (β) of all the variables are significant ($p < .05$) in both models.

The goodness of fit measures for the individual models of retail investors in Türkiye and Pakistan are presented in Table 4.3.1. The model fit was better for Türkiye ($CFI=.961$, $RMSEA=.074$, $CMIN/DF = 2.349$) compared to Pakistan ($CFI= .929$, $RMSEA = .141$, $CMIN/DF = 7.74$). Table 4.3.2 presents the total effect of all variables for both models. The effect of Financial Literacy on Investment Experience of Turkish (5.99 ± 1.76) and Pakistani Investors (6.44 ± 2.33) is almost the same (41%) at $p < .001$.

Due to relatively lower goodness of fit values for Pakistan, Turkish Model seems to explain influence of other variables on Investment Choices better than Pakistani Model. For Türkiye (as seen in Table 4.3.3), R^2 value is .115, which implies that the predictor variables are accounted for approximately 11.5% of the variation in Investment Choices variable. For Pakistan (as seen in Table 4.3.4), R^2 value is .431, which implies that the predictor variables in the model are accounted for almost 43.1% of the variation in Investment Choices variable. The path coefficients (β) are the parameters of the model and represent the estimates of effective connectivity. Path coefficient represents the response of the endogenous variable to a unit change in an exogenous variable when other variables in the model are held constant. The path coefficients in both models are also significantly different for same paths which indicates that the nature of relationship of variables in two models are different. For example, the total effect of Risk Tolerance on Investment Choices in Turkish model is .234 and in Pakistan it is .492. The total effects of all predictors on Investment choices for both models are provided in Table 4.3.2.

Table 4.3.1. *Model Fit Comparison between Türkiye and Pakistan*

Model Fit Measure	Türkiye	Pakistan
χ^2 Test of Model Fit (df)	16.43 (7)	54.22(7)
P(χ^2)	0.024	0.000
Cmin/df	2.349	7.74
CFI	.961	.929
RMSEA (90% CI)	0.074	0.141
P (RMSEA $\leq$.05)**	0.17	0.00
SRMR	0.048	0.0767
NFI	0.936	0.928

Table 4.3.2. *Standardized Total Effects in grouping Models*

Variables	Türkiye					Pakistan				
	Financial Literacy	Experience	Risk Tolerance	Self Confidence	Investment Philosophy	Financial Literacy	Experience	Risk Tolerance	Self Confidence	Investment Philosophy
Experience	0.41	-	-	-	-	0.41	-	-	-	-
Risk Tolerance	0.21	0.50	-	-	-	0.20	0.48	-	-	-
Self Confidence	0.13	0.31	-	-	-	0.18	0.43	-	-	-
Investment Philosophy	0.16	0.39	0.33	-	-	0.22	0.53	0.45	-	-
Investment Choices	0.08	0.20	0.23	0.15	0.14	0.17	0.40	0.49	0.13	0.36

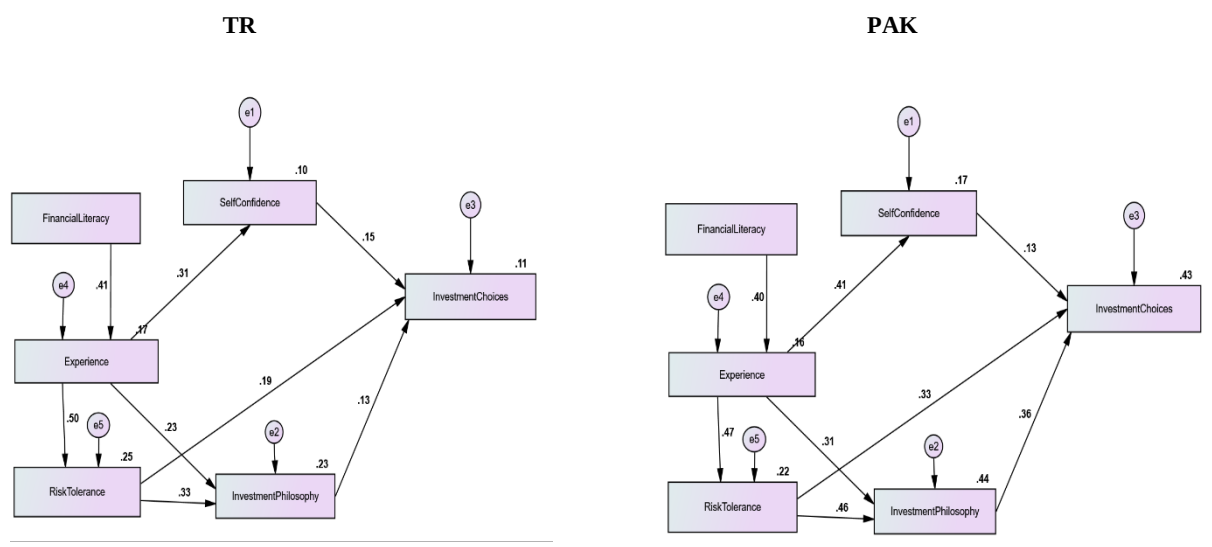
**Figure 4.3-1:** *Path Analysis of Investors' behavior (Türkiye and Pakistan)*

Table 4.3.3. *Standardized Regression Weights: (Turkiye)*

Variables and links			Unstandi- zed weights	Standardized weights β	S.E.	CR	P
Experience	←	Financial Literacy	0.38	0.41	0.05	7.09	***
Risk Tolerance	←	Experience	1.62	0.50	0.18	9.16	***
Investment Philosophy	←	Experience	0.39	0.23	0.11	3.55	***
Investment Philosophy	←	Risk Tolerance	0.18	0.33	0.03	5.12	***
Self-Confidence	←	Experience	0.17	0.31	0.03	5.18	***
Investment Choices	←	Self- Confidence	0.50	0.15	0.20	2.54	0.01
Investment Choices	←	Investment Philosophy	0.14	0.14	0.07	2.02	0.04
Investment Choices	←	Risk Tolerance	0.11	0.19	0.04	2.82	0.01
Squared Multiple Correlations: (Full- Default model)							R^2
Financial Literacy							.000
Experience							.168
Risk Tolerance							.253
Investment Philosophy							.235
Self Confidence							.098
Investment Choices							.115

Table 4.3.4. *Standardized Regression Weights: (Pakistan)*

Variables and links			Unstandi- -zed weights	Standardized weights β	S.E.	CR	P
Experience	←	Financial Literacy	0.34	0.41	0.04	8.41	***
Risk Tolerance	←	Experience	1.46	0.48	0.14	10.2 1	***
Investment Philosophy	←	Experience	0.31	0.45	0.03	9.77	***
Investment Philosophy	←	Risk Tolerance	0.65	0.31	0.10	6.73	***
Self-Confidence	←	Experience	0.16	0.43	0.02	8.84	***
Investment Choices	←	Self- Confidence	0.28	0.36	0.04	6.87	***
Investment Choices	←	Investment Philosophy	0.18	0.33	0.03	6.44	***
Investment Choices	←	Risk Tolerance	0.56	125.00	0.19	2.96	0.00
Squared Multiple Correlations: (Full- Default model)							R^2
Financial Literacy							.000
Experience							.172
Risk Tolerance							.234
Investment Philosophy							.439
Self Confidence							.186
Investment Choices							.431

5. CONCLUSION

Understanding the behavior of (retail) investors is critical to determine factors that may affect investment intentions. Therefore, this study aims to get an insight into retail investors' behavior in two different countries i.e., Pakistan and Türkiye. The purpose of the study is to investigate similarities and differences in terms of investment behavior of investors of Pakistan and Türkiye in detail. The factors which may influence investment behavior include financial knowledge, financial experience, investment philosophy, investment and risk attitude as well as demographic variables. To the best of our knowledge, this is the first comparative study about the behavior of Turkish and Pakistani retail investors.

