

The Effect of Personality Traits and Demographic Factors on Investment Decisions Making: A Framework Proposing Risk Tolerance as a Mediator – Evidence from Egypt

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Abstract

This study investigated the direct impact of the personal traits and demographic factors of Egyptians, their risk tolerance on their investment decisions making. Moreover, the study engaged the mediating role of the risk tolerance in the relations among investors' personal traits, their demographic factors and their investment decisions making. A survey was conducted to measure personality traits, demographic factors, risk-tolerance behavior, and investment decisions of the respondents. The study sample consists of 135 respondents representing different segments of Egyptian investors. The main statistical methods used to test the study hypotheses were Pearson's correlation test and Structural Equation Model. The results confirmed that there is an effect of the Egyptians' personal traits on the investment decisions making. Also, the investment experience has an impact on the investment decision making. The findings revealed that some of the personality traits have some impact on an individual's risk-tolerance behavior. The results also revealed the partial mediating role of the risk -tolerance behavior among the personal traits and the gender of the Egyptians and their investment decisions. The study provides valuable insights to investment experts and policymakers to understand investors' behavior in Egypt.

Keywords: personality traits – demographic factors- openness to experience- neuroticism- extroversion- agreeableness- conscientiousness- risk tolerance – financial literacy- investment experience.

تأثير سمات الشخصية والعوامل الديموغرافية على اتخاذ قرارات الاستثمار: إطار عمل يقترح تحمل المخاطر كوسيط – دراسة تطبيقية في مصر

ملخص باللغة العربية:

قام هذا البحث بدراسة السمات الشخصية والعوامل الديموغرافية للمصريين ، وقدرتهم على تحمل المخاطر وتأثيرهم المباشر على قراراتهم الاستثمارية. علاوة على ذلك ، اشتملت الدراسة على الدور الوسيط لتحمل المخاطر في العلاقات بين السمات الشخصية للمستثمرين وعواملهم الديموغرافية واتخاذ قراراتهم الاستثمارية. تم إجراء إستقصاء لقياس السمات الشخصية والعوامل الديموغرافية وسلوك تحمل المخاطر والقرارات الاستثمارية للمستثمرين. تتكون عينة الدراسة من 135 مستجيب يمثلون شرائح مختلفة من المستثمرين المصريين. الطرق الإحصائية الرئيسية المستخدمة لاختبار فرضيات الدراسة هي اختبار ارتباط بيرسون ونموذج المعادلة الهيكلية. وأكدت النتائج تأثير السمات الشخصية للمصريين على اتخاذ القرارات الاستثمارية. كما أن الخبرة الاستثمارية لها تأثير على اتخاذ القرار الاستثماري. كما كشفت النتائج أن بعض سمات الشخصية لها بعض التأثير على سلوك الفرد في تحمل المخاطر. ووضحت النتائج دور الوسيط الجزئي الذي يقوم به سلوك تحمل المخاطر بين السمات الشخصية ونوع المصريين (ذكر أو أنثى) وقراراتهم الاستثمارية. تقدم الدراسة رؤى قيمة لخبراء الاستثمار وواضعي السياسات لفهم سلوك المستثمرين في مصر.

الكلمات المفتاحية: السمات الشخصية - العوامل الديموغرافية - الانفتاح على التجربة - العصائية - الانبساطية - التوافق - الضمير - تحمل المخاطر - محو الأمية المالية - خبرة الاستثمار

Introduction

Traditional theories of Finance assumed that the members of the investment markets are rational and make sensible choices leading to maximizing expected utility and consequently their wealth. The fundamental issues of traditional finance are classical decision theory, rationality, risk aversion, modern portfolio theory (MPT), the capital asset pricing model (CAPM), and the efficient market hypothesis (EMH). These theories assumed that investors will consider all available information in the market and act rationally towards decision making process especially because all this information is available at no cost to all the investors, as assumed by the efficient market hypothesis (EMH). Therefore, the price of stocks always reflects their intrinsic value and is reasonable (Fama, 1965, 1970 and 1991).

However, some research findings expressed doubt about the rationality of investors, this happened because investors being human cannot be rational all the time. The irrationality factor hinders their decision making. Reason for irrational decisions is psychological and behavioural factors (Rober, 2003; Kourtidis et al., 2011; Francisco, D.S B., 2020).

Later post the 1980's Finance theorists came up with a new emergent field within Finance, called Behavioural Finance that explains the understanding of the logical patterns of investors, including the psychological processes and the extent to which the decision-making process is influenced by them (Ricciardi and Simon, 2000). Behavioural Finance defines the biases and reasons for investment that traditional tools are unable to explain. Previous research had also proven that investors tend to have behavioural biases related to personal traits, stereotypes, past trading experiences, etc. (Rober, 2003; Chen et al., 2007; Kourtidis et al., 2011; Sadi et al., 2011; Sahi, 2012).

Many researches had investigated the relationship between personality traits and investment decisions, most of these studies have been conducted in developed countries (Lalumiere & Williams, 2010; Young et al., 2012), and less study had been conducted in emerging markets. To the researcher knowledge, there is no study that investigates the impact of the personal traits on the investment decision making in the Egyptian market. As previous research evidence revealed that personalities, attitudes and values of the people of emerging economies differ substantially from those of developed economies, which subsequently influence their decision-making processes in different ways (Ergeneli et al., 2007; Semykina and Linz, 2010; Linz and Semykina, 2011).

Personality traits are defined as “combination of cognitive, perceptual, distinguishing emotional and motivational characteristics”, Dole and Schroeder, 2011. Many Studies showed that these combinations will affect individual's investment decision-making. Furthermore, it was found a relationship between the personal traits and the individual's risk tolerance. The results of many researches showed that personal traits have an impact on individual's risk tolerance behaviour which then influences investment decisions (Krishnan & Beena, 2009; Pak & Mahmood, 2015). Risk tolerance refers to the willingness of an investor to suffer the negative impact of the investment, or the return earns different with expectation (Grable & Lytton, 1999). It is important to understand risk tolerance for investors because it helps to determine the risk and return parameters of investment portfolios which may allow investors to make sustainable decision (Wong and Carducci, 2013). Investors' risk tolerance itself is affected by many demographic factors. Grable, 2000 found that risk tolerance itself is associated with a variety of personal variables like being male, older, married, professionally employed with higher incomes, more education, more financial knowledge, and increased economic expectations. So, in addition to risk tolerance the demographic factors can influence

investment decision. Barber and Odean, 2001 found that male investors tend to be more risk tolerant than do female investors. Evans, 2004 found that investors under 30 years old tend to take more risk than do the older ones. Other demographic factors as educational qualification, income, marital status, and investment experience are relevant while studying investment decisions (Chavali & Mohanraj, 2016; Baruah & Parikh, 2018).

