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Evaluating the Investment Behaviour of Women in Arab Capital Markets: A Case Study of Saudi Arabia and Jordan

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the degree of a Doctor of Philosophy in Behavioural Finance

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In the Name of God, Most Gracious, Most Merciful.

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This work is original except where stated otherwise, and is not the result of collaboration. It has not been submitted for a degree at any other university.

Razan Salem

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ANGLIA RUSKIN UNIVERSITY

Abstract

LORD ASHCROFT INTERNATIONAL BUSINESS SCHOOL

DOCTOR OF PHILOSOPHY

Evaluating the Investment Behaviour of Women in Arab Capital Markets: A Case Study of Saudi Arabia and Jordan

By Razan Salem April 2017

Gender has become an extremely crucial factor when examining the investment behaviour of individuals because men and women invest in stocks differently. The investment behaviours of women relative to men have been examined extensively in the behavioural finance literature, mainly for comparison purposes. Women's roles in the stock market and their effect on its aggregate performance have not been explored in the behavioural finance literature, however, particularly in respect to the Arab region. This study aims to contribute towards a better understanding of the investment behaviours of Arab women (in regards to their herding behaviours, risk tolerance, confidence and investment literacy levels, along with the effect of religion on their investment behaviours). It also seeks to highlight the investment barriers facing Arab women and to indicate the factors that might motivate them to participate more in the stock market. Furthermore, it examines the direction and the strength of the linear association between Arab women investors and stock market aggregate performance (measured by the return on its major index) relative to Arab men. In another word, the study investigates whether the participation of Arab women in stock market is positively associated with its aggregate performance.

In order to achieve the study's main aims, the researcher used a range of quantitative statistical methods (non-parametric tests along with regression and correlation analysis) to analyse both primary and secondary data. To examine Arab women investment behaviours together with the barriers and motives for investment, the researcher distributed close-ended online questionnaires to a sample of Arab male and female individual investors, or those interested in investing in stocks in both Saudi Arabia and Jordan. In addition, to investigate the relationship between women and the stock market performance, the researcher used statistical data on the numbers of Saudi and Jordanian female and male investors trading in the Saudi and Jordanian stock markets, along with data on the yearly returns of the major indices of the two stock markets from 2008-2015.

The analysis of the 549 questionnaire respondents revealed the main investment barriers to be the fear of taking a high risk and of losing, suggesting that women are risk averse investors when trading stocks. Furthermore, the main investment motives were cited as the facilitation of more online trading and more reliance on financial advisors /reports. These findings also show that Arab women exhibit herding behaviour more and have lower investment literacy, confidence,

and financial risk tolerance levels than Arab men. Consequently, they invest less in the stock market than Arab men. Moreover, the findings unexpectedly show that religion has no impact on the sample Arab women's investment behaviours. In regards to women's relationship with the stock market performance, the findings show that Jordanian and Saudi women have a positive (but not statistically significant) relationship with the performance of the Jordanian and Saudi stock markets relative to their male counterparts.

This study presents three novel and stimulating findings that add to the behavioural finance literature. First, women from emerging markets have similar investment behaviours as women from developed markets. When it comes to investment in stocks, women around the world behave similarly although they may have different cultures. Furthermore, female investors may increase their participation in the stock market if barriers to investment are eliminated and their specific investment motives are supported. Finally, and notably, female investors can probably have a positive, strong and significant relationship with the performance of the stock market due to their more rational behaviours than male investors. Consequently, this study extends and diversifies the literature on gender differences in investment behaviour to include Arab women investors. More importantly, it opens the door for new areas of research in the behavioural finance field to investigate the role of female investors in the stock market in developed and emerging markets, during both bull and bear markets.

Keywords: women, investment behaviour, Arab capital markets, gender differences.

JEL Classification Codes: C91, G11, J16

Personal Reflection

I am reflecting on my personal journey of my PhD thesis in behavioural finance. Overall, this journey has been one of the most important, beneficial and exciting journeys in my life. It has empowered my academic and time management skills. Although I have felt like a soldier for the three years of my PhD journey, fighting day and night to win the battle, now, having completed my thesis, I have won the battle. I believe this thesis will open a new area of research in the behavioural finance field.

It was indeed a very serious challenge to complete this thesis but I have remained focused, motivated, and committed while moving from one stage to another in my PhD journey. I have enjoyed every part of this journey from the beginning until the completion. For instance, deciding on my PhD topic was hard. From the start, I wanted to conduct my thesis on a topic in the field of behavioural finance. This field captured my attention because it studies and explains how feelings, emotions and cognitive errors affect investors' behaviours and their investment decision-making. After extensive reading in this field, I decided to focus on gender differences in investment behaviours. I personally believe that men and women differ, so their investment behaviours must also vary. While reviewing the existing studies, I concluded that women investors, on average, have not been extensively examined in the literature. There are very limited studies that focus on women investors. Further, studies that investigate the impact of women on the stock market, especially in the Arab region, are virtually non-existent. Given that women in this region are becoming wealthier, more educated, and are gaining more control over their finances, they are becoming major players in different sectors, except in the investment sector, and are therefore worth studying. Academic scholars and financial practitioners have neglected these women. I therefore decided to study Arab women investment behaviours along with the investment barriers and investment motives that encourage them to trade stocks more. In making this decision I also accepted the challenge of being one of the first to investigate women's impact on stock market performance. When I selected my topic, I experienced some trepidation: the fear of getting it right, the fear of getting the required data from a region where local traditions and norms can cause difficulties when obtaining data. Through motivation and persistence, however, together with my supervisor's guidance and my colleagues' support, I was able to accomplish this thesis.

From the start, I intended to set the main aims, objectives, and questions of the thesis and draw a clear plan to reach them in the most optimal way. Accordingly, I critically reviewed large numbers of existing work in the field of behavioural finance, particularly the ones that examine gender differences in investment behaviour. My aim was to understand the theory better, its concepts, and the empirical work of its followers. This work helped me to analyse the existing findings in a more critical way, and thus to recognize gaps in the literature and identify the thesis's main contribution to knowledge. The literature review, therefore, gave me a clearer and more accurate idea on what should be done in this thesis. Of all the stages in this research, the data collection part was the most challenging for me due to the cultural constraints inherent in reaching Arab women investors. Thus, I decided to adopt an online questionnaire in order to circumvent these constraints and reach these women directly. Further, it was hard to collect statistical data on women investors from the Jordanian and Saudi stock markets. With hard work and continuous effort, however, I was able to collect both my primary and secondary data.

In order to ensure that my thesis was proceeding in the right direction and to make it better, I presented in various financial conferences, mainly specialised in behavioural finance, in the UK, Germany, and the USA. For instance in 2017, I presented a paper titled (Are all women risk averse investors?) in the joint conference on entrepreneur finance and behavioural finance and economics in Stuttgart, Germany. The feedback and comments on this paper, which was part of my thesis, were positive and encouraging. The paper was widely accepted from the field's experts and had great potential to be published in the journal of behavioural finance and economics. Similarly, I presented a paper titled (Home bias and young individuals), which is part of my thesis, in the behavioural finance conference at the University of Nevada, USA. I received useful and important feedback from an expert panel in the field of gender differences in investment behaviour. I also presented a summary about my thesis in the behavioural finance conference at the University of Miami, USA. The topic was widely accepted by various academic experts in the field of behavioural finance. Some of them suggested making my framework more generalizable so it can be used in further research, an advice that I endeavoured to follow. Additionally, I presented my thesis in the 10th student annual conference at Anglia Ruskin University. Overall, the feedback has been constructive. Many attendants were interested in knowing how religion may influence the investment behaviour of Arab women. Moreover, in the BAFA 2015 Doctoral conference, the feedback that I should also study the investment behaviour of Arab males was a positive addition to the study's main objectives and contribution to knowledge. This issue has not been fully investigated in respect to any of the Arab capital markets. Further, I presented a poster on my PhD topic in the 9th student annual conference in Anglia Ruskin University, 2015. The poster and what it contains captured the attention of many academics and fellow PhD students from different majors. Their interest motivated me to work hard and continue my PhD journey with a clearer vision.