Path Analysis and Independent *t*-test results reveal that there are significant differences in investment behavior of retail investors in Türkiye and Pakistan. Financial literacy, Self-Confidence and Investment Philosophy are different for Turkish and Pakistani Investors. It may be due to socio-economic background and demographic differences as *t*-test statistics of Income, Qualification, Occupation and Marital Status vary significantly across the countries. After analyzing the Financial Literacy items separately, it was observed that the rate of correct answers for some questions are significantly different across the respondents of both countries. For instance, the question related to “Credit Card” transaction is 50% correctly answered by Turkish respondents, while for Pakistani respondents the rate of correct answer is 20%. The findings of the study are in line with the findings of a case study conducted in Türkiye the financial inclusion and usage of financial technology, which revealed that Turkish citizens use credit cards more frequently as compared to 22 other Upper-Middle-Income countries (*The Fintech market in Turkey the fintech sector and its potential and financial health in Turkey*, 2019).

When we analyze overall portfolio of investors including both countries, Risk tolerance and Investment Choices seem to be very similar. However, a significant difference is found when the choices are analyzed separately based on their first, second and third preference. Current findings are in line with the research outcomes of the study conducted by Dorn and Huberman (2010), which concluded that retail investors adjust their portfolio in such a manner that the overall composition of the portfolio remains the same in terms of risk (Dorn & Huberman, 2010).

The first investment preference for Pakistani respondents is found to be Stock/Share. This finding contrasts with the findings of Ali et al. (2012), who concluded that Pakistani respondents are reluctant to invest in stocks and shares. Apparently, it seems that the shift in investor behavior of Pakistani investors occurred due to structural regulations in the stock exchange market. Subsequently, in 2016, the three stock exchanges of the country were merged into a single stock exchange named as 'Pakistan Stock Exchange' (PSX). The ultimate aim of this merger was to decrease market volatility and increase investors' confidence in investment related to share/stocks (Masood & Campus, 2017).

According to our findings, financial literacy has no direct relation with any other variable except Investment Experience. In other words, Financial Literacy casts its influence in the model through Investment Experience. Sabir et al. (2021) also found that the relationship of investment intention and investment behavior of individual investors in stock market is significantly influenced by financial literacy.

In the overall sample, mean value of Risk Tolerance, Experience and Self Confidences is significantly different across gender. Financial Literacy and Investment Choices are marginally significantly different. However, regarding Investment Philosophy, no significant difference is found between males and females although the results vary across countries.

In the current study, Risk Tolerance is significantly different between males ($M=29.06$, $SD=4.97$) and females ($M=26.67$, $S.D=5.16$) and Financial Literacy is also significantly different between males ($M=6.32$, $SD=1.54$) and females ($M=6.43$, $S.D=1.95$) in the Turkish sample. Yet, there are no significant differences with respect to gender for the variables of Investment Philosophy, Investment Choices and Self Confidence.

As far as Self Confidence of Pakistani investors is concerned, there are significant differences between males ($M=3.52$, $SD=.69$) and females ($M=3.31$, $S.D=.75$). Investment Experience also found to be different between males ($M=5.20$, $SD=.1.92$) and females ($M=4.75$, $S.D=1.82$). Yet, no significant relationship was found between Financial Literacy and Demographic variables in Pakistan.

The level of Financial Literacy is found to be lower for Turkish younger respondents (Financial literacy score was 5.99, $p < .05$) as compared to middle aged or

elder respondents (6.33. $p < 0.05$), which is similar to the findings of the study conducted by Karaa & Kuğu, (2016b).

In terms of Investment Philosophy, the items related to usage of funds, portfolio development and information sources exhibit significantly different responses.

Path Analysis reveals that the strength of exogeneous and endogenous variables' relationship varies widely across countries. The model fit measures are high for Turkish sample, as compared to Pakistani Sample. The effect size of the main variables on Investment Choices is high for Pakistan, but the results for Türkiye are more stable. However, all five variables under the study i.e., Financial Literacy, Risk tolerance, Investment Philosophy and Self Confidence proved to be a good predictor of Investment Choices in both countries.

In the current study, the variation in Investment Choices explained by the predictors is 30% for Pakistan and 11.5% for Türkiye. Financial Literacy has no direct influence on Investment Choices but plays a role of significant mediator between Investment Philosophy, Risk Tolerance and Investment Choices. Financial Literacy also moderates the relationship between Self Confidence and Investment Choices.

According to the findings of the study, Financial Literacy together with Risk Tolerance influences the selection of Investment Choices in Türkiye. This finding is in line with the findings of Aren and Nayman (2020). Moreover, a significant association was found between Financial Literacy and Self Confidence ($r = .291$, $p = 0.001$) as suggested by Karaa & Kuğu (2016a). It was also found that Risk Tolerance level influences Investment Choices and investment behavior of Pakistani investors (Riaz & Hunjra, 2012). In general Risk Tolerance was found to be a significant predictor of Investment Choices. This finding is similar to the findings of Kanten et al., (2018). Investors' Confidence also seems to exhibit a substantial increase with Experience and Financial literacy, which is in line with the study of Bashar & Hammash (2017).

The findings of the current study thus may help financial institutions like investment banks, savings and loan associations, credit unions, other relevant organizations, and commercial banks to identify specific retail segments. It will also help them to customize their products and services according to the needs and demands of their target clients. It could enhance their understanding of investors' financial capacity and investor personality that may influence investment behavior.

The findings of the study are limited to the subjective nature of variables “Investment Philosophy” and “Investors’ Confidence”. Thus, generalization of the findings needs to be considered with caution as the potential for results variance exists. The current study also inherits the limitations associated with a survey-based study. A major part of the sample under study comprises of males’ investors, so in future, a sample with a good representation of female investors may help to unfold their investment personality and behavior in more meaningful ways.