The purpose of this study is to investigate the relationship between personality traits, demographic factors and investment decision making through the mediation role of risk tolerance. The researcher tries to investigate this relationship among the Egyptians investors to provide valuable insights to investment experts and policymakers in Egypt.

Literature Review

For many decades, investors' decision-making under uncertainty was guided by the expected utility theory (Friedman and Savage, 1948; Arrow, 1964) in which an investor measures his or her own utility according to mathematical modelling of the desired benefit, depending on the available information about the economics of the market, before taking decisions related to investment. Then an alternative theory was proposed by Kahneman D and Tversky A, (1979) called prospect theory. This theory has become one of the most important tools used in behavioural finance to explain a series of biases affecting decision making under conditions of risk. This theory assumed that individuals valued losses and gains differently, and thus individuals make decisions based on perceived gains instead of perceived losses. Based on this behavioural model, investors made investment decisions based on their attitudes, mindset or ideological set up.

The process of investment decision is usually being influenced by investors' personality traits (Ferreira, 2019; Lai, 2019; Mathur & Nathani, 2019; Pak & Mahmood, 2015a; Sadi et al., 2011) their demographic factors (Das & Jain, 2015; Chavali & Mohanraj,

2016; Tanusdjaja, 2018). and their personal qualities like the level of risk tolerance (Kumari & Pandey, 2020a; Nguyen, Gallery, & Newton, 2016).

Personality Traits

Personality is well-defined as “the way an individual interacts, reacts and behaves with others” (Crysel et al., 2013). Personality is partly genetically inherited from parents, but some other factors such as social environment, family, geographical and physical conditions can develop personality effectively. For this reason, personality is one of the fundamental psychological factors that shape human behaviour and perception and is often exhibited through measurable traits. These traits are a combination of distinguishing emotional, cognitive and motivational characteristics which influence the way individuals respond to their environment and make decisions (Smith, 1999a; Dole and Schroeder, 2001; Erkuş and Tabak, 2009; Dolan et al., 2012).

Different studies have proposed different personality traits. The Myer-Briggs type indicator (MBTI) classified personality into four domains namely judging versus perceiving, sensing versus intuition, thinking versus feeling and extrovert versus introvert (Smith, 1999a; Leary et rather than personal characteristics. Following MBTI, a Big five-factor model” is developed by Allport and Odbert (1936) and consolidated by Costa and McCrae (1987) and became the most al., 2009). The MBTI described personality as preferences in the way individuals make decisions commonly used classification for personal traits and explored in the context of risk tolerance and investment decisions making. In this research, the researcher used the big five factor model (BFF) as it is the most commonly used taxonomy in explaining human behaviour, risk-taking propensities and investment decisions in different situations.

Personality Traits and investment decisions

A wide range of studies have been conducted to identify the influence that the Big Five Personality Model have on investment decisions. This model comprising Extraversion, Openness to Experience, Conscientiousness, Neuroticism and Agreeableness.

An extroverted person is externally oriented, friendly, active, optimistic, excitement seeking, tend to socialize in large crowd and are not bound by rationality or principles (McCrae & Costa J, 1997; Robie et al., 2005; Leary, Reilly, & Brown, 2009). Sadi et al. (2011) concluded that extroverts are more prone to be guided by external tangible stimulators and, consequently, take risks more rashly than introverts. Pan and Statman (2013) revealed that extroverts may consult financial advisors, but, ultimately deliberate only positive information, which influences their assessment of the probability of success and instigated overconfidence in financial decision making.

Individuals who are high on openness to experience are creative, resourceful, adaptive, more curious, non-traditional, broadminded, rely on emotions in their actions and usually, tend to conduct new experiments and take higher risks than his counterparts. Individuals with this attribute have charisma toward aesthetics, novelty, and new ideas (McCrae and Costa, 1997; Martins, 2002; Mayfield et al., 2008; Gunkel et al., 2010; Nandan & Saurabh, 2016). Research has found that openness exerts a positive influence on long-term investments decisions and has positive association with risk tolerance. (Sadi et al., 2011; Nga and Ken Yien, 2013)

Conscientious individuals are “determined, well-organized, reliable, persistent, and punctual and take higher risks less impulsively” (Mayfield et al., 2008). Conscientiousness is also associated with success, order and persistence as well as the

degree of self-control (Costa, McCrae, and Dye, 1991), while those who have a low score on Conscientiousness, tend to give in to their impulses and are disorganised. (Costa and McCrae, 1987). They actively involved in decision making and have positive association with trading behaviour (Gunkel et al., 2010; Durand R. B., et al. , 2013). Conscientious investors have the ability to make their investment decisions prudently without relying on delusions. (Sadi et al., 2011)

The fourth dimension of the big five factor model (BFF) is Neuroticism, which refers to the state of emotional instability linked to high anxiety and stress (Migliore, 2011). Individuals, with a high score of Neuroticism, are insecure, moody, hot-tempered and impulsive (McCrae and Costa, 1997). The neurotics tend to experience negative emotions and physical swings such as emotional imbalance, anxiety, depression and anger. Mayfield et al. (2008) found that individuals with this personality trait had a propensity to avoid short term investing. Neuroticism among investors has been found to be positively correlated with randomness bias and escalation of commitment (Sadi et al., 2011). Their impulsiveness could cause them to be overly anxious or spontaneous in spending and investing

The agreeableness personality dimension is more related to interpersonal relationships, it is the extent to which people agree to or go along with others. Those high on agreeableness are trusting, forgiving, helpful, empathetic and are well accepted by their peers, they are more direct and modest in their decision-making approach (McCrae and Costa, 1997; Martins, 2002). While those low on this dimension are critical and sceptical consider more information than highly agreeable individuals and, ultimately, take less risks and make more calculative decisions (Chitra and Sreedevi, 2011). Literature showed that agreeable individuals place high emphasis on social criteria, positively consider the information provided by others in their financial

decision-making (Costa & McCrae, 1992), and negatively associated with risky behaviour (Pak and Mahmood, 2015)

Personality Traits and risk tolerance

Previous researches testing the relationship between risk tolerance and personality traits obtained homogeneous results. Some results indicated that personality factors are positively associated and directly linked with risk tolerance (Grable, 2000; Zaleskiewicz, 2001; Filbeck et al., (2005; Kannadhasan et al., 2016). One other supporting empirical study is the Mathur & Nathani, 2019 study which examined the relationship between the personality types in the BIG Five model and risk tolerance among youth in Indian. They found significant effect of personality traits on risk tolerance. In line with this study are the studies of Ozer and Mutlu, (2019), Sadiq (2019) and Pinjisakikool (2017) Similarly, Ferreira (2019) assessed how personality traits can influence financial decision-making. The results of his study indicated that different personalities prefer different levels of risk. Individual who are more open to experience, indicated a significant difference in risk tolerance levels compared to other personality types.