My PhD journey, with all the obstacles and challenges I have been through, has enhanced my academic knowledge in various fields, mainly finance and psychology. Further, it has improved my analytical, communication, time management and presentation skills. It also has empowered my logic and deep thinking in order to analyse better, which is essential in the finance field. Additionally, and importantly, my financial analytical skill has increased significantly as a result of conducting this PhD thesis. This was achieved by conquering my fear and insecurity through the decision to conduct my PhD thesis on Arab women and their role in the stock market; women who have been largely neglected due to cultural sensitivity and data collection difficulties. Moreover, my self-confidence has improved through communicating my PhD thesis in conferences, with experts in the field. This increased self-confidence will help me in my future academic and research career. I consider this journey and what I learned from it as my key success for the future. Further, it will help motivating women, mainly in the Arab region, to participate more in the stock market.

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Chapter One: Introduction

1.1 Research Purpose

Men and women vary in many ways socially and economically, from educational achievement to employment and earnings, to wealth and power, to financial decision-making and investment behaviour. In the investment sector, men and women differ in their mentality and behaviour when it comes to financial risk taking, and trading in stocks. Due to their differences in investment behaviour, men tend to invest more in the stock markets in both developed and emerging countries. In the Arab countries, men investors particularly dominate the stock markets, and the gender gap in stock trading is enormous and noticeable. The two main purposes of this study are to investigate the investment behaviour of Arab women when trading stocks, and to examine their relationship with the stock market performance relative to Arab men investors. Hence, the investment behaviour of Arab women in this study is described in regards to their herding behaviour, financial risk tolerance levels, investment confidence levels, and investment literacy levels along with the effect of religion on their investment behaviours.

1.2 Research Background

Traditional finance theory over the past fifty years has assumed that investors think and behave rationally when buying and selling stocks (Statman, 2010), attempting to maximize wealth while minimizing risk. In reality, however, it is now realized that investors do not think or behave rationally (Shiller, 1999; Kiyilar and Acar, 2013) because they are affected by personality traits and psychological biases (such as overconfidence), which in turn affect their emotions and cause them to act irrationally when investing (Barberis and Thaler, 2003).

Consequently, the behavioural finance emerged, which focuses on studying the effect of psychological factors on the financial markets and also on the behaviour of market participants (Sewell, 2007).

Researchers supporting this theory attempt to combine concepts of investing with those of psychology on a micro level (such as the decision processes of investors) as well as at a macro level (such as the role of financial markets) in order to understand and explain the investment decisions of institutional and individual investors (Baker and Ricciardi, 2014). The amount of research in the field of behavioural finance has grown remarkably in the past decade both to develop detailed models of investors' behaviours in the financial markets, and to suggest the main factors (such as overconfidence, risk tolerance, financial literacy and social influence) that affect the investment behaviour of stock market participants (Kourtidis et al. 2011), particularly individual investors.

Through the late 1990s, various studies in the field of behavioural finance focused on examining the investment behaviour of institutional investors, since there was more data available for these than for individual investors (Barber and Odean, 2011). More recently, however, many researchers in this field have turned to investigate the behaviour of individual investors, recognising that they play a vital role in the stock market due to their large share of gross savings in a country's economy (Suman, 2012). The empirical evidence shows that individual investors behave mostly irrational, with their investment decision making being affected by psychological, demographic and social factors (Baker and Wurgler, 2007). This irrational behaviour of individual investors causes them to trade aggressively utilising speculative strategies (Barber and Odean, 2011), holding riskier undiversified portfolios because they underestimate risk (Benos, 1998a), and trading frequently due to their

overconfident behaviour (Wang, 2001). Accordingly, they tend to lose money when trading (Odean, 1999).

Not all individual investors behave similarly when it comes to trading in stocks, however. Indeed, their investment behaviours are quite heterogeneous. The existing studies in the field of behavioural finance attempt to explain this heterogeneity, linking it to various demographic factors (such as gender, age, education and wealth). The role of gender is considered to be one of the most important demographic factors explaining the variation in individuals' investment behaviours such as overconfidence (see Barber and Odean, 2001)

Men and women are different and so their behaviours may vary in many ways. The role of gender difference in investment behaviour is an increasingly important strand in the field of behavioural finance research. Scholars have examined the investment behaviours of men and women under different settings and from different perspectives. For instance, some of the existing literature investigates the gender differences in investment behaviour in relation to demographic factors such as age, education, marital status, and wealth (Shaikh and Kalkundrikar, 2011; Jain and Mandot, 2012).

In contrast, other studies have focused on differences in risk tolerance, confidence and investment literacy levels between men and women, along with their herding behaviour. The empirical findings reveal women are more risk averse and less risk tolerant investors than men (see Charness and Gneezy, 2012) and thus invest more conservatively (see Bajtelsmit et al. 1999; Hohnish et al. 2014). Additionally, women are less confident (Barber and Odean, 2001) and less financially literate investors compared men (Lusardi and Mitchell, 2011). Further, women investors exhibit higher herding behaviour relative to men, tending to imitate other investors' actions when making investment decisions (Lin, 2011). Accordingly, women participate less than men in the stock market. The gender gap in stock market participation is

mainly related to women's lower risk tolerance levels (Croson and Gneezy, 2009), lower financial literacy levels (Van Rooij et al., 2011), or lack of trust in the stock market (Guiso et al., 2008). Although women participate less in the stock market, they still hold less volatile and more diversified portfolios, invest in less risky assets, make more rational investment decisions, and earn higher returns than men (Barber and Odean, 2001; Bauer et al. 2007; Willows and West, 2014). An increased participation of women investors, who act more rationally, may therefore have a positive relationship with stock market performance (the higher the participations of women investors is associated with higher performance). Overall, it is essential to extend the literature and focus on studying women's investment behaviour and their relationship with the stock market performance in both developed and emerging markets.

1.3 Research Motivation

Due to the noticeable gender inequality in the Arab region, underpinned by local traditions, women (on average) face barriers that prevent them from fully recognizing their rights as equal participants in society and the whole economy (Nazir, 2005). In the Arab region, gender ideology emphasizing women's family roles plays a major aspect in limiting their participation in many sectors (including the investment sector). Generally, the investment sector is considered to be a masculine sector, which is mainly dominated by men investors, and this is especially so in the Arab region. Therefore, Arab men investors have received more attention from academic researchers and financial practitioners in respect to behavioural finance compared to Arab women investors. This neglect of Arab women investors may be due to cultural barriers along with a lack of data. In the context, this study aims to extend and diversify the existing literature to include consideration of Arab women individuals and their investment behaviours.

The very scant literature on Arab women and their investment behaviours is, therefore, a key motivator for this study. Further, the recent growth in Arab women's financial, educational, and career positions, which has contributed positively to the growth of the region's economy, encourages this research. According to the president of the World Bank, Arab women can be successful entrepreneurs, powerful political figures, important global business managers, and major players in the region's development; when given the chance (Growth role of Arab women in focus, 2008). Consequently, Arab women can also be influential investors in the region's stock markets and globally. Moreover, Arab women have a unique and different culture (mainly governed by religion), so it is important and interesting to explore how these cultural aspects may affect them and their investment behaviours. Accordingly, this study focuses mainly on examining the investment behaviour of Arab women along with the investment barriers they face, and the investment motives that encourage them to participate more in the stock market.