We used Houts and Knols (2019) questionnaire to measure financial literacy. It is a comprehensive questionnaire, but it ignores some aspects of modern financial technologies. It measures basic understanding not the advance financial knowledge. In the future, researchers may further extend this study by investigating aspects related to investor’s knowledge about digital currency and their understanding about fintech etc. Moreover, in the current study only a set of traditional Investment choices options were considered, by adding other options like derivatives, digital currency and hybrid investment choices etc. can be helpful to get more deep insight of investors behavior. Future research could also focus on some other aspects of investors’ behavior like “Paradox of Choices” and “Cultural Differences”.

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APPENDICES

Appendix: 1

Sample Selection

Pakistan: Total Population 212 Million
Literate Population = 131 Million
Population below High Schools= 47 Million
Population that is literate and above High Secondary= 84 Million
Total Population= 212 Million
Below Poverty===78 Million (34.7%) (Rs 3030 per person per month and 21,000 per family)
Employed population in Pakistan 39.6 Million
People in Pakistan who hold accounts = 23% of Adult population (70% in Türkiye)
Unbanked Population in Pakistan= 100 Million

Globally, 62 percent of the unbanked population possess some manner of a primary-school level education or less, compared with about half of adults overall in developing economies. This share is even higher in some economies, such as Ethiopia, where 92 percent of unbanked adults have a primary school education or less — as well as Tanzania (86 percent) and Pakistan (75 percent). Worldwide, only 38 percent of the unbanked have completed their high school or post-secondary education.

Stock market investors= 250,000

<https://ilm.com.pk/pakistan/pakistan-information/pakistan-literacy-rate/>

The literacy rate in Pakistan 2021 province-wise for males and females has improved by 58% to 70%. With the special attention of the ministry of education Government of Pakistan on this section, we have overcome illiteracy. Now, about 22 million students are having easy access to schools and colleges which has improved the latest figure. Pakistan literacy rate latest figure is 72.5% for male and 51.8% for females which almost 10% of the latest three years. Pakistan social and living standards measurement carried out every year but this year it cannot be conducted due to population and housing census. Every year, Pakistan's economic survey reevaluates the figure which telling us the real efforts by Govt. on this section to secure the future of the upcoming generations. As far as education is concerned Pakistan is one of those nations which are left out in this area and are behind the majority of the countries of this world. Pakistan has one of the worst literacy rates in the world which is one of the very core reasons for the slow growth and destructive economy.

Appendix: 2

Questionnaire

The survey "A Study of Investment Behavior of Retail Investors in Pakistan and Türkiye" is trying to get insight of investors behavior. There is no right and wrong answer in many cases so feel free to choose the answer you think is suitable and represent your thinking style. (Requesting 17 minutes from your busy schedule).

Your name or specific questions that reveal your identity would not be asked and responses to these questions would be kept confidential and exclusively used only for academic purposes.

If you have any questions or need more information about this research, you can contact us

Question 1 to 5 Demographic Variables

1. Gender and Marital Status

- | | |
|-----------|--------------|
| a. Male | a. Married |
| b. Female | b. Unmarried |
| c. Other | c. Divorced |

2. Age

- a. 18 – 25
- b. 26 - 54
- c. 56 - 64
- d. 65 and above

3. Education level

- a. Less than high School (12 years)
- b. Senior High School (College 12 years)
- c. University (Bachelor 2 -4 years)
- d. Masters/ PhD

4. Your average monthly Income

- a. Under Rs 55000
- b. Rs 55001 to Rs 210,000
- c. Rs 210,001 to Rs 320,000
- d. Rs 320,001 to Rs 425,000
- e. Rs 425,001 to Rs 530,000
- f. Rs 530,001 and above

THE STRUCTURE OF TÜRKİYE'S EDUCATION SYSTEM

Compulsory Education: Elementary, Lower Secondary, and Upper Secondary – From “8+3” to “8+4” to “4+4+4”

DEGREE PROGRAMS

Türkiye has a U.S.-style three-cycle system, which includes a bachelor's degree, Master's degree, and doctorate. In addition, the Turkish system also includes a two-year associate degree, which is mostly a non-university qualification in technical and vocational fields designed to prepare students for entry into the labour force,

5. Occupation

- a. Employer
- b. paid employee
- c. Self-employed
- d. Students/scholarship holder

6. Self-Assessment Risk Tolerance Question Self-Assessment Risk Tolerance

Usually, the most risk tolerant individuals rank themselves over 8, while the least risk tolerance individuals rank themselves under 2. The average score is between 4 and 6. What do you think your score will be?

.0 .1 .2 .3 .4 .5 .6 .7 .8 .9 .10
(Least risk Tolerance) (Avrg. Risk Tolerance) (High Risk Tolerance)

Question 7 to 11 : Self Confidence

- 7. I believe that I can predict stock market better with accuracy. 1 2 3 4 5
- 8. I rate my own competence more than what it actually is (results are not what I expected). 1 2 3 4 5
- 9. I rate my own decisions better than what they actually are (the results in actual are lower). 1 2 3 4 5
- 10. I am Overconfident while assessing my abilities 1 2 3 4 5
- 11. Most of the time I overestimate my ability to make good investments. 1 2 3 4 5

Question 12 to 13 ; Experience

12. You have Investment experience of :

- a. 0 to 2 years
- b. 2 years to 4 years
- c. 4 years and Above

13. You have investment Experience in:

- | | | |
|--|-----|----|
| a. Stocks/Shares | Yes | No |
| b. Bonds | Yes | No |
| c. Mutual Funds | Yes | No |
| d. Gold | Yes | No |
| e. Real Estate | Yes | No |
| f. others (Term deposit, foreign currency, digital currency) etc.) | Yes | No |

Question # 14 to 19 ; Investment Philosophy, information, and Goals

14. What is the purpose of your investment? Please select the most appropriate one.

- a. To generate income for today
- b. To generate income at a later date
- c. To provide for my dependents
- d. To fund a large purchase in the future

15. What is your major goal for your investment portfolio? Please Select the most appropriate one.

- a. To ensure my portfolio remains secure
- b. To see my portfolio grow and to avoid fluctuating returns
- c. To balance growth and security, and to keep pace with inflation
- d. To provide growth potential, and to accept some fluctuation in returns
- e. To provide the sole objective of potential long-term growth

16. When do you anticipate (expect) using these funds?

- a. Immediately
- b. One to three years
- c. Four to 10 years
- d. 11 to 15 years
- e. 16 and above

17. Which of the following statements most correctly describes your investment philosophy?

- a. I cannot accept any fluctuation in principal.
- b. I can only accept minimal fluctuations and prefer to invest in safer, lower-return investments.
- c. I am willing to tolerate some ups and downs in the value of my investments to achieve overall higher returns in the long run.
- d. My main interest is high, long-term returns and I am not concerned about short-term decreases in the value of my investments.