The study of Mayfield, et al., (2008) examined the individual traits and discovered that people who can accommodate new experience tend to be more prone to risk. Their results showed negative correlation between the openness to experience personality trait and risk aversion whereas the extraversion trait was negatively related to prevention of investment risk. Similar results were observed by Nicholson N et al., 2002 who found that risk propensity was linked with high scores for extraversion and openness to experience and low scores for neuroticism, agreeableness and conscientiousness. Filbeck et al. (2005) conducted a study on the effect that personality traits have on risk tolerance, and showed results that personality traits explain differences in individual risk tolerance. This study indicated a positive correlation between extraversion and high risk taking and there is a significant relationship between risk aversion and

introversion, which can be explained by the desire for economic security by this personality group.

Demographic Factors, investment decisions and risk tolerance

Other factors are showed to influence the investment decision to be taken, including demographic factors. According to Joseph, 2015, demographic factors are proved to have a role in individual behaviour when facing a financial decision and changes in demographic factors can lead to changes in an investor's behavior. Some studies have tried to examine the relationship between demographic factors such as age, gender, annual income, financial literacy and investment experience and investment decision making. Other studies were conducted to determine whether demographic factors influence risk tolerance as the study of Kannadhasan et al., 2016. Their results indicated that these factors are positively correlated with risk tolerance. Individual skills can increase when someone gets older (Jolaosho, 2017), as elderly learn to manage their wealth effectively and allocate them among various investment products. Many researchers studied the relationship between age and investment decisions and showed different results. (Das & Jain, 2015; Chavali & Mohanraj, 2016; Tanusdjaja, 2018).

As for gender, many studies mentioned that men and women have different characteristics that have an impact when making investment decisions, Deaves, Lüders, & Schröder, 2013; Musdalifa, 2016; Akims & Jagongo, 2017. Other studies showed that there is significant relationship between gender and risk propensity of an individual, Anbar & Eker, 2010; Mishra and Lalumiere (2011); Cooper, Kingyens & Paradi, 2014. Violeta & Linawati, 2019 results showed for example that women pay attention to many things and have less tolerance for risk.

Research on the effect of income earned by a person on investment decisions got mixed results, studies that have been made by NMDR Putri & Rahyuda, 2017, Tanusdjaja, 2018, WW Putri & Hamidi, 2019 and RA Putri & Isbanah, 2020 had results

which are different from research conducted by Rita & Kusumawati, 2010, Gumus & Dayioglu, 2015 and Artina & Cholid, 2018.

One of the demographic factors that is considered also in the previous literature is the financial literacy. Huston (2010) defined financial literacy as “a process of understanding and applying financial concepts and developing techniques to manage financial resources effectively”. The level of financial literacy plays an important role in investment decision making and the acceptance of risks associated with these particular financial investments. Faff and McKenzie, (2008) introduced an evidence that financial literacy and well education were both correlated with escalated financial risk tolerance. Also, Okech, 2016 stated that the higher a person's education level, the higher the person's level of tolerance for the risks faced

As for the relationship between the financial literacy and investment decision making, Musdalifa, 2016 concluded that person's level of knowledge and education is related to making investment decisions in such that the higher a person's education level, when making an investment decision, the much more careful that person will be, especially in terms of managing and spending money based on the benefits.

Various other researches' results related to the relationship between a person's knowledge level and investment decisions showed different results including hanam, 2017; Artina & Cholid, 2018; Christanti & Mahastanti, 2011 and RA Putri & Isbanah, 2020.

Finally, the person's experience may influence investment decisions as this experience can help in making more precise predictions and decisions related to investment. Research conducted by Rahman & Khanam, 2013; Tanusdjaja, 2018 and R. A. Putri & Isbanah, 2020 showed different results related to the effect of the person's investment experience on the investment decisions taken. On the other hand, investment experience can enhance confidence level of an investor and act as a best tool to

deal with risky investments. Gambetti & Giusberti, 2012 mentioned that the person who had more investment experience, will be more risk-tolerant. In addition, their results showed that high risk portfolio is more relatively with the less experience investors. Chou et al., 2010 said that the investor's experience no matter is good or bad will have effect on his risk tolerance and investment decisions. He explored that a wise investor will learn from the past experience to manage the risky condition and can handle it properly and can earn high returns. Others also, concluded that the past investment behavior is positively connected with risk tolerance which can affect investment decisions (Awais et al., 2016).