Building on the general arguments above, Arab women now represent 48.4 % of the region's population (World Bank statistics 2014) and the majority of the university populations in two-thirds of the region's countries (United Nations statistics 2012). Additionally, Arab women represent 21.3% of the region's workforce (World Bank statistics 2014), own about 21% of the region's companies (Hoteit, 2014) and control 22% of the region's wealth (Damisch et al., 2010). Gulf women are estimated to control \$224 billion, which is bigger than the GDP of various African and Asian countries (Soman, 2013). Saudi women alone control a combined wealth of \$11.9 billion (Maceda, 2010). Most of the wealth of Arab women is held in cash accounts, real estate and trust units (Williams, 2011) probably for future saving purposes. Despite these significant facts and potential opportunities in Arab women, barriers remain, including in the investment sector.

Another crucial motivation for this study is to investigate the correlation between Arab women investors and the performance of the region's stock markets. It is essential to examine the correlation between these wealthy, educated, and professional individuals and the aggregate performance of the stock market. Such an examination is important particularly as a result of the great uncertainty caused by the political and economic instability globally and particularly in the Arab region. Based on the study's objectives, findings, and proposed outcome, the researcher develops a complete and unique framework to understand Arab women investors and their relationship with the performance of the stock market. Hence, this study's findings, and this framework, open new paths of enquiry for other academic researchers and financial practitioners in the field of behavioural finance.

1.4 Research Rationale

The rationale behind this study lies in the well-documented findings in the behavioural finance literature regarding the gender differences in investment behaviours. Most of the existing literature on gender differences in investment behaviours has focused on exploring the differences between men and women investors, mainly in regards to their financial risk tolerance, confidence and financial literacy levels. The empirical evidence reveals that men investors are risk takers and overconfident investors who trade too much, to their potential disadvantage. In contrast, although women are more risk averse investors with lower confidence in their financial abilities, they still earn better returns than men (Barber and Odean, 2001). Such evidence indicates that women are good investors and potentially important players in the stock market, whose greater participation may help to reduce the market's volatility and improve its performance. Thus, academic researchers and practitioners in the behavioural finance field should focus more on studying the investment behaviours of women, and their relationship with stock market performance.

Currently, there are very few studies that concentrate exclusively on the investment behaviour of women, while none focus on the main investment barriers that limit women's participation in the stock market and the major motives that lead them to invest more in stocks. Additionally, most of the studies on gender differences in investment behaviours focus on developed markets, particularly the U.S. market (see as Sung and Hanna, 1996; Jianakoplos and Bernasek, 1998; Eckel and Grossman, 2008). In contrast, few studies have been conducted in emerging markets (see Feng and Seasholes, 2008) and very few in the Arab region.

Since there are differences between individuals in developed and in emerging markets in regards to their lifestyles, social traditions, and beliefs, so their investment behaviours may vary. To extend and diversify the growing literature on gender differences in investment behaviour to include women investors from different cultures, this study particularly focuses on investigating the investment behaviours of Arab women (represented by a sample from Arab women investors living in Saudi Arabia and Jordan).

To the best of the researcher's knowledge, no research to date has focused particularly on investigating Arab women investment behaviours (in regards to their herding behaviours, financial risk tolerance, investment confidence and investment literacy levels, along with the effect of religion on their investment behaviours) probably due to cultural sensitivity and statistical data collection difficulties. Furthermore, there is no existing literature on the major investment barriers and motives from Arab women's views. Examining the investment behaviour of Arab women, the investment barriers, and the investment motives may lead women to invest more and encourage other women to start investing. The increased

participation of Arab women investors may have a positive relationship with the performance of the stock markets in the Arab region.

Consequently, this study also examines the correlation between Arab women and the performance of the stock market relative to Arab men. It is important to investigate how the participation of Arab women, who are more rational investors, may be associated with the performance of the region's stock markets. In general, the more rational behaviour of women leads them to hold more diversified portfolios, earn better returns, and provide more stability to the stock market (Muller, 2007) relative to men investors. Such behaviour may reflect positively on the aggregate performance of the stock market. Accordingly, women investors and their relationship with the stock market performance cannot be neglected. This study fills that gap and opens up a new and important area for academic scholars and financial practitioners in the field of behavioural finance to investigate the relationship between women investors, the new emerging market, and stock market performance in both developed and emerging markets during both bullish and bearish periods.

1.5 The Research Aim and Objectives:

The main aim of this study is to examine the impact of women investors on stock market performance in the Arab region (represented by Saudi Arabia and Jordan). In order to reach the study's aim, the researcher attempts to achieve the following objectives:

- Indicate the reasons behind Arab women's fear of investing in stocks.
- Examine the investment behaviour of Arab men and women individuals and identify the gender differences in investment behaviour (in regards to their herding behaviour, risk tolerance, investment confidence and investment literacy levels).
- Explore the effect of religion on the investment behaviour of Arab women.

- Determine the correlation between Arab women investors and stock market performance; then verify the type and size of the relationship.
- Specify the motives that urge current women investors to trade more in stocks and encourage other Arab women to start trading in stocks.

1.6 The Research Questions:

This study seeks to address the following questions:

- What are the major investment barriers Arab women may face in an economy that is influenced by religion and culture?
- Does religion influence the investment behaviour of Arab women?
- What are the major differences between the investment behaviour of Arab men and women individuals?
- What is the association between Arab women investors and stock market aggregate performance relative to Arab men in Jordan and Saudi Arabia?
- What are the main motives that lead women to invest more in stocks?

1.7 The Contribution to Knowledge of this Research

The existing literature in the field of behavioural finance examines the investment behaviour of women, mainly Western women, for the purpose of gender comparison. The role of women investors and their relationship with the stock market are completely ignored, particularly in the Arab Region.

To fill this gap, this study contributes theoretically by exploring the investment barriers that limit the participation of Arab women in trading stocks and by identifying the main motives

that encourage Arab women to participate more in the stock market. The study also contributes by investigating the investment behaviour of Arab women relative to Arab men. Finally, the study empirically tests the relationship (in regards to its sign and size) between Arab women investors and the stock market performance.

Practically, the study contributes to the financial wellbeing of Arab women, to the region's stock markets, and the region's whole economy. Although Arab women now control more wealth and own more companies than they have historically, they still shy away from trading in stocks. This reluctance to invest wealth in stocks may negatively affect the financial positions of these women, by not generating more income or capital, and may also negatively affect the performance of the region's stock markets, as well as the recovery of its whole economy.

Examining the investment behaviour of Arab women, the investment barriers they face, and their investment motives may, therefore, encourage them to participate more in the stock market, and also motivate other Arab women to start investing. Increased participation in stock market, with more investment knowledge and confidence, has the potential to improve the financial position of women in the Arab world by generating additional income. It may also increase the liquidity of the region's stock markets (by injecting more inflows) and reduce the volatility caused by the irrational behaviour of men investors. Arab women, in recent years, are an essential economic resource and a powerful force for prosperity, so investing in these women may lead to help Arab nations thrive and boost economic growth in the region. Overall, studying the investment behaviour of Arab women and their relationship with the performance of the stock market is important both theoretically and practically.

1.8 The Structure of the Research

The study consists of eight chapters. **The first chapter** introduces the study's main objectives, questions, and the rationale of the study. **The second chapter** introduces the main theory used in the study (Behavioural Finance Theory), and reviews the scholarship within behavioural finance theory on the behaviour of individual versus institutional investors. **The third chapter** discusses in detail a vast amount of scholarship on gender differences in investment behaviour in both developed and emerging markets, including in the Arab region.