18. How do you make your investment decisions?
- a. By myself
 - b. I consult family members
 - c. I consult peers
 - d. I consult Professionals
19. In what way do you usually get investment information? (Single Choice)
- a. Experts/professionals (directly)
 - b. Social Media and electronic media
 - c. Print media
 - d. Follow the knowledge/experience of someone else

Question # 20 to 29 Financial Literacy

20. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy:
- a. More than today.
 - b. Exactly the same as today.
 - c. Less than today.
21. If the interest rates rise, what should happen to bond prices?
- a. They should rise.
 - b. They should fall.
 - c. They should stay the same.
22. Considering a long time period (for example 10 or 20 years), which asset described below normally gives the highest return?
- a. Savings accounts.
 - b. Bonds.
 - c. Stocks.
23. Normally, which asset described below displays the highest fluctuations over time?
- a. Savings accounts.
 - b. Bonds.
 - c. Stocks.
24. When an investor spreads his or her money among different assets, does the risk of losing a lot of money :
- a. Increase.
 - b. Decrease.
 - c. Stay the same.
25. "If you were to invest \$1000 in a stock mutual fund, it would be possible to have less than \$1000 when you withdraw your money."

- a. True.
 - b. False.
26. “‘Whole life’ insurance has a savings feature while ‘term’ insurance does not.”
- a. True.
 - b. False.
27. “A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.”
- a. True.
 - b. False.
28. Do you think the following statement is true or false? “Housing prices can never go down.”
- a. True.
 - b. False.
29. Suppose you owe \$3,000 on your credit card. You pay a minimum payment of \$30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card/debt if you made no additional new charges?
- a. Less than 5 years.
 - b. Between 5 and 10 years.
 - c. Between 10 and 15 years.
 - d. Never, you will continue to be in debt.

Question # 30 to 42 : Risk Tolerance

30. In general, how would your best friend describe you as a risk taker?
- a. A real gambler
 - b. Willing to take risks after completing adequate research
 - c. Cautious
 - d. A real risk avoider
31. You are on a TV game show and can choose one of the following, which would you take?
- a. \$1,000 in cash
 - b. A 50% chance at winning \$5,000
 - c. A 25% chance at winning \$10,000
 - d. A 5% chance at winning \$100,000
32. You have just finished saving for a “once-in-a-lifetime” vacation. Three weeks before you plan to leave, you lose your job. You would:
- a. Cancel the vacation
 - b. Take a much more modest vacation
 - c. Go as scheduled, reasoning that you need the time to prepare for a job search
 - d. Extend your vacation, because this might be your last chance to go first-class
33. If you unexpectedly received \$20,000 to *invest*, what would you do?
- a. Deposit it in a bank account, money market account, or an insured CD
 - b. Invest it in safe high-quality bonds or bond mutual funds
 - c. Invest it in stocks or stock mutual funds

34. In terms of experience, how comfortable are you investing in stocks or stock mutual funds?
- Not at all comfortable
 - Somewhat comfortable
 - Very comfortable
35. When you think of the word “risk,” which of the following words comes to mind first?
- Loss
 - Uncertainty
 - Opportunity
 - Thrill
36. Some experts are predicting prices of assets such as gold, jewels, collectibles, and real estate (hard assets) to increase in value; bond prices may fall, however, experts tend to agree that government bonds are relatively safe. Most of your investment assets are now in high interest government bonds. What would you do?
- Hold the bonds
 - Sell the bonds, put half the proceeds into money market accounts, and the other half into hard assets
 - Sell the bonds and put the total proceeds into hard assets
 - Sell the bonds, put all the money into hard assets, and borrow additional money to buy more
37. Given the best and worst case returns of the four investment choices below, which would you prefer?
- \$200 gain best case; \$0 gain/loss worst case
 - \$800 gain best case; \$200 loss worst case
 - \$2,600 gain best case; \$800 loss worst case
 - \$4,800 gain best case; \$2,400 loss worst case
38. In addition to whatever you own, you have been given \$1,000. You are now asked to choose between:
- A sure gain of \$500
 - A 50% chance to gain \$1,000 and a 50% chance to gain nothing
39. In addition to whatever you own, you have been given \$2,000. You are now asked to choose between:
- A sure loss of \$500
 - A 50% chance to lose \$1,000 and a 50% chance to lose nothing
40. Suppose a relative left you an inheritance of \$100,000, stipulating in the will that you invest ALL the money in ONE of the following choices. Which one would you select?
- A savings account or money market mutual fund
 - A mutual fund that owns stocks and bonds
 - A portfolio of 15 common stocks
 - Commodities like gold, silver, and oil
41. If you had to invest \$20,000, which of the following investment choices would you find most appealing?

- a. 60% in low-risk investments, 30% in medium-risk investments, 10% in high-risk investments
 - b. 30% in low-risk investments, 40% in medium-risk investments, 30% in high-risk investments
 - c. 10% in low-risk investments, 40% in medium-risk investments, 50% in high-risk investments
42. Suppose your trusted friend is an experienced geologist and need a group of investors to fund in a Gold mine exploration project that could pay back 50 to 100 times the investment if successful. If the mine burst, the entire investment is lost. The estimated chance of success is only 20%. If you had the money, how much would you invest?
- a. Nothing
 - b. One month's salary
 - c. Three month's salary
 - d. Six month's salary

Question # 43 Financial choices

43. Please indicate your investment preferences out of 9 options given in column. You can scroll forward on your mobile screen to see all the options.

- 1. Gold/ Bank accounts in Gold
- 2. Bank Deposit Accounts in Local Currency
- 3. Bank Accounts in Foreign Currency
- 4. Govt bonds, Corporate Bonds
- 5. Islamic Financial Products
- 6. Shares, stocks
- 7. Others

44. If you select "others" in the above question then please mention your investment choices (e.g. digital currency etc.)

Türkiye ve Pakistan'daki Bireysel Yatırımcıların Yatırım Davranışı
(Doktora Tez Araştırması için Anket)

Türkiye'de doktora yapan Pakistan'lı bursiyer öğrencimiz Faree Javed'in, Türkiye ve Pakistan'daki bireysel yatırımcılarla gerçekleştirdiği uygulamalı araştırma sayesinde, farklı kültürlerdeki bireysel yatırımcıların yatırım davranışları karşılaştırılacaktır.

Araştırmanın anket sorularının yanıtlanması yaklaşık 15-20 dakika sürmektedir. Gönüllü katılım ile yanıtladığınız sorularda kimlik bilgileriniz sorgulanmayıp verileriniz gizli tutulacak ve araştırma verileri sadece akademik amaçlarla kullanılacaktır. Değerli katılımınız için çok teşekkür ederiz.