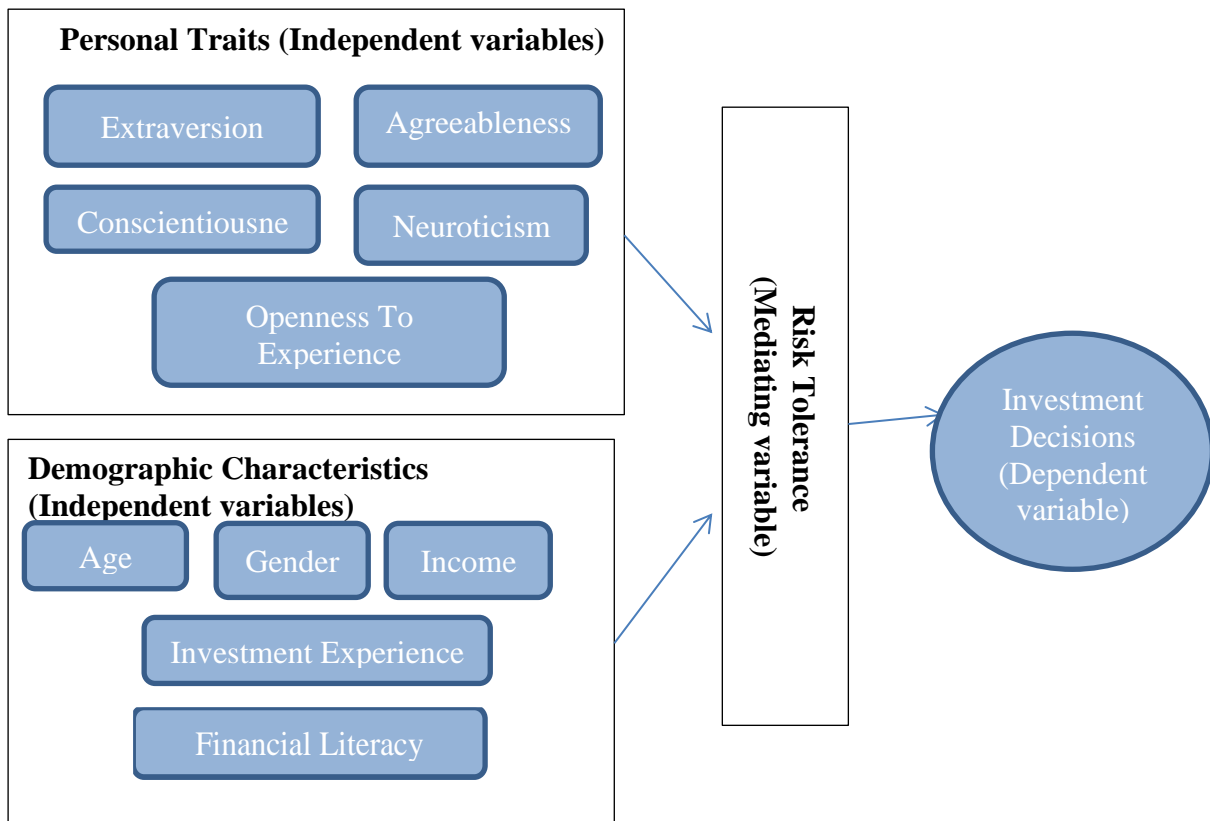
Risk tolerance as a mediator

Risk tolerance has served in various articles as mediating factor between the personal traits, demographic factors and the investment making decisions. Wookjae et al., 2016 tried to test whether financial risk tolerance mediates the association between the marital status, gender and the investing behavior, the findings showed that financial risk tolerance was positively associated with risky investing behaviour as equity ownership, also the that person will be findings indicated that risk tolerance mediates these relationships by sometimes amplifying and occasionally attenuating risky behaviour. Kanagasabai and Aggarwal (2020) research was one of the studies that examined the relationship between financial literacy and investment performance using risk tolerance as a mediating factor. Their results indicated that there is strong positive association on the link between financial literacy and performance of investment, and that risk tolerance fairly mediates the relationship between literacy level and performance of investment. Waheed et al., 2020 identified the mediating role of risk perception between investor's investment decisions and their financial literacy, the findings showed that financial literacy significantly causes the increase in investment decisions and risk perception significantly mediates between financial literacy and investment decisions.

However, no study (to the researcher’s knowledge) has so far established the total effects of the Egyptians’ personality traits, their demographic factors and risk tolerance on the investment decision. Hence, this study attempt of doing so by proposing a framework upon which further studies can be carry out using the big five personality traits and five demographic factors as predictor variables, risk tolerance as a mediator and investment decision as an outcome variable.

1) Proposed conceptual framework

The following is the conceptual framework, and that was drawn from the above literature review:



Source: Developed by the researcher

2) Research Hypotheses

Based on literature studies discussed above, the testable hypotheses of this study can be formulated as follows:

- H1.* Personality traits have an impact on the investment decision making.
- H1a: Extraversion has an impact on the investment decision making
 - H1b: Agreeableness has an impact on the investment decision making
 - H1c: Conscientiousness has an impact on the investment decision making
 - H1d: Neuroticism has an impact on the investment decision making
 - H1e: Openness to Experience has an impact on the investment decision making
- H2.* Personality traits have an impact on the investors' risk tolerance.
- H2a: Extraversion has an impact on the investors' risk tolerance
 - H2b: Agreeableness has an impact on the investors' risk tolerance
 - H2c: Conscientiousness has an impact on the investors' risk tolerance
 - H2d: Neuroticism has an impact on the investors' risk tolerance
 - H2e: Openness to Experience has an impact on the investors' risk tolerance
- H3.* Demographic factors have a significant impact on the investment decision making.
- H3a: Age has a significant impact on investment decision making
 - H3b: Gender has a significant impact on investment decision making
 - H3c: Annual income has a significant impact on investment decision making
 - H3d: Financial Literacy has a significant impact on investment decision making
 - H3e: Investment Experience has a significant impact on investment decision making
- H4.* Demographic factors have a significant impact on the investors' risk tolerance.
- H4a: Age has a significant impact on the investors' risk tolerance.
 - H4b: Gender has a significant impact on the investors' risk tolerance.
 - H4c: Annual income has a significant impact on the investors' risk tolerance.
 - H4d: Financial Literacy has a significant impact on the investors' risk tolerance.
 - H4e: Investment Experience has a significant impact on the investors' risk tolerance.
- H5.* Investors' risk tolerance mediates the relationship between personal traits, demographic factors and investment decision making.

3) Methodology

A questionnaire was designed, and survey method was applied to obtain responses. The questionnaire was categorized into four sections whereas Section One showed the respondent’s demographic profile: age, income, gender, his/her level of investment Experience and financial literacy. Section Two measured the personality traits of the respondent through a five-point Likert scale 25 questions that were conducted based on previous studies as Costa and McCrae, 1992a and 2003 and mainly the study of Mayfield et al. (2008) who used 20 sentences to measure the BFF personality dimensions and Lee et al. (2005). The researcher changed in the number of sentences, each personal trait was measured with 5 sentences and also changed the sentences that set as reverse scored to non-reverse scored for consistency when collecting data and analysing it. Section three measured risk tolerance of respondent using a multidimensional ordinal scale developed by Grable and Lytton (1999) composed of 13 questions with four options to choose from, and finally section four ask for the respondent’s investment decision in capital markets using a five-point Likert scale two questions.

Table 1: Descriptions of the Big Five personality traits

Trait	Description
Neuroticism	High scores indicate tenseness, moodiness, anxiety, and insecurity
Extraversion	High scores indicate assertiveness, sociability, talkativeness, optimism, and being upbeat and energetic
Openness	High scores indicate an active imagination, aesthetic sensitivity, a preference for variety, intellectual curiosity, and broad cultural interest
Agreeableness	High scores indicate altruism, personal warmth, sympathy towards others, helpfulness, and cooperation
Conscientiousness	High scores indicate purposefulness, being strong willed, determination, organization, reliability, and punctuality

The description is adapted from Professional manual: Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI), by P.T. Costa and R.R. McCrae, 1992, Lutz, FL: Psychological Assessment Resources, Inc., and “The five-factor model of personality and job performance in the European community,” by J.F. Salgado, 1997, Journal of Applied Psychology, 82, 30 – 43.