The fourth and fifth chapters are developed out of the second and third chapters to concentrate, respectively, on the hypothesis/conceptual framework and the methodology of the study. The methodology chapter contains the research approach and strategy, along with the statistical methods used. **The sixth chapter** analyses the study's primary and secondary data in order to accept/reject its hypotheses. **The seventh chapter** discusses and explains the study's findings in depth, and associates/compares these with the existing findings in the behavioural finance field. **The eighth chapter** concludes the study by summarizing its main findings, highlighting its main theoretical and practical contributions, and recommending suggestions for future research. In order to help the readers to follow the entire research easily, the structure of the study is illustrated in Figure (1.1).

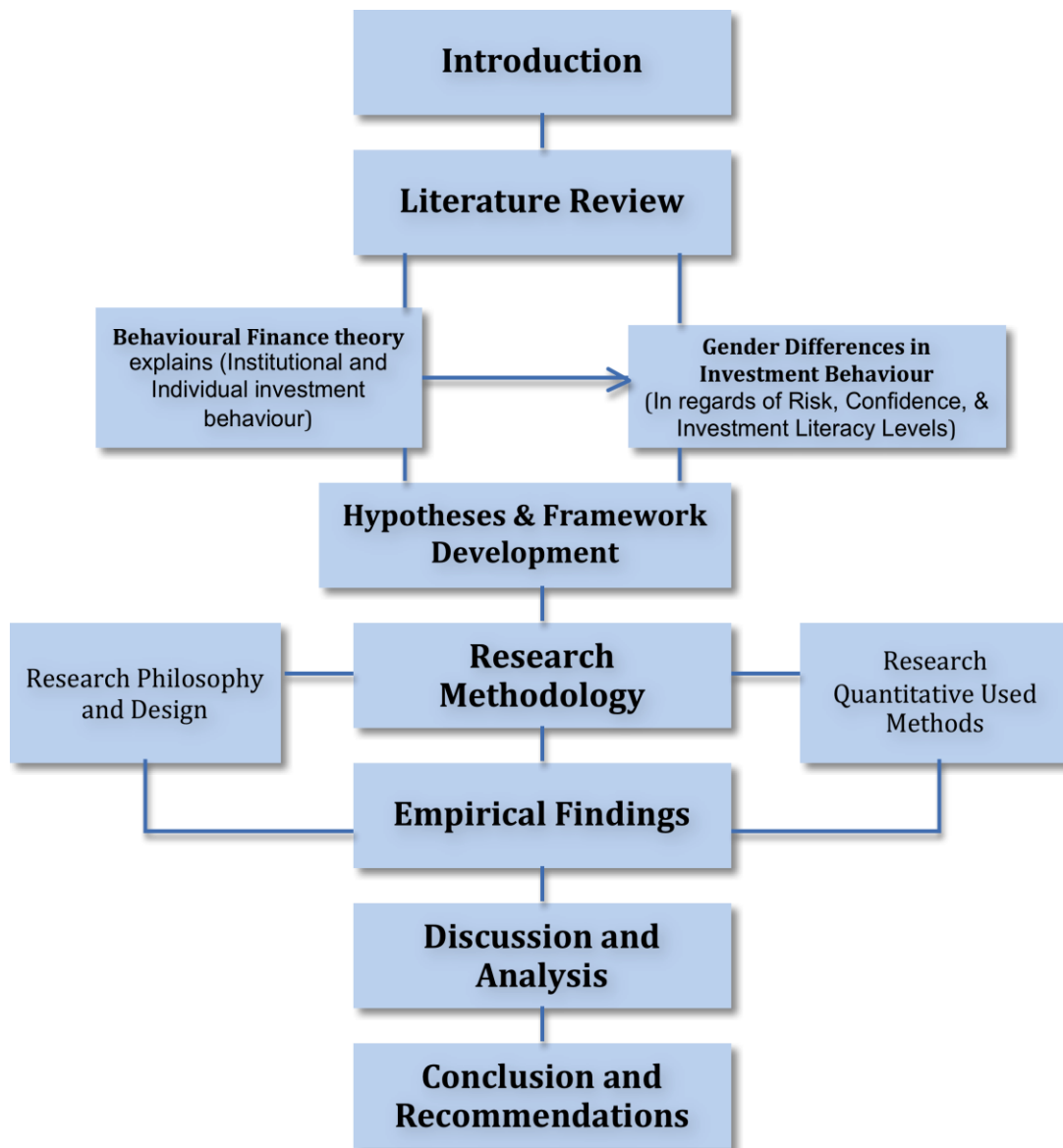


Figure 1 .1 The study's main structure

Chapter Two: Literature Review (The Behavioural Finance Theory)

2.1 Introduction

The main aims of this chapter are to highlight the general importance of the field of study and to illustrate the relevant contributions that are made to the field. The majority of the chapter is focused on critically assessing the various methodologies and findings of the existing literature in the field of behavioural finance, in order to identify a basis to develop the study's main frameworks and hypotheses. Moreover, the chapter contains a detailed review of the behavioural finance literature and its paradigms, with a particular focus on investigating the investment behaviour of institutional and individual investors in developed and emerging markets.

The chapter begins with a detailed review of the main ideas behind the theory of efficient markets, along with its main critiques. This is followed by a comprehensive review of behavioural finance theory, its concepts, its supporters, its critiques, and its association with the recent financial crisis. The chapter then provides specific reviews of the literature that investigate the trading strategies and the investment behaviour of stock market participants (mainly individual investors) in both developed and emerging markets. More specifically, the chapter reviews the investment behaviour of individuals in the Arab region. The final section summarizes and concludes the chapter.

2.2 Traditional finance theory (Classical Theory).

Over the years, traditional finance theory has been the governing theory in the field of finance and investment. This theory is built on four primary assumptions: (1) investors behave rationally and logically to maximize wealth when trading; (2) markets are efficient; (3)

investors construct their portfolios based on the rules of mean-variance portfolio theory; and (4) expected returns are a function of risk alone, where risk is measured by beta (Statman, 2010). The foundation of this traditional approach to finance is associated with the efficient market hypothesis (EMH), the capital asset pricing model (CAPM) and the modern portfolio theory (MPT) (Ricciardi and Simon, 2000). These traditional theories mainly seek to predict or explain what would happen under these theoretical limitations (Rawls, 1971). The efficient market hypothesis, in particular, is considered to be one of the foundations of modern finance theory and a major element in the traditional methods of asset pricing.

According to the efficient market theory, rational behaviour makes investors value a financial asset according to its net asset value. This theory supports the idea of investors' rationality and the idea that stock prices may follow a random walk (Dupernex, 2007). Thus, investors cannot consistently use strategies to outperform the financial market. In the previous century, prior to the development of EMH, various financial researchers and statisticians observed that changes in stock prices seemed to follow random and unpredictable patterns. This observation led various researchers to test and develop models of stock price behaviour. One essential model that emerged from this extensive research was random walk theory (Fama, 1995).

2.2.1. Random walk theory:

Random walk theory is a stock market theory that indicates that stock prices change randomly, making it almost impossible to predict future stock prices. The theory suggests the current stock price is independent and not associated with past stock market price patterns (Van Horne and Parker, 1967). Originally, Kendall (1953) proposed this theory after analysing twenty-two UK stock and commodity price series. The results showed the data behaved almost like a wandering series, where stock price variations are independent from each other and have the same probability distributions. Over a period of time, however, prices

sustain an upward trend.