Doç. Dr. Özlem Sayılır
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Anadolu Üniversitesi, Sosyal Bilimler Enstitüsü doktora öğrencisi

- 2. Evli
- 3. Bekar

4. Boşanmış

- a. Erkek
- b. Kadın
- c. Diğer

5. Cinsiyet ve Medeni Durum

6. Yaş

- e. 18 – 25
- f. 26 - 54
- g. 56 - 64
- h. 65 ve üstü

7. Eğitim Düzeyi

- e. İlköğretim (İlkokul veya Ortaokul)
- f. Lise
- g. Üniversite (2-4 yıllık)
- h. Master veya Doktora

8. Aylık Ortalama Gelir (TL)

- g. 2500 altı
- h. 2500-10000
- i. 10000-15000
- j. 15000-20000
- k. 20000-25000
- l. 25000 üstü

9. Meslek

- e. İşveren
- f. Ücretli çalışan
- g. Kendi işinde çalışan
- h. Öğrenci

10. Riskleri tolere etme konusunda kendilerini değerlendirirken; risklere en çok tahammül edebilen bireyler genellikle kendilerine 8 veya daha yüksek puan vermekte, risklere en az tahammül edebilen bireyler ise genellikle kendilerine 2 veya daha düşük puan vermektedir. Ortalama puan 4-6 arasında değişir. Sizce, sizin puanınız kaç olur?

.0 .1 .2 .3

(Düşük Risk Toleransı)

.4 .5 .6

(Ortalama Risk Toleransı)

.7 .8 .9 .10

(Yüksek Risk Toleransı)

11. Borsanın yönünü kolaylıkla tahmin edebileceğime inanıyorum. 1 2 3 4 5
12. Kendi yeteneklerimin, gerçekte olduğundan daha fazla olduğunu düşünürüm (sonuçlar beklediğim gibi olmaz). 1 2 3 4 5
13. Kendi kararlarımın, gerçekte olduğundan daha iyi olduğunu düşünürüm (gerçekte sonuçlar daha kötüdür). 1 2 3 4 5
14. Becerilerimi değerlendirirken aşırı özgüvenliyimdir. 1 2 3 4 5
15. Çoğunlukla, iyi yatırım yapma becerimi gözümde fazla büyütürüm. 1 2 3 4 5
16. Yatırım konusunda deneyiminiz kaç yıldır?
- d. 2 yıldan az
- e. 2-4 yıl
- f. 4 yıldan fazla
17. Hangi yatırım araçlarında deneyiminiz bulunmaktadır?
- | | | |
|---|------|-------|
| a. Hisse Senetleri | Evet | Hayır |
| b. Tahvil/Bono | Evet | Hayır |
| c. Yatırım Fonları | Evet | Hayır |
| d. Altın | Evet | Hayır |
| e. Gayrimenkul | Evet | Hayır |
| f. Diğerleri (Vadeli tasarruf hesabı, Döviz hesabı, Dijital para vb.) | Evet | Hayır |
18. Yatırım yapmakla neyi amaçlıyorsunuz? Sizin için en uygun olan seçeneği seçiniz.
- e. Bugün için gelir sağlamak
- f. Gelecek için gelir sağlamak
- g. Bakmakla yükümlü olduğum kişilerin giderlerini karşılamak
- h. Gelecekte yüklü bir satın alma işlemi için finansman sağlamak
19. Yatırım portföyünüzle ilgili temel hedefiniz nedir? Sizin için en uygun olan seçeneği seçiniz.
- f. Portföyümün güvence sağlaması
- g. Portföyümün kazanç sağlaması ve dalgalanmalardan etkilenmemesi
- h. Güvence ve kazanç arasında denge sağlaması ve enflasyona karşı koruma sağlaması
- i. Kazanç potansiyeli sağlaması ve dalgalanmalardan bir miktar etkilenmesi
- j. Sadece uzun vadeli kazanç potansiyeli sağlaması
20. Yatırımlarınızı ne zaman kullanmayı planlıyorsunuz?
- f. Hemen
- g. 1-3 yıl içinde
- h. 4- 10 yıl içinde
- i. 11-15 yıl içinde
- j. 16 yıldan uzun zamanda

21. Aşağıdaki ifadelerden hangisi yatırım felsefenizi en doğru şekilde tanımlar?
- e. Prensip olarak dalgalanmaları kabullenemem
 - f. Minimum düzeyde dalgalanma kabullenebilirim ve güvenli, düşük getirili yatırımları tercih ederim
 - g. Uzun vadede genel olarak daha yüksek kazanç elde etmek için, yatırımlarımın değerindeki bazı iniş çıkışlara tahammül etmeye hazırım
 - h. Ana ilgi alanım uzun vadeli yüksek kazanç sağlamaktır ve yatırımlarımın değerindeki kısa dönemli düşüşler konusunda endişelenmem
22. Yatırım kararlarınızı nasıl alırsınız?
- e. Kendi başıma
 - f. Aile üyelerine danışırım
 - g. Arkadaş çevreme danışırım
 - h. Profesyonel finans/yatırım uzmanlarına danışırım
23. Yatırımla ilgili bilgileri genellikle nasıl edirsiniz? (Tek Seçenek)
- e. (Doğrudan) finans/yatırım uzmanlarından
 - f. Sosyal medya ve elektronik medyadan
 - g. Basılı medyadan
 - h. Başkalarının bilgi ve deneyimlerinden
24. Mevduat hesabınızın getirisinin yıllık %15 olduğunu ve yıllık enflasyonun %20 olarak gerçekleştiğini varsayalım. Bu durumda 1 yıl sonra alabileceğiniz mal ve hizmetler ne kadar olur?
- d. Bugünden daha fazla
 - e. Bugünkü kadar
 - f. Bugünden daha az
25. Faiz oranları arttığında, tahvil/bono fiyatları nasıl etkilenir?
- a. Artar
 - b. Azalır
 - c. Aynı kalır
26. 10 yıl veya 20 yıl gibi uzun vade söz konusu olduğunda, hangi yatırım aracı en fazla getiriye sağlar?
- d. Mevduat Hesabı
 - e. Tahvil/Bono
 - f. Hisse Senedi
27. Normalde, aşağıdaki yatırım araçlarından hangisi zaman içinde daha fazla dalgalanma gösterir?
- a. Mevduat Hesabı
 - b. Tahvil/Bono
 - c. Hisse Senedi