Sampling and Sample Characteristics

Only 135 questionnaires were found useful, completed and selected as sample size. Convenience sampling technique is used to collect data from investors in the Egyptian market.

Table (1) provides some descriptive statistics of the sample to give a general view of the demographic and professional characteristics of respondents.

Table (2): Sample Description according to the Basic Characteristics of Respondents

Variable	Gender		Age				Income				Total
	Female	male	18-25	26 - 35	36 - 50	above 50	< 100,000	100,000 - 200,000	200,000 - 300,000	> 300,000	
Faces	8	127	9	37	66	23	10	2	76	47	135
Percentage	5.9%	94.1%	6.7 %	27.4%	48.9 %	17%	7.4%	1.5%	56.3%	34.8%	100%

1-

Variable	Do you have attended any financial/ investment course or training before?		which of the following best describes your level of financial/ investment experience?					Total
	No	yes	Very limited exp.	Basic exp.	Fair amount of exp.	Considerable exp.	Strong exp.	
Faces	71	64	13	39	40	36	7	135
Percentage	52.6%	47.4%	9.6%	28.9%	29.6%	26.7%	5.2%	100%

The previous table indicates that the sample experienceof 127 males and 8 females, and 9 aged less than 25 while 37 aged 26-35, 66 aged 36-50, and 23 aged 50 years and above, regarding the income 10 earn less than 100,00, 2 earn between 100,000-200,000, also 76 earn 200,000-300,000, and 47 earn more than 300,000. Also, there is 71 of the respondents do not have attend any financial course or training before. Regarding the financial Experience we found that 13 have limited Knowledge, 39 have

basic Knowledge, 40 have fair amount of Knowledge, while 36 have considerable Knowledge, and finally 7 have strong Knowledge.

Analysis and Interpretation

To interpret and draw a conclusion from the collected data, firstly the researcher used Building indicators statistical technique to combine group of related questions in one indicator. The indicators are composed by using equal weights method. That is each indicator is calculated by adding the scores of questions which are related to this indicator, and then this sum is divided by the number of related questions. These created indicators are used in answering the hypotheses.

Secondly, Cronbach Alpha is applied to check the reliability of data. The internal consistency coefficient (Cronbach's Alpha) captures the proportion of total variance that is common to all items that form the scale, which presumably corresponds to the underlying construct being measured. Cronbach's alpha takes values between 0 and 1. The nearer the Cronbach's alpha to 1, the better the stability of the questionnaire is. More precise we say that the questionnaire is stable if Cronbach's alpha is greater than 0.5. Also, Average inter-item correlation is measured to analyse internal consistency and reliability.

The correlation coefficient is then carried out to test the relationship among variables that is investment decision making and personal traits and risk tolerance. Then, finally, Structural equation modelling (SEM) is conducted to assess hierarchy relationship between some variables, as testing for mediating effect in the model.

Creating indicators

Seven indicators are created in this research, these indicators represent the research variables. Each indicator is created by averaging the questions which measure this question. The following table represents the created variables: -

Table (3): Created variables of the study

Variable	Number of Questions measure the variable
Extraversion	5
agreeableness	5
Conscientiousness	5
Neuroticism	5
Openness to Experience	5
Risk	13
investments decision	2

Constructs Validity and Reliability

Cronbach’s Alpha reflects the good reliability of the questions as it is ranged from 0.797 to 0.900. Also, inter-item correlation for all items are greater than 0.5 which support the intrinsic validity of the questionnaire.

Table (4): Reliability of questionnaire in each category by using Cronbach's Alpha coefficient.

	<i>Cronbach's Alpha</i>	<i>Average item correlation</i>
Extraversion	0.899	0.640
agreeableness	0.881	0.697
Conscientiousness	0.900	0.642
Neuroticism	0.878	0.690
Openness to Experience	0.864	0.659
Risk	0.867	0.705
investments decision	0.797	0.662

Descriptive Statistics of variables of the study

The researcher provides descriptive statistics and analyses for each item of the model's variables. The descriptive analysis is comprised of the following: Mean, minimum, maximum, and Standard Deviation, C.V for each question. It is noted that all variables, except risk range from 1 to 5 while for risk ranges from 1 to 4 and the average of the variables is around 3.

Table (5): The descriptive analysis of the variables

	N	Minimum	Maximum	Mean	Std. Deviation
Extraversion	135	1.4	5.0	2.776	.9620
agreeableness	135	1.2	5.0	2.736	.9210
Conscientiousness	135	1.4	5.0	2.671	.9732
Neuroticism	135	1.2	4.6	2.554	.8977
Openness to Experience	135	1.4	4.4	2.705	.9210
Risk	135	1.8	3.2	2.5	0.3
investments decision	135	1.0	5.0	2.9	1.0332

Correlation Analysis

The correlation analysis between the variables of the study shows the following:

- There is positive significant correlation between investment decision and each of Extraversion, agreeableness, Conscientiousness, Neuroticism, and Openness to Experience, and this with confident 95%, as the p-value associated with them less than 5%.
- There is negative significant correlation between risk and each of Extraversion, agreeableness, Conscientiousness, Neuroticism, and Openness to Experience, and this with confident 95%, as the p-value associated with them less than 5%.

Table (6) : Correlations

	Investment decisions	Risk
Extraversion	.418**	-.173*
Agreeableness	.483**	-.252**
Conscientiousness	.427**	-.267**
Neuroticism	.346**	-.111
Openness to Experience	.453**	-.221*

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

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

Structural Equation Model(SEM)

To answer the hypotheses of the model the following two models will be estimated using SEM

$$risk = \beta_0 + \beta_1 * Extraversion + \beta_2 * agreeableness + \beta_3 * Conscientiousness + \beta_4 * Neuroticism + \beta_5 * Openness to Experience + \beta_6 * gender + \beta_7 * age + \beta_8 * income + \beta_9 * Financial Literacy + \beta_{10} * Experience + \epsilon$$