The random walk theory also states that it is impossible to beat the market because stock prices reflect all available information, where current prices are the best approximation of a firm's intrinsic value. The random walk theory is therefore considered to be consistent with the efficient market hypothesis (Dimson and Mussavian, 2000). To illustrate, the concept of stock prices following a random walk is linked to that of the EMH, but a random walk of stock prices does not indicate that stock markets are efficient with rational investors (Dupernex, 2007).

2.2.2. The efficient market hypothesis (EMH) and its forms:

According to the EMH, stock prices rapidly adjust to any new information, are always priced at fair value, and often follow a random walk in that all price changes represent random departures from past prices (Malkiel, 2003). Since information is directly reflected in stock prices, tomorrow's price changes only reflect tomorrow's news and are independent from today's price changes (Malkiel, 2003).

The origins of the EMH can be traced back to the research of Fama (1965) and Samuelson (1965). Independently, and from two different approaches, both researchers established the same basic ideas of market efficiency, where prices fully reflect all available information. In addition, Samuelson (1965) argued that changes in the information of efficient market prices must be unpredictable. Building on Samuelson's (1965) approach, Fama (1970) developed a comprehensive review of the EMH and found evidence of market efficiency through his empirical work. He stated that financial markets are efficient and that all information is fully reflected in the market prices to reveal their true value. Accordingly, an average investor

cannot frequently beat and predict the market by finding overvalued or undervalued stocks using fundamental and technical analysis strategies (Malkiel, 2003).

Moreover, Fama (1970) distinguished between three different forms of the EMH (weak, semi-strong and strong). First, the weak form of the EMH claims that asset prices fully reflect all information contained in previous trading, and thus current price changes cannot be forecasted from previous prices. The semi-strong form of the EMH, meanwhile, emphasizes that asset prices reflect all relevant publicly available information, and not only previous prices. Finally, the strong form of the EMH assumes that prices fully reflect all information, even if certain investors have access to some information that is not available to others. By combining the existing findings of the random walk literature with his own and other studies' findings on the information involved in the historical series of prices, Fama (1970) argued there is strong support for the weak form of market efficiency. He reached a similar finding with respect to the semi-strong form. In regards to the strong form of EMH, markets cannot be completely efficient in the strong form.

Over the past century, the EMH is considered to be the dominant theory and one of the primary cornerstones of modern financial theory that is widely accepted by economic and financial researchers (Malkiel, 2003). Various theoretical and empirical studies' have confirmed market efficiency and indicated stock returns that have a low serial correlation are very hard to predict (see Working, 1934; Kendall, 1953; Cootner, 1962; Fama, 1965,1970). Thus, price changes cannot be used to predict future price changes; especially after transaction costs are taken into account. The findings of these studies also support the weak form of EMH for developed markets.

A growing number of studies in the fields of economic psychology, finance and behaviour, however, have found many anomalies (such as in size, value and calendar effects) and psychological behavioural biases (such as high trading volumes and volatility caused by overconfidence, overreaction and risk-taking), which are unexplained by the EMH. Accordingly, EMH and other traditional financial theories have been increasingly criticized in regards to their explanatory power and the validity of their assumptions (Takahashi and Terano, 2003).

2.2.3. Stock market anomalies and EMH:

Due to stock market anomalies, several numbers of studies have emerged to challenge the market efficiency hypothesis and rational expectations (as Shleifer, 2000; Kothari, 2001; Lee, 2001). Overall, the empirical findings of these studies are consistent with investor under- or over-reaction to publicly available information (Core et al. 2006)

Stock market anomalies are cross-sectional and time series patterns in security returns that are regular, reliable, widely known and inexplicable. The fact that the pattern is regular and reliable suggests a degree of predictability, and the fact that the regularity is widely known suggests that various investors can take advantage of it (Lo, 2007). Several of these anomalies happen during particular periods, however, with specific samples that cannot be generalized (Schwert, 2003). Additionally, there are different types of stock market anomalies that investors can take advantage of. For instance, fundamental anomalies (such as size and value effect) are considered to be among the most enduring anomalies that investors can take advantage of. Banz (1981) is considered to be the first work to discover the size effect anomaly. He analysed the monthly returns for stocks listed in the NYSE from 1931-1975 in order to study the long-run rate of return from investing in smaller firms. He found that on a risk-adjusted basis, the fifty smallest stocks outperformed the fifty largest by an average of

1% per month. Building on Banz's (1981) work, Keim (1983) and Roll (1983) also documented a related size effect anomaly; where small capitalization stocks outperform large capitalization stocks over the turn of the calendar year (January effect). The January effect, an increase of security prices during the month of January, especially the prices of small firms, may be consistent with market inefficiency due to its regularity and publicity. According to the EMH, stock prices should fully reflect all the public available information, so the January effect would not occur because it is well known by all investors.

Other well-known documented anomalies that investors can take advantage of are known as value anomalies. Fama and French (1992) studied the relationship between price-to-book (P/BV) ratios and expected returns. They indicated that the value and size of common stocks, which are measured by the book-to-market ratios, represent two risk factors that are not included in the CAPM. When the measure of risk in CAPM is used to adjust for risk, the higher returns from value stocks represent inefficiency (Malkiel, 2011). Fama and French (1992) therefore proposed an equation using regressions to measure abnormal returns.

In fact, stock market anomalies (whether fundamental, technical or calendar anomalies) allow investors to beat the market, and generate abnormal returns using fundamental and technical analysis, or to analyse previous performance using insider trading (Latif et al., 2011). The presence of stock market anomalies contradicts the EMH and the rational expectations.

2.2.4. Psychological behavioural biases and EMH:

Along with stock market anomalies, psychological behaviours may also be observed as an indication of market inefficiency. Various researchers from the fields of psychology, finance

and economics have documented specific behavioural biases (such as cognitive,¹ and emotional factors) that are pervasive to people's decision-making under uncertainty. For instance, DeBondt and Thaler (1985) indicated that investors could face swings of optimism and pessimism (overreaction) that cause prices to diverge systematically from their fair values. They documented that such overreaction to previous events is consistent with the prospect theory of Kahneman and Tversky (1979), where investors are systematically overconfident in their ability to predict future market prices.

Along with the overreaction bias, there are various examples of behavioural biases such as overconfidence (see Barber and Odean, 2001), loss aversion (see Kahneman and Tversky, 1979; Odean, 1998a), herding (see Warmers, 1999), representativeness, where investors classify an investment as good or bad based on its recent performance (see Shefrin, 2002; Baker and Ricciardi, 2014), and familiarity (see Ashcraft, 2006). Such behavioural biases affect investors' decision-making process, causing them to act in irrational ways, and influencing the pattern of security prices. Such behaviours contradict the EMH argument of investors' rationality and asset pricing.

In general, the findings from the literature on these anomalies, combined with the behavioural theories from the psychology literature, have helped to evolve an alternative theory: behavioural finance theory. This theory combines economic with psychological concepts to create a better understanding of investors' behaviours when making financial decisions, and thus explaining market anomalies. During the 1990s, this theory emerged in various academic journals, business publications, and financial articles (Ricciardi and Simon, 2000) because it

¹ Cognitive refers to how people think.

attempted to explain how feelings and cognitive error affect market participants and their financial decision-making.

2.3. Behavioural finance theory:

Behavioural finance theory combines perceptions from the fields of psychology, sociology, finance and economics to apply behavioural concepts to the study of portfolio investments, corporate finance and capital markets. It marks a departure from the assumption of rationality that underpins traditional finance theory, focusing on studying the effect of psychological factors on financial markets and on the behaviour of market participants, such as institutional and individual investors (Sewell, 2010).