28. Bir yatırımcı parasını farklı yatırım araçlarına/finansal varlıklara dağıttığında, çok para kaybetme riski nasıl etkilenir?
- d. Artar
 - e. Azalır
 - f. Aynı kalır
29. “1000 TL’yi yatırım fonlarına yatırdığınızda ve paranızı çekmek istediğinizde, yatırımınızın 1000 TL’den daha az olması mümkündür.”
- a. Doğru
 - b. Yanlış
30. Tam kapsamlı hayat sigortalarında birikim/tasarruf özelliği varken, vadeli hayat sigortalarında yoktur.
- a. Doğru
 - b. Yanlış
31. “5 yıl vadeli bir konut kredisinin aylık ödemeleri, 10 yıl vadeli konut kredisinden daha yüksek olur. Ancak, kredi vadesi boyunca ödenen toplam faiz, 5 yıl vadeli olan için 10 yıl vadeli olandan daha düşük olur.”
- c. Doğru
 - d. Yanlış
32. Sizce şu ifade doğru mudur yanlış mıdır? “Ev fiyatları asla düşmez.”
- a. Doğru
 - b. Yanlış
33. Varsayalım, 3000 TL kredi kartı borcunuz var. Her ay 30 TL ödeme yapmanız ve aylık %1 faiz uygulanması durumunda, ilave harcama yapılmaması şartıyla, borcunuzun sıfırlanması kaç yıl sürer?
- e. 5 yıldan az
 - f. 5-10 yıl
 - g. 10-15 yıl
 - h. Borç sonsuza kadar devam eder
34. En iyi arkadaşınız sizi genel olarak risk alma konusunda nasıl tanımlar?
- a. Gerçek bir kumarbaz
 - b. Yeterli araştırma yaptıktan sonra risk almaya istekli
 - c. Temkinli/Dikkatli
 - d. Gerçek bir riskten kaçınan
35. Bir televizyon şov programına çıktığınızda size şu seçenekler sunulsa, hangisini seçerdiniz?
- a. 1000 TL nakit para
 - b. % 50 olasılıkla 5000 TL kazanma şansı
 - c. % 25 olasılıkla 10.000 TL kazanma şansı
 - d. % 5 olasılıkla 100.000 TL kazanma şansı
36. Diyelim ki, yakında yapmayı planladığınız “hayatınızın tatili” için para biriktirdiniz, ancak gitmeden 3 hafta önce işinizi kaybettiniz. Bu durumda ne yapardınız?
- a. Tatili iptal ederdim
 - b. Daha mütevazı bir tatile çıkardım

- c. İş aramak için zamana ihtiyacım olduğu gerekçesiyle planladığım tatile çıkardım
d. Bu benim son lüks tatil şansım olabilir diye tatilimi uzatırdım
37. Beklenmedik bir şekilde, 20.000 TL para gelse yatırım amaçlı ne yapardınız?
- a. Vadeli mevduat hesabına yatırırdım
b. Güvenli tahvillere veya tahvil ağırlıklı yatırım fonlarına yatırırdım
c. Hisse senetlerine veya hisse senedi ağırlıklı yatırım fonlarına yatırırdım
38. Deneyim açısından, hisse senetlerine veya yatırım fonlarına yatırım yapma konusunda ne kadar rahatsınız?
- a. Hiç rahat değilim
b. Biraz rahatım
c. Çok rahatım
39. Risk kelimesini duyduğunuzda aklınıza ilk önce ne gelir?
- a. Kayıp
b. Belirsizlik
c. Fırsat
d. Heyecan
40. Bazı uzmanlar altın, mücevher, gayrimenkul gibi maddi varlıkların değerinin artacağını tahmin etmekte. Tahvil fiyatları düşebilir, ancak uzmanlar devlet tahvillerinin nispeten güvenli olduğu konusunda hemfikir. Yatırım varlıklarınızın çoğu şu anda yüksek faizli devlet tahvillerinde. Bu durumda ne yapardınız?
- a. Tahvillerimi tutardım
b. Tahvillerimi satardım, yarısını mevduat hesabına kalan yarısını maddi varlıklara yatırırdım
c. Tahvillerimi satardım, paramın tamamını maddi varlıklara yatırırdım
d. Tahvillerimi satardım, paramın tamamını maddi varlıklara yatırırdım ve daha fazla yatırım yapmak için borçlanırdım
41. Aşağıda en iyi ve en kötü durum kazançları ve kayıpları verilen dört yatırım seçeneğinden hangisini tercih edersiniz?
- a. en iyi durumda 200 TL kazanç, en kötü durumda "0" kazanç/kayıp
b. en iyi durumda 800 TL kazanç, en kötü durumda 200 TL kayıp
c. en iyi durumda 2600 TL kazanç, en kötü durumda 800 TL kayıp
d. en iyi durumda 4800 TL kazanç, en kötü durumda 2400 TL kayıp
42. Sahip olduklarınızın üstüne ekstra 1000 TL verseler ve şu iki yatırım seçeneğinden birini seçmenizi isteseler, hangisini tercih edersiniz?
- a. 500 TL garanti kazanç
b. %50 olasılıkla 1000 TL kazanç ve %50 olasılıkla "0" kazanç
43. Sahip olduklarınızın üstüne ekstra 2000 TL verseler ve şu iki yatırım seçeneğinden birini seçmenizi isteseler, hangisini tercih edersiniz?
- a. 500 TL garanti gelir
b. %50 olasılıkla 1000 TL kayıp ve %50 olasılıkla "0" kayıp
44. Diyelim ki, bir akrabanızdan size 100,000 TL miras kaldı, ancak vasiyette yer alan şarta göre bütün parayı aşağıdaki seçeneklerden birine yatırmanız gerekiyor. Hangi seçeneği tercih ederdiniz?
- a. Mevduat hesabı veya likit yatırım fonu
b. Hisse senedi ve tahvillere yatırım yapan bir yatırım fonu
c. 15 hisse senedinden oluşan bir portföy

d. Altın, gümüş, petrol gibi emtia

45. 20.000 TL yatırım yapmak istesenz, aşağıdakilerden hangisi size daha cazip gelir?

- a. % 60 düşük riskli yatırımlar, %30 orta riskli yatırımlar, %10 yüksek riskli yatırımlar
- b. %30 düşük riskli yatırımlar, % 40 orta riskli yatırımlar, %30 yüksek riskli yatırımlar
- c. %10 düşük riskli yatırımlar, %40 orta riskli yatırımlar, %50 yüksek riskli yatırımlar

46. Varsayalım, deneyimli bir jeolog olan güvenilir bir arkadaşınızın altın madeni araştırma projesine finansman sağlayacak bir grup yatırımcıya ihtiyacı var. Proje başarılı olursa yatırımın 50 ila 100 katı kazanç getirecek, ama maden patlarsa yatırımın tamamı kaybedilecek. Başarı olasılığı %20 olarak tahmin ediliyor. Paranız olsaydı, ne kadar yatırırdınız?