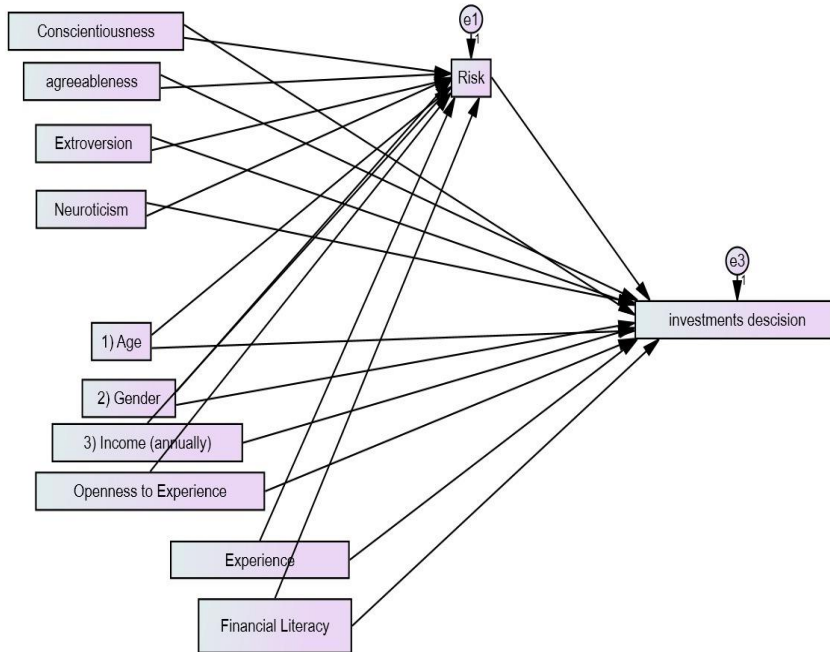
$$investment\ decision = \beta_0 + \beta_1 * Extraversion + \beta_2 * agreeableness + \beta_3 * Conscientiousness + \beta_4 * Neuroticism + \beta_5 * Openness to Experience + \beta_6 * gender + \beta_7 * age + \beta_8 * income + \beta_9 * Financial Literacy + \beta_{10} * Experience + \beta_{11} * risk + \epsilon$$

Where β_0 : is the constant term

β_i : is the regression coefficient for independent variable i

ϵ : is the regression residual term

First the following path model is estimated



The following table presents the results of the above estimated path model:

Table (7): Regression Weights: (Group number 1 - Default model)

		Estimate	S.E.	C.R.	P
Risk	<--- Conscientiousness	-.046	.0117	-3.936	***
Risk	<--- agreeableness	-.034	.008	-4.332	***
Risk	<--- Extraversion	.031	.024	1.284	.199
Risk	<--- Neuroticism	.012	.026	.471	.638
Risk	<--- Openness to Experience	-.032	.007	-4.271	***
Risk	<--- @1Age	.004	.029	.154	.878
Risk	<--- @2Gender	.210	.098	2.147	.032
Risk	<--- @3Incomeannually	-.011	.029	-.377	.706

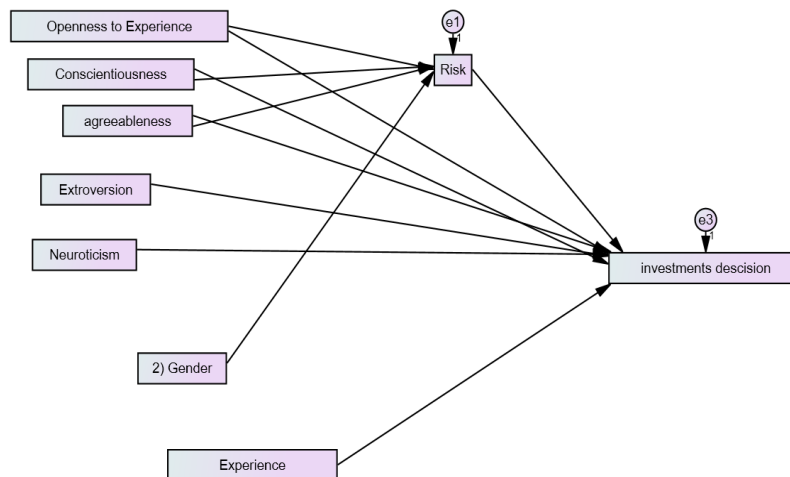
			Estimate	S.E.	C.R.	P
Risk	<---	Financial Literacy	-.018	.046	-.390	.697
Risk	<---	Experience	.002	.022	.075	.940
Investments decision	<---	Financial Literacy	.097	.067	1.440	.150
Investments decision	<---	Experience	-.329	.144	-2.290	.022
Investments decision	<---	Openness to Experience	.270	.079	3.438	***
Investments decision	<---	@3Incomeannually	.080	.091	.885	.376
Investments decision	<---	@2Gender	-.167	.309	-.539	.590
Investments decision	<---	@1Age	.075	.089	.843	.399
Investments decision	<---	Neuroticism	-.055	.0117	4.686	***
Investments decision	<---	Extraversion	.079	.0156	5.050	***
Investments decision	<---	agreeableness	.314	.079	3.987	***
Investments decision	<---	Conscientiousness	.107	.0312	3.426	***
Investments decision	<---	Risk	.602	.1855	3.245	***

From the table, the researcher can conclude that:

- Age, income, financial literacy, and gender have no significant direct impact on investment decision, this with confident 95% as the p-value of them are greater than 5%.
- Age, income, financial literacy, Extraversion, Neuroticism and experience have no significant direct impact on risk, this with confident 95% as the p-value of them are greater than 5%.

According to all the above, these paths must be removed and re-analyzed again.

Secondly, the following path model is estimated after removing insignificant relations.



After removing the insignificant relations in this estimate model and from looking on the following table the researcher can conclude that:

Regarding direct effects

- Openness to Experience has direct positive impact on investments decision and this effect = 0.282, and this with confident 95% as the p-value is less than 5%. This means that higher Openness to Experience the higher the investment decision.
- Neuroticism has direct positive impact on investments decision and this effect = 0.086, and this with confident 95%

as the p-value is less than 5%. This means that higher Neuroticism the higher the investment decision.