According to Statman (2010), the foundation of behavioural finance is based on the following: 1) investors are not rational, but normal; 2) markets are not efficient and hard to beat; 3) Investors construct their portfolios based on the rules of behavioural portfolio theory, not mean-variance portfolio theory; 4) and expected returns follow behavioural asset pricing theory, where risk is not measured by beta and expected returns are determined by more than risk. Further, the theory justifies the irrational behaviour of investors when making financial decisions to explain what causes stock market anomalies, crashes and bubbles. It also studies how investors systematically make mental mistakes (errors in judgment) due to emotional and cognitive factors.

Various scholars in the field of behavioural finance define the theory and explain how emotional and cognitive factors affect investors' financial decision-making processes. Shefrin (2001) argued that behavioural finance is the study of how psychological factors influence investment decision making and affect the aggregate financial markets. Similarly, Sewell (2007) defined behavioural finance as the study of how psychology influences the behaviour

of market participants and the consequent effects on financial markets. Further, Ritter (2003) indicated that behavioural finance has two major components: cognitive psychology (referring to how people think) and the limits to arbitrage, so investors build their portfolios based on behavioural finance rules.

2.3.1 The origin of behavioural finance theory:

Behavioural finance theory evolved during the 1990s due to the growing challenges facing the EMH. It began from the concept that financial decision making normally takes place in complex and uncertain environments in which people behave irrationally and do not follow the rational choice models described in EMH.

In recent decades, Kahneman and Tversky (1974, 1979) theoretically and empirically contributed to the theory. Their main research concentrated on the cognitive psychological biases that cause unpredictable and irrational behaviours. Kahneman and Tversky (1974) present the concept of heuristics (mental shortcut rules of thumbs to process information in ways that are not strictly logical) that people use to assess frequency and probability. They found that people tend to use rules of thumb when solving problems and making decisions, due to their lack of ability to process information fully rationally and the limited time available to make many decisions, especially when investing. The researchers concluded that heuristics are helpful in many situations for finding quick and easy, but not necessarily optimal solutions. Various investors (individuals and institutional) rely on heuristic decision-making strategies by ignoring available information to make quicker decisions. More specifically, individual investors may apply heuristics when they buy a stock based only on a friend's recommendation (herding behaviour) without analysing the stock's performance fundamentally or technically.

Further, Kahneman and Tversky (1979) introduced a theory of loss aversion known as Prospect theory. This theory mainly studies how people manage risk and uncertainty in the context of psychology and economics. It describes the decisions taken by people when faced with alternatives that involve risk and where the probabilities of the outcome are known. The theory also reveals how individuals think in terms of losses and gains instead of their net values, along with how individuals differently assess losses and gains. According to the theory, investors are much more concerned about prospective losses than they are satisfied by equivalent gains. Kahneman and Tversky (1979) argued that, according to prospect theory, people are generally risk averse to gains and risk seeking to losses (reflection effect). All decisions are framed around the reference point, where people start from a reference point (the Anchor) when making a decision, even if the reference point has slight relation with the decision. In most situations, people use the anchoring and judgment heuristic when making decisions under uncertainty.

Some, therefore, use insufficient judgments based on initially available values to reach a final conclusion. Over time, the prospect theory started to replace expected utility theory and became the main theory of decision making under risk because its psychological description of preference is more precise than in expected utility theory; a theory that ignores decision making under uncertainty. Moreover, prospect theory incorporates the effects of certainty, reflection and isolation on individuals' behaviours that are ignored by expected utility theory. In general, the work of Kahneman and Tversky (1979) on prospect theory established the primary psychological theories that provide the main foundations of behavioural finance theory.

Incorporating the work of Kahneman and Tversky (1979) on prospect theory, Thaler (1985) developed a new descriptive model (where prospect theory is suggested to be the base for consumer behaviour that contains mental accounting.² The model is mainly a mixture of psychological, economic and financial concepts. He concluded that psychological theories could explain investors' irrational behaviours when making financial decisions. Through the years, various researchers in the behavioural finance field have continued to analyse the impact of psychological effects on investors' behaviours. Many researchers have developed sub-theories and themes within behavioural finance theory. For instance, Olsen (1998) indicated that although models of the standard finance theories (such as rational behaviour and utility maximization) are recognized by behavioural finance theory, these models are incomplete because they do not fully involve individuals' behaviours. Consequently, Olsen (1998) built a new model that attempts to understand and predict systematic behaviour, thus assisting investors to make more accurate financial and investment decisions. Overall, these developed models are based on how psychosocial aspects affect investors' behaviours.

In his study, Shefrin (2000) also confirmed that behavioural finance is an interaction of psychological effects with investors' trading performances, where investors should be aware of their own financial and investment mistakes. He also illustrated that not all investors with different sentiments³ suffer to the same extent, i.e. investors' various attitudes affect their investment decisions and financial asset prices differently. Similarly, Bathia and Bredin (2013) evaluated the relationship between investor sentiment and the stock market return using the G7 countries from January 1995 to December 2007. Their findings indicated that investor sentiment has a strong negative effect on stock market returns for various time

² Mental accounting refers to individuals' propensity to divide their current and future money into separate accounts based on many subjective standards (Phung, 2009).

³ Sentiment refer to investors' attitude toward a specific security or financial market

horizons. If investor sentiment is high, the stock return is low and vice versa. More specifically, Kogan et al. (2006) focused on studying mainly irrational investors. The study's results illustrated that irrational investors, with their various sentiments, can affect stock market prices. This contradicts the main idea behind the efficient market theory – that investors are rational and wealth maximizers.

Based on these existing findings, behavioural finance theory explains investors' sentiments and how their irrational behaviours affect financial asset prices (such as stocks). On the other hand, many existing scholars in the behavioural finance field concentrate on explaining how behaviour biases, such as overconfidence, affect investors' financial decision making. Overconfidence, an overestimation of one's ability to perform well, is considered to be a major behavioural bias that causes various investors to overestimate their abilities consistently to pick the best investment. Such bias can influence investors' decision-makings and their stock selections in the long run. Investors' overconfidence has two main implications: investors pick bad bets because they fail to realize they are at an informational disadvantage, and they trade more often than they suppose, which leads to large trading volumes (Shefrin, 2000).

Overall, a stream of existing literature argues that investors are overconfident in so far as each investor overvalues his/her own personal signal and therefore causes high trading volume in the financial markets (such as De Bondt and Thaler, 1995; Odean, 1998b; Statman et al., 2006). In particular, Odean (1998b) developed theoretical statistical models of financial markets where investors suffer from overconfidence behaviour. He argued that overconfidence might increase trading volume, raise market depth, and decrease the expected utility of overconfident traders by leading them to trade much more than rational investors.

Additionally, overconfidence causes the market to underreact to the information of rational traders. The researcher concluded that overconfidence is the behaviour bias that explains the puzzle of the excess trading volume. Correspondingly, Gervais and Odean (2001) developed a multi-period market model for overconfidence. The model predicts biased overconfident investors, who overestimate their own valuation abilities, and forecasts the degree to which these investors contribute to the returns from general market increases. As a result of their long positions in equities, investors become overconfident and trade more aggressively following market gains. Moreover, Statman et al. (2006) documented that overconfidence is a driver of disposition effect, where investors tend to sell winning stocks too early and hold losing stocks too long. The researchers argued that overconfidence motivates investors to trade unevenly between gains and losses and that this affects the financial markets as a whole.

According to the behavioural finance models on overconfidence, overconfident investors overestimate their valuation abilities and thus trade more frequently, which cause them to earn less than the average returns (Barber and Odean, 2000). Hence, such models contradict the argument of the EMH, which assumes that investors trade rarely due to their rational behaviour (Thaler, 1999). In general, behavioural finance theory is a vital theory for explaining investors' irrationality and the most appropriate theory for understanding how emotions and cognitive errors influence investors' decision making (Waweru et al., 2008). Although behavioural finance theory has various supporters, there are still some challenges to the theory's main arguments.