- a. Hiç yatırmazdım
- b. Bir aylık maaşımı yatırırdım
- c. Üç aylık maaşımı yatırırdım
- d. Altı aylık maaşımı yatırırdım

47. Aşağıdaki yatırım araçlarından hangisini; 1. Seçenek, 2. Seçenek, 3. Seçenek olarak seçersiniz?

- 1. Altın/Altın hesabı
- 2. TL mevduat
- 3. Döviz mevduat
- 4. Hazine bonosu/ devlet tahvili/ şirket tahvili
- 5. İslami finansal ürünler
- 6. Hisse senedi
- 7. Yatırım fonu
- 8. Gayrimenkul
- 9. Diğer

1.Seçenek	2.Seçenek	3.Seçenek

48. Eğer diğer seçeneğini işaretlediyseniz, yatırım tercihinizi belirtiniz (örneğin dijital para vb.)

Appendix: 3

Coding frame

Country		
Türkiye	=	1
Pakistan	=	2
Gender		
Male	=	1
Female	=	2
Marital Status		
Married	=	1
Unmarried	=	2
Divorced	=	3
Age		
a. 18 – 25	=	1
b. 26 – 54	=	2
c. 56 – 64	=	3
d. 65 and above	=	4
Education Level		
Less than High School (less than 12 years)	=	1
Senior High School (colleges, 12 years)	=	2
University (Bachelor 2-4 years)	=	3
Masters/PHD	=	4
Your average monthly Income		
a. Under Rs 55000	=	1
b. Rs 55001 to Rs 210,000	=	2
c. Rs 210,001 to Rs 320,000	=	3
d. Rs 320,001 to Rs 425,000	=	4
e. Rs 425,001 to Rs 530,000	=	5
f. Rs 530,001 and above	=	5
Note: Data is collected between Oct 2020 to April 2021 \$=7.20 lira, \$=154 Rs 55000Rs = 2500TL = \$350 210,000Rs = 10000Tl = \$1370 320,000Rs = 15000 Tl = \$2075 425000Rs = 20000TL = \$2760 530,000 Rs = 25000TL = \$3450		
Occupation		
a. Employer	=	1
b. Employee	=	2
c. Self-employed	=	3
d. Students/scholarship holder	=	4

Usually, the most risk tolerant (Risk takers) individuals rank themselves over 8, while the least risk tolerance (Risk avoiders) individuals rank themselves under 2. The average score is between 4 and 6. What do you think your score will be?			
Low Risk Taker (0 to 3)	=	1	
Medium Risk Taker (4 to 6)	=	2	
High Risk Taker (7 to 10)	=	3	
You have Investment experience of :			
a. 0 to 2 years	=	1 (Novice)	
b. 2 years to 4 years experience)	=	2 (learner/limited)	
c. more than 4 years	=	3 (Experienced)	
You have investment Experience in:			
Yes	=	1	
No	=	0	
<u>Investment Preferences coding</u>			
Real Estate=1			
Gold/ Gold Accounts =2			
Accounts (term deposits in local Currency=3			
Accounts in Foreign Currency =4			
Islamic Products=5			
Bonds=6			
Mutual Fund=9			
Stocks/shares=7			
Others=8			
09: what is the purpose of your investment? Please select the most appropriate one.			
a. To generate income for today	=	1	short term
b. To generate income at a later date	=	2	Short term
c. To provide for my dependents	=	3	Medium
d. To fund a large purchase in the future	=	4	long term
10: What is your major goal for your investment portfolio? Please select the most appropriate one.			
a. To ensure my portfolio remains secure	=	1	
b. To see my portfolio, grow and to avoid fluctuating returns	=	1	
c. To balance growth and security, and to keep pace with inflation	=	2	
d. To provide growth potential, and to accept some fluctuation in returns	=	3	
e. To provide the sole objective of potential long-term growth	=	4	
11. When do you anticipate (expect) using these funds?			
a. Immediately	=	1	
b. b. One to three years	=	2	
c. c. Four to 10 years	=	3	
d. d. 11 to 15 years	=	4	
e. e. 16 and above	=	4	
12. Which of the following statements most correctly describes your investment philosophy?			
a. I cannot accept any fluctuation in principal.	=	1	
b. b. I can only accept minimal fluctuations and prefer to invest in safer, lower-return investments.	=	2	

c.	c. I am willing to tolerate some ups and downs in the value of my investments to achieve overall higher returns in the long run.	=	3	
d.	d. My main interest is high, long-term returns and I am not concerned about short-term decreases in the value of my investments.	=	4	
13.	How do you make your investment decisions?			
a.	By myself	=	1	
b.	b. I consult family members	=	2	
c.	c. I consult peers	=	3	
d.	d. I consult Professionals	=	4	
14.	In what way do you usually get investment information? (Single Choice)			
a.	Experts/professionals (directly)	=	4	
b.	b. Social Media and electronic media.	=	3	
c.	c. Print media	=	1	
d.	d. Follow the knowledge/experience of someone else	=	2	
15.	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy:			
a.	More than today.	=	0	
b.	b. Exactly the same as today.	=	0	
c.	c. Less than today.	=	1	
16.	If the interest rates rise, what should happen to bond prices?			
a.	They should rise.	=	0	
b.	b. They should fall.	=	1	
c.	c. They should stay the same.	=	0	
17.	Considering a long time period (for example 10 or 20 years), which asset described below normally gives the highest return?			
a.	Savings accounts.	=	0	
b.	b. Bonds.	=	0	
c.	c. Stocks.	=	1	
18.	Normally, which asset described below displays the highest fluctuations over time?			
a.	Savings accounts.	=	0	
b.	b. Bonds.	=	0	
c.	c. Stocks.	=	1	
19.	When an investor spreads his or her money among different assets, does the risk of losing a lot of money:			
d.	Increases	=	0	
e.	Decreases	=	1	
f.	Stay the same	=	0	
Please select True or False				
20:				
True	=	1	Correct	
False	=	0		
21:				
True	=	1	Correct	
False	=	0		
22:				
True	=	1	Correct	
False	=	0		
23:				

True	=	0	
False	=	1	Correct
24: Suppose you owe \$3,000 on your credit card. You pay a minimum payment of \$30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card/debt if you made no additional new charges?			
a. Less than 5 years.	=	0	
b. b. Between 5 and 10 years.	=	0	
c. c. Between 10 and 15 years.	=	0	
d. d. Never, you will continue to be in debt.	=	1	Correct
25. In general, how would your best friend describe you as a risk taker?			
a. A real gambler	=	4	
b. b. Willing to take risks after completing adequate research	=	3	
c. c. Cautious (careful)	=	2	
d. d. A real risk avoider	=	1	
26. You are on a TV game show and can choose one of the following, which would you take?			
a. \$1,000 in cash	=	1	
b. b. A 50% chance at winning \$5,000	=	2	
c. c. A 25% chance at winning \$10,000	=	3	
d. d. A 5% chance at winning \$100,000	=	4	
27. You have just finished saving for a “once-in-a-lifetime” vacation. Three weeks before you plan to leave, you lose your job. You would:			
a. Cancel the vacation	=		
1			
b. b. Take a much more modest vacation	=		
2			
c. c. Go as scheduled, reasoning that you need the time to prepare for a job search	=		
3			
d. d. Extend your vacation, because this might be your last chance to go first-class	=		
4			
28. If you unexpectedly received \$20,000 to invest, what would you do?			
a. Deposit it in a bank account, money market account, or an insured CD	=		
1			
b. b. Invest it in safe high-quality bonds or bond mutual funds	=		
2			
c. c. Invest it in stocks or stock mutual funds	=		
3			
29. In terms of experience, how comfortable are you investing in stocks or stock mutual funds?			
a. Not at all comfortable	=	1	
b. b. Somewhat comfortable	=	2	
c. c. Very comfortable	=	3	
30. When you think of the word “risk,” which of the following words comes to mind first?			
a. Loss	=	1	
b. b. Uncertainty	=	2	
c. c. Opportunity	=	3	
d. d. Thrill	=	4	
31. Some experts are predicting prices of assets such as gold, jewels, collectibles, and real estate (hard assets) to increase in value; bond prices may fall, however, experts tend to agree that			