- Extraversion has direct positive impact on investments decision and this effect = 0.071, and this with confident 95% as the p-value is less than 5%. This means that higher Neuroticism the higher the investment decision.
- Agreeableness has direct positive impact on investments decision and this effect = 0.284, and this with confident 95% as the p-value is less than 5%. This means that higher Agreeableness the higher the investment decision.
- Conscientiousness has direct positive impact on investments decision and this effect = 0.098, and this with confident 95% as the p-value is less than 5%. This means that higher Conscientiousness the higher the investment decision.
- Experience has direct negative impact on investments decision and this effect = -0.289, and this with confident 95% as the p-value is less than 5%.
- Conscientiousness has direct negative impact on risk and this effect = -0.032, and this with confident 95% as the p-value is less than 5%. This means that higher Conscientiousness the lower the risk tolerance.
- Agreeableness has direct negative impact on risk and this effect = -0.022, and this with confident 95% as the p-value is less than 5%. This means that higher Agreeableness the lower the risk tolerance.
- Openness to Experience has direct negative impact on risk and this effect = -0.023, and this with confident 95% as the p-value is less than 5%. This means that higher Openness to Experience the lower the risk tolerance.
- Gender has significant impact on risk and this effect = 0.198, and this with confident 95% as the p-value is less than 5%. This means that average of the risk for males is greater than the same average for females.
- Risk has direct positive impact on investments decision and this effect = 0.610, and this with confident 95% as the p-value

is less than 5%. This means that higher risk tolerance, the higher the investment decision making.

Table (8): Regression Weights: (Group number 1 - Default model: Second step)

			Estimate	S.E.	C.R.	P
Risk	<---	Conscientiousness	-.032	.024	-3.328	***
Risk	<---	Agreeableness	-.022	.005	-3.886	.375
Risk	<---	@2Gender	.198	.098	2.019	.043
Risk	<---	Openness to Experience	-.023	.006	-3.919	***
Investments decision	<---	Experience	-.289	.146	-1.987	.047
Investments decision	<---	Openness to Experience	.282	.079	3.546	***
Investments decision	<---	Neuroticism	.086	.0211	4.059	***
Investments decision	<---	Extroversion	.071	.018	3.929	***
Investments decision	<---	Agreeableness	.284	.079	3.572	***
Investments decision	<---	Conscientiousness	.098	.029	3.297	***
Investments decision	<---	Risk	.610	.267	2.289	.022

Regrading indirect effects

- Risk Mediates the relationship between Conscientiousness and investments decision such that the indirect effect is negative, so the risk weakens this relationship.
- Risk Mediates the relationship between agreeableness and investments decision such that the indirect effect is negative, so the risk weakens this relationship.
- Risk Mediates the relationship between openness to experience and investments decision such that the indirect effect is negative, so the risk weakens this relationship.
- Risk does not mediate the relationship between Neuroticism, ad Extraversion with investments decision.

- As for the demographic factors, Risk Mediates only the relationship between gender and investments decision such that the indirect effect is positive.

Model fit

The efficiency of the model can be checked using the goodness of fit measures as:

- Incremental fit index (IFI): it varies from 0-1 with 1 being a perfect fit.
- Relative fit index: it varies from 0-1 with 1 being a perfect fit
- Comparative fit index (CFI): if CFI close to 1 indicates a very good fit.
- Normed fit index (NFI): it ranges between 0 and 1, and a model with a perfect fit will produce an NFI of 1.
- Turker-Lewis Index (TLI): it ranges between 0and 1, and a model with a perfect fit will produce an TLI of 1.
- Root mean square error(RMESA): the model is good fit with RMESA less than 0.05.

The goodness of fit Indices for the estimated SEM

Table (9): The Model fit

	<u>Model</u>
Chi-square	14.991
Degree of freedom	25
Level of significance	0.000
RMESA	0.0153
NFI	0.864
RFI	0.974
IFI	0.872
TLI	0.890
CFI	0.871

As shown in the table, the researcher concluded that all the goodness of fit measures of the model indicates that all indicators are at acceptable limits, especially NFI, RFI, IFI, TLI, and CFI are close to one. Also, the value of RMSEA is less than 0.05.

All these measures indicate the goodness of fit of the structural model. Note that the level of significance of the Chi-square test is less than 0.05 which indicates that the model is not good fit, but this is not an accurate result as Chi-square is very sensitive for large sample size so goodness of fit of the model is determined according to the above-mentioned indicators.

Hypotheses Assessment Summary

No.	Hypotheses	Result
1.	Personality traits have an impact on the investment decision making	Fully Accepted
1a.	Extraversion has an impact on the investment decision making	Accepted
1b.	Agreeableness has an impact on the investment decision making	Accepted
1c.	Conscientiousness has an impact on the investment decision making	Accepted
1d.	Neuroticism has an impact on the investment decision making	Accepted
1e.	Openness to Experience has an impact on the investment decision making	Accepted
2.	Personality traits have an impact on the investors' risk tolerance.	Partially Accepted
2a.	Extraversion has an impact on the investors' risk tolerance	Rejected
2b.	Agreeableness has an impact on the investors' risk tolerance	Accepted
2c.	Conscientiousness has an impact on the investors' risk tolerance	Accepted
2d.	Neuroticism has an impact on the investors' risk tolerance	Rejected
2e.	Openness to Experience has an impact on the investors' risk tolerance	Accepted
3	Demographic factors have a significant impact on the investment decision making.	Partially Accepted
3a.	Age has a significant impact on investment decision making	Rejected
3b.	Gender has a significant impact on investment decision making	Rejected
3c.	Annual income has a significant impact on investment decision making	Rejected
3d.	Financial Literacy has a significant impact on investment decision making	Accepted
3e.	Investment Experience has a significant impact on investment decision making	Rejected

4	Demographic factors have a significant impact on the investors' risk tolerance.	Partially Accepted
4a.	Age has a significant impact on the investors' risk tolerance.	Rejected
4b.	Gender has a significant impact on the investors' risk tolerance.	Accepted
4c.	Annual income has a significant impact on the investors' risk tolerance.	Rejected
4d.	Financial Literacy has a significant impact on the investors' risk tolerance.	Rejected
4e.	Investment Experience has a significant impact on the investors' risk tolerance.	Rejected
5	Investors' risk tolerance mediates the relationship between personal traits, demographic factors and investment decision making.	Partially Accepted

Discussion

The purpose of this study was to investigate the relationship between the Egyptians' personality traits, demographic factors and investment decision making through the mediation role of risk tolerance. A questionnaire is used to collect the data about the investors' personal traits, their demographic factors, their risk tolerance and their investment decisions making, and the sample was 135 respondents. The researcher made structural equation model using AMOS.

The findings of the first step of the SEM show that the five personal traits that included in Big Five Factor (BFF) Model have significant impact on investment decisions making. These results are in line with Sreedevi R, Chitra K, 2011 whose results showed that personality traits have an impact on decision-making and influence the choice of investment methods. And in line with Brown S, Taylor K, 2011 who concluded that there is strong evidence that personality traits influence aspects of people's economic and financial decision-making. As for the demographic factors, the only factor that has a significant impact on the investment decision making is the experience. This is in

consistent with Chou et al., 2010 who emphasized that the investor's behaviour is influenced by past experience.