2.3.2. Critics of behavioural finance theory

Behavioural finance theory has been a focus of attention for researchers for many years. Various academics and professionals in the fields of finance, economics and psychology have supported the theory and have attempted to develop new concepts and models that add to the

original theory. On the contrary, there are some researchers (mainly supporters of the efficient market theory) that have criticized behavioural finance theory, its purpose and its arguments.

Ball (1996) criticized behavioural finance theory in favour of the efficient market theory. He argued that the EMH must be the dominant theory since there is no other better alternative theory that can replace it. Specifically, he pointed out that any theoretical model (at some point) might shift and cause an exception to its main rules, which would avoid the need for the behavioural finance theoretical model. Likewise, Fama (1998) claimed that various findings in the behavioural finance literature conflict with each other, and that is a valid proof for the existence of the EMH. Moreover, he argued that the studied events are considered methodology rather than method, so with any change in the methodology the apparent anomalies in the EMH can be reduced or eliminated completely. Thus, the behavioural finance theory is mainly a group of anomalies that is clarified by EMH.

Although the behavioural finance theory has been criticized, the solid accumulated empirical evidence from finance, behavioural economics and psychology would strongly suggest the validity of this theory as a potential alternative to the EMH, explaining investors' irrationally when making financial decisions. Additionally, behavioural finance theory is the appropriate theory to understand and explain behavioural psychological biases, and stock market anomalies. To illustrate, the recent global financial crisis in 2007-2009 reasserted the validity of behavioural finance theory. The irrational psychological sentiments (such as overconfidence and risk seeking) are considered to have been the main causes of the global financial crisis (Shifren, 2009). In general, investors' sentiments increase the probability of causing financial market crises, including the recent financial crisis (Zouaoui et al., 2011). The recent financial crisis supports the behavioural finance theory, where investors act

irrationally when investing.

2.3.4 Behavioural finance theory and the recent financial crisis (2007-2009)

The recent global financial crisis started in 2007 and spread quickly and with gathering intensity during 2008, causing problems that undermined the stability of the global financial system. These problems (such as the loss of liquidity of financial institutions, the deep devaluation of asset prices, and the enormous instability in financial market prices) were probably results of behavioural factors that cannot be fully explained by the EMH.

During the financial crisis, human psychological behavioural factors affected investors, financial institutions and regulatory institutions. Despite the constant and combined efforts of central banks and regulators to end the crisis and to prevent a long turndown, the financial system and the global economy declined steeply in the beginning of 2009. The irrational behaviours, as overreaction and overconfidence, caused investors to make various mistakes and thus affected the financial system negatively. For instance, the excessive optimism and overconfidence of various consumers and investors pushed them to predict unrealistic increases in the prices of physical assets (such as housing prices) and also of financial assets (such as stock prices). Accordingly, the increase in asset prices led to bubbles, especially in the housing sector. Bubbles, where prices diverge from their intrinsic values, are caused mainly by human irrational behaviours. Such behaviours cannot exist in the rational market and thus challenge the EMH (Shefrin and Statman, 2011).

The financial crisis started with the subprime mortgage defaults in 2007. Low interest rates, combined with increased home prices and relaxed lending standards, encouraged many people to buy houses they could not afford. This indicates that emotions and cognitive errors cause homeowners to underestimate the risk associated with home buying (Shefrin and Statman,

2011). As a result, house prices declined, loans started to default, and financial market volatility increased. Similar to the homebuyers, many overconfident and greedy professionals in the financial institutions incorrectly assessed trends and underestimated the risks involved in complex securities that they buy, trade with or construct. Accordingly, the unimpeded greed triggered unrealistic leverage and led to unsustainable asset-price levels (Lo, 2011). Moreover, the financial professionals accepted risky strategies that are liable to fail dramatically every five to ten years (Jickling, 2010). Consequently, various large multinational financial institutions suffered dramatic losses and some collapsed (such as the bankruptcy of one of the most powerful and important global investment banks; Lehman Brothers). The sudden collapse of Lehman's in 2008 implied market inefficiency (George Sores (2009) cited in Ball, 2009).

Prior to the financial crisis, the financial markets exhibited a long decline in risk premiums combined with a decrease in the measured risk. These declines motivated investors looking for higher yields to take more risk. The increasing yields combined with the decreasing measured risk led to the creation of a financial bubble in the stock market (Rohde, 2011). Bubbles are linked to emotional decision making and underestimation of the risk involved in financial investments. Moreover, investors' excessive optimism and overconfidence led them to expect an unjustified rise in stock prices (Shefrin and Statman, 2011). Due to their irrational behaviours, investors (mainly individuals) suffered huge losses and hurt their retirement savings and investment returns badly.

Overall, the recent financial crisis dramatically damaged the global economy and brought the global financial system to the edge of collapse. The financial crisis has had negative consequences not only for the North American and European stock markets, but also put

pressure on emerging stock markets, including the Arab markets. The crisis negatively affected Arab countries (mainly the Gulf oil producing countries) by causing declines in oil prices, slowdowns in exports, decreases in stock prices, reduction in economic activities, and lower worker remittances and foreign direct investment (Saif and Choucair, 2009). Furthermore, the crisis particularly affected the Arab region's financial system and its stock markets, mainly the stock markets of the Gulf countries, due to their connection with the global oil market (Hammoudeh and Li, 2008). Finally, the recent financial crises also affect Arab individual investors, especially Arab women. To illustrate, Arab women participated less in stocks investments during the recent financial markets. For instance, in 2010, only 10% of the total investors in the Jordanian stock market were women (ASE Annual report, 2010) and that probably due to their risk aversion behaviours.

The recent financial crisis and its negative global implications have therefore tended to support behavioural finance theory and posed more questions about the foundations of the standard financial theory. Accordingly, increasing numbers of financial practitioners and academic researchers use behavioural finance theory to explain individual and institutional investors' irrational behaviours and to understand stock markets bubbles and crashes better. Additionally, various researchers have applied the theory to understand and explain the investment strategies (such as momentum and contrarian trading strategies) and the trading behaviours (such as risk tolerance and confidence level) of individual and institutional investors when trading stocks. Overall, the recent financial crises indicated that the trading behavioural biases could affect investors, financial markets, and the global economy.

2.4. The investment strategies of market participants:

In the financial markets, participants (individual and institutional investors) are heterogeneous in their beliefs and behaviours, which may lead them to differ in their trading characteristics

(such as in their views of the market, risk profiles, informational sets and previous beliefs) (Benhamd, 2011). The stock market has different investors with various trading strategies (Belhoula and Naoui, 2011), which generates speculation, higher trading volumes and higher asset prices (Miller, 1979; Harrison and Kreps, 1978). The main types of traders are as follows:

Smart traders (also called the arbitragers) are considered to be rational speculators who build fully rational expectations about security returns, so they play major roles in the standard traditional finance theories (Shleifer and Summers, 1990). Their trading strategies are based on buying undervalued stocks and selling overvalued stocks.

Noise traders (technical analyst or chartists) are considered to be less informed, less rational and more risk-averse traders. They base their trading activities on noise rather than market information or indicators. Their trading strategies depend on observing previous prices and extrapolating the historical trends (DeLong et al. 1990). The irrational activities of noisy traders acting on non-fundamental signals (called sentiment) can cause systemic risks and affect volatility (Brown, 1999). Noise traders might, therefore, be considered more aggressive traders than arbitrageurs and bear more risk, due to their overconfidence behaviours (Shleifer and Summers, 1990).

Fundamentalist traders are considered risk averse, more rational and well-informed traders. These traders base their trading activity on company specific events (such as earning announcements), macroeconomic indicators and other indicators (such as political indicators) that influence the income flow of security (Hirshleifer, 2001). Fundamentalist are long-term traders (with a buy-hold strategy) because they believe that, in the long run, stock prices return to their fundamental prices, so they sell overvalued stocks and buy undervalued stocks

(Raberto et al., 2003). Over time, stock prices diverge from their fundamental value causing either crashes or bubbles (Benhmad, 2011), such as the US internet stocks bubble during 1998-2000.

Contrarian traders base their investment trading strategy by buying stocks when most other traders are selling them due to their poor performance. On the contrary, these traders sell stocks when other traders are buying them (Odean and Barber, 2011). The main basis for contrarian trading is that when everyone is buying stock prices go up, and therefore it is the best time for contrarians to sell and vice versa (Bloch, 2011).

Momentum traders base their investment trading strategy on a tendency to buy recent winners and sell recent losers. They therefore trade on previous price changes and also forecast based on historical prices (Hong and Stein, 1999). The momentum traders' behaviour is a form of herd behaviour,⁴ and is considered to be irrational under the efficient market hypothesis. According to behaviourist researchers, momentum profits are due to market inefficiency and occur from the irrational reaction of stock prices to information, along with the herding behaviour of traders (Kang et al., 2002).

Human behaviour bias generally leads investors to underreact to information (such as a stock's earnings announcements), or to follow a positive feedback strategy that causes delays in overreacting to information (such as a series of good and bad news in respect to a stock) (Barberis et al., 1998; Daniel et al., 2004). Since investors follow their sentiments and views, they mainly focus more on the strength of the evidence they are presented with rather than its statistical weight (Barberis et al., 1998). Empirical evidence indicates that investors' sentiments and behaviours have a significant influence on cross-sections of stock market

⁴ Herding results when investors are intent to imitate the behaviours of other investors (Merli and Roger, 2013).

prices, such as realized past returns and future returns (Baker and Wurgler, 2006). Investors' influence on stock prices varies, however, depending on the specific behaviours of institutional and individual investors.

2.5. The investment behaviour of market participants:

The behavioural explanation of how investors' sentiments affect stock returns continues to be a matter of debate in the finance literature. For instance, Brown and Cliff (2004) comprehensively examined the role of investors' sentiment in the stock market and explored its relationship to near-term stock market returns, using surveys in the U.S market. The researchers concentrated on the aggregate stock market instead of individual stocks due to data limitations. Their findings indicated that investors' sentiment has slight power in predicting near-term future returns, although it has a strong correlation with market returns. Furthermore, the sentiment is not only specified to individual investors and small stocks, but also to institutional investors.

Using monthly data from the G7 stock markets, Bathia and Bredin (2013) evaluated the influence of investors' sentiment on the total market returns, along with value and growth stock returns, from 1995 until 2007. The results showed that investors' sentiment has a negative relationship with future returns and thus cannot fully forecast near-term future stock returns, which is consistent with the findings of Brown and Cliff (2004) in the U.S. market.

In contrast, many studies indicate the strong influence of past price performance on the trading behaviour of institutional and individual investors. More specifically, institutional and individual investors differ in their reaction to past price performance, although they both use momentum and contrarian strategies (NG and WU, 2005). Generally, institutional investors have different behaviours from individual investors and thus affect the financial markets

differently.

2.5.1 The investment behaviour of institutional investors:

In the late 1990s, various researchers studied institutional investor behaviours (such as mutual funds and pension funds) due to data availability. Keim and Madhavan (1995) examined a large sample of institutional managers and found both momentum and contrarian managers in their sample. Similarly, Grinblatt et al. (1995) focused on analysing the behaviour of mutual fund equity managers (using quarterly ownership data to compute changes in institutional ownership). In contrast to individual investors, the findings indicated that the majority of these managers tended to pursue momentum investment strategies and follow herding behaviour. Wermers (1999) specifically investigated the herding behaviour of mutual fund managers, with the findings revealing that these managers tend to show high levels of herding behaviour in small stocks, growth stocks and extreme past return stocks. Nofsinger and Sias (1999) also documented how the herding behaviours of institutional investors influence stock prices more than those of individual investors. In particular, momentum institutional investors trade more than individual investors. The study concluded that stock returns are contemporaneously correlated with the institutional buying of stocks, which is consistent with Wermer's (1999) findings.

Badrinath and Wahal (2002) conducted a study on the behaviour of 1,200 institutional investors trading in the equity markets from 1987-1995. The results revealed that institutions are momentum traders when they buy stocks and are contrarian traders when they sell stocks. Griffin et al. (2003) showed strong cross-sectional evidence of the relationship between a stock's previous returns and institutional and individual trading. The researchers used daily data and intra-daily data from the NASDAQ 100, rather than quarterly ownership data as in previous studies, to determine the significant effect of institutional and individual trading

activities on forecasting future price movements and the previous stock return movements. The findings suggested that institutional investors follow previous stock returns when trading. Additionally, there is an inverse relationship between the trading activities of institutional and individual investors and the daily stock returns, which is mainly due to the intra-daily trades following previous returns.

Other existing studies focus on examining the behaviour of institutional and individual investors on a daily basis but using other developed markets than the U.S. market. Grinblatt and Keloharju (2000 and 2001a) examined the buying, selling and holding activities of institutional and individual investors in the Finnish stock market. Using a short time series of returns for a period of two years, the results indicated previous stock returns and past price patterns influence trading behaviours in the Finnish stock market. Overall, the Finnish local investors tend to be contrarian investors, while the foreign investors tend to be momentum investors where they use positive feedback trading. Moreover, individual investors tend to buy stocks with weak future performance, while institutional and foreign investors tend to buy stocks that are expected to have a strong performance in the future. Finally, the researchers found strong evidence proving that individual investors earn weak gross returns relative to other investors.

Several studies have also examined the behaviour of institutional and individual investors in emerging markets. From Asia, Choe et al. (1999) examined the pattern and the influence of net purchases conducted by institutions, individuals and foreign investors particularly, in the Korean stock exchange between 1996 and 1997. Using order and trade data (where the data includes the time when the order arrives at the market), the study concluded that Korean and foreign institutional investors use momentum trading strategies while individual investors use

short-term contrarian trading strategies. Similarly, Ng and Wu (2005) studied the trading behaviour of 6.2 million institutional and individual investors in China. Investors in China are different from other investors because they are involved in different trading strategies. The results documented that institutional investors are momentum stock traders (using a positive feedback trading). In contrast, individual investors tend to be categorized based on their sophistication and wealth levels. Less sophisticated and less wealthy individuals use a contrarian investment strategy; while more sophisticated individuals act like institutional investors when they purchase stocks and like individual investors when they sell stocks.

Further, Barber et al. (2009) investigated the complete trading records of individual and institutional investors between 1995 and 1999 in the Taiwanese stock exchange (the 12th largest financial market in the world). The results showed that individual investors lose when trading due to their aggressive orders, while all institutional investor types win. To illustrate, stocks purchased by individuals (sold by institutions) earn poor returns. Additionally, the results revealed the trading losses along with the market-timing losses, and the trading cost is found to be the main reason for an annual decrease of 3.9% in the aggregate portfolio returns of individual investors. The aggregate trading losses of individuals are equal to 2.2% of Taiwan's total GDP, In contrast, trades conducted by institutional investors are profitable, and enjoy an annual performance increase