government bonds are relatively safe. Most of your investment assets are now in high interest government bonds. What would you do?		
a.	Hold the bonds	= 1
b.	b. Sell the bonds, put half the proceeds into money market accounts, and the other half into hard assets	= 2
c.	c. Sell the bonds and put the total proceeds into hard assets	= 3
d.	d. Sell the bonds, put all the money into hard assets, and borrow additional money to buy more	= 4
32. Given the best and worst case returns of the four investment choices below, which would you prefer?		
a.	May gain \$200 or chance of nothing gain/loss	= 1
b.	b. May Gain 800 or chance of \$200 loss	= 2
c.	c. May gain \$2,600 or chance of \$800 loss	= 3
d.	d. May Gain \$4,800 or chance of \$2,400 loss	= 4
33. In addition to whatever you own, you have been given \$1,000. You are now asked to choose between:		
a.	A sure gain of \$500	= 1
b.	b. A 50% chance to gain \$1,000 and a 50% chance to gain nothing	= 2
34. you have been given \$2,000 free. You are now asked to choose between:		
a.	A sure loss of \$500	= 1
b.	b. A 50% chance to lose \$1,000 and a 50% chance to lose nothing	= 2
35. Suppose a relative left you an inheritance of \$100,000, stipulating in the will that you invest ALL the money in ONE of the following choices. Which one would you select?		
a.	A savings account or money market mutual fund	= 1
b.	b. A mutual fund that owns stocks and bonds	= 2
c.	c. A portfolio of 15 common stocks	= 3
d.	d. Commodities like gold, silver, and oil	= 4
36. If you had to invest \$20,000, which of the following investment choices would you find most appealing?		
a.	60% in low-risk investments, 30% in medium-risk investments, 10% in high-risk investments	= 1
b.	b. 30% in low-risk investments, 40% in medium-risk investments, 30% in high-risk investments	= 2
c.	c. 10% in low-risk investments, 40% in medium-risk investments, 50% in high-risk investments	= 3
37. Your trusted friend and neighbor, an experienced geologist, is putting together a group of investors to fund an exploratory gold mining venture. The venture could pay back 50 to 100 times the investment if successful. If the mine is a bust, the entire investment is worthless. Your friend estimates the chance of success is only 20%. If you had the money, how much would you invest?		
a.	Nothing	= 1
b.	One month's salary	= 2
c.	c. Three month's salary	= 3
d.	d. Six month's salary	= 4
Rate the following self- assessment statements		
	strongly Agree	= 5

Agree	=	4
Neutral	=	3
Disagree	=	2
Strongly Disagree	=	1

43. Rank following investment choices starting from the most preferred to the least preferred. (please choose any 3 where most preferred = 03, least preferred =01):		
Preference 1		
Preference 2		
Preference 3		

Helping Notes

- ▶ Self Confidence Assessment Questions are used to enhance the understanding of investors about his/her own confidence level.
- ▶ For Financial Knowledge assessment, study tends to use 10- item scale which is the latest version of famous Houts and Knoll FKS- 2012 later modified and published in Dec 2019.
- ▶ Philosophy questions: The 6-question related to investment philosophy cover the source of information, the term of investments and sneak peep of investors' nature to invest for safe returns vs willingness to get high but volatile returns.
- ▶ For Investment Choices Investment choices are classified as
 - less Risk Tolerant=3,4,5=1
 - Moderate Risk Tolerance=9, 6=2
 - More Risk Tolerance=1,2,7,8=3
 - And weights are assigned in a manner that
 - 1st Preference =1*3/3
 - 2nd Preference =1*2/3
 - 3rd Preference =1*1/3

Appendix: 4

Table 7.1: Model-fit Criteria and Acceptable Fit Interpretation

Model-fit Criterion	Acceptable Level	Interpretation
Chi-square	Tabled χ^2 value	Compares obtained χ^2 value with tabled value for given df
Goodness-of-fit index (GFI)	0 (no fit) to 1 (perfect fit)	Value close to .90 or .95 reflects a good fit
Adjusted GFI (AGFI)	0 (no fit) to 1 (perfect fit)	Value adjusted for df , with .90 or .95 a good model fit
Root-mean square residual (RMR)	Researcher defines level	Indicates the closeness of Σ to S matrices
Standardized RMR (SRMR)	< .05	Value less than .05 indicates a good model fit
Root-mean-square error of approximation (RMSEA)	.05 to .08	Value of .05 to .08 indicates close fit
Tucker–Lewis Index (TLI)	0 (no fit) to 1 (perfect fit)	Value close to .90 or .95 reflects a good model fit
Normed fit index (NFI)	0 (no fit) to 1 (perfect fit)	Value close to .90 or .95 reflects a good model fit
Parsimony fit index (PNFI)	0 (no fit) to 1 (perfect fit)	Compares values in alternative models
Akaike information criterion (AIC)	0 (perfect fit) to positive value (poor fit)	Compares values in alternative models

Conversely, borrowing rates are higher in Turkey: 43 per cent of the population borrows from a financial institution or uses a credit card, compared to 22 in other upper-middle-income countries (*The Fintech market in Turkey the fintech sector and its potential and financial health in Turkey*, 2019). The percentage of correct answer of credit card question is high in Türkiye as compare to Pakistan.

by H Düzakın · 2021 — Additionally, the results of this study indicated that the *level of financial literacy* is 52.9% in Turkey.

CURRICULUM VITAE

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2009 MBA (Finance), Government Postgraduate College, Muzaffarabad (AJK)
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Professional Experience

- ✚ Joined The University of Azad Jammu and Kashmir in May 2016 as Lecturer at the Department of Business Administration and Management Sciences.
- ✚ Two and a half year research experience for doctoral thesis titled “A Comparative Analysis of Investment of Retail Investors in Türkiye and Pakistan”.
- ✚ Two years research experience for MS thesis research project titled “Measuring the Cost of Quality in a Manufacturing Firm Using Activity-based Costing & Taguchi Approach”.
- ✚ Served as Visiting Lecturer at the Government Postgraduate College, Muzaffarabad, AJK from 2013 to 2016.