The other demographic factors do not have significant impact on the investment decisions making based on this research's data. Age does not affect the investment decision making process in line with the results of Chavali). & Mohanraj, 2016 and Tanusdjaja, 2018 and in contrary to the results of Das & Jain, 2015 and AN Wahyuni & YP Astuti, 2020 who concluded that old age investors make wise decisions in investments and there will be no excessive spending and detrimental to themselves.

Also, gender is proven statistically to have no impact on the investment decision making as although men and women have different characteristics in terms of self-confidence, this is not the reason that they can differ in their decision to invest and that is in line with Utami & Kartini, 2016, Tanusdjaja, 2018 and AN Wahyuni & YP Astuti, 2020 and in contrary to Deaves et al., 2013, Musdalifa, 2016 and Akims & Jagongo, 2017 who argued that gender will influence the decision to invest because there are differences in roles, needs and in how to manage finances. In this study, the one's income has no effect on making decision to invest. Research conducted by N. M. D. R. Putri & Rahyuda, 2017, Tanusdjaja, 2018, W. W. Putri & Hamidi, 2019, R. A. Putri & Isbanah, 2020 and AN Wahyuni & YP Astuti, 2020 have the same results as this study. The person's income allows them to do what they want. They are free to buy what they want even if their needs exceed them. However, the amount of the annual income earned by someone does not make a benchmark for them to invest or not. As for the financial literacy, the results showed no significant effect on the investment decisions. This is in consistency with the results of Christanti & Mahastanti, 2011 and RA Putri & Isbanah, 2020 but in contrary with most of the literature and with the researcher is convinced with and is expected to get as results. The researcher returned these results to the question that measured the financial literacy does not

completely reflect the literacy that can be gained by means other than attending course or training session.

An insignificant relationship was found between two of the personality dimensions (Neuroticism and Extraversion) and investor's Risk Tolerance. These results are in contrary with the results of Nicholson et al., 2005; Nga & Yien, 2013; Wong and Carducci, 2013; and Lin & Lu, 2015 who argued that a person with high extroversion has higher risk tolerance and the person who score low in neuroticism is seeking for high risk. But these results are consistent with Grable and Joo, 2004 who found an insignificant relationship between personality dimensions and risk tolerance. The demographic factors included in this study except gender shows insignificant impact on the risk tolerance, these results are in consistent with the results of Grable, 2000 who found that many factors affect risk tolerance which includes gender, age, occupation, income, education financial knowledge, and economic expectations.

The second step of the SEM shows the degree and the direction of the significant relationships between the personal traits, the demographic factors and the investment decisions and also the mediation role of the risk tolerance. The findings show that Openness to Experience has direct positive impact on investments decision with a coefficient value of 0.282, this is consistent with the studies of Soane & Chmiel 2005; Camgoz et al., 2011 and Bashir, 2013. A person with high openness level would like to try or experience something new that can grab high profits or losses in the financial domain. Their results showed besides that, openness to experience is expected to be risk taker. Hence, people with high openness to experience have higher risk tolerance and that is contrary to the results of this research that shows a negative impact on risk with a coefficient = -0.023, and this means that higher Openness to Experience are lower risk tolerance. This may be due to the Egyptians' nature even those with high level of

openness to experience, they may be risk adverse especially in the financial domain.

Neuroticism has negative impact on investments decision with coefficient = - 0.086, that because Neurotic individuals have lack of analytical ability, critical thinking, cognitive skills, and conceptual understanding. These deficiencies incline them toward being afraid of failure and anxious during risky decision making. These results are consistent with McCrae & Costa J, 1997; Young et al., 2012; Sadiq, M.N., & Khan, R. A., 2019. The findings revealed that the individuals with personality traits “Extraversion”, “Agreeableness” and “Conscientious” has positive impact on investment decisions. These results suggest that individuals who are active, sympathy toward others, determined, and well-organized are more willing toward taking investment decisions. These results are in line with Krishnan & Beena, 2009; Nandan & Saurabh, 2016 and Sadiq, M. N., & Khan, R.A., 2019. “Agreeableness” is negatively impact the risk tolerance, this is consistent with the results of Soane and Chmiel, 2005; Nicholson et al., 2005 and Bucciol and Zarri, 2015. From the demographic factors, the investment experience shows a negative effect on investment decisions. Although experience is said to be the best teacher to learn from the past, the results of this study prove that experience may lead to false confidence, so the investors can take wrong investment decisions.

And the gender has significant impact on risk with coefficient = 0.198 means that the average of male’ risk tolerance is greater than the same average for females. This result is consistent with several previous studies as Palsson, 1996; Hartog et al., 2000; Al-Ajmi, 2008; Faff, Mulino and Chai, 2008; Frijns, Koellen and Lehnert, 2008; and Gilliam, Chatterjee and Zhu, 2010. These results explained that males had a much higher risk tolerance than females.

Beside this, the study also concluded that risk tolerance partially mediates the relationship of Personality traits with investment decision making. However, Risk tolerance mediates the

relationship of “Agreeableness”, “Openness to Experience”, and “Conscientious” with investment decision making and does not mediate the relationship of “Neuroticism” and “Extraversion” with investment decision making. While exploring the demographic factors, the study revealed that risk tolerance mediates only the relationship of gender and investment decision making.

Implications and Recommendations of the Study

This study revealed the role of the Personality Traits, demographic factors and Risk behaviour in investment decision making. The study could have implications for financial managers, Financial institutions, and governments. As the Egyptian Government is trying to develop the capital market and appealing the individuals for investment. The Government could use the result of the study and can start Financial literacy programme relevant to different investments fields to spread the investment awareness. Also, the results of this study imply that investment advisors should consider personal traits and individual risk tolerance, among other factors, when giving investment advice to private investors. By considering these, the investment companies can determine the level of accuracy in individual investors’ financial decisions. The study confirms that investors may show irrational behaviour in the investment decision-making process. Therefore, governments should take effective measures to control such behaviour; otherwise, the share market could be “bubbled up”.

The present study had certain limitations. First, the size of the sample was limited. It is possible that in case of a larger sample size, a significant relationship between the variables under study could have been established and more accurate results could be obtained. Second, the demographic variables were not equally distributed. The sample comprised of more males than females. Third, the study did not consider the sub domains of risk tolerance such as risk taking in everyday matters. These considerations should be taken into future research in this area.

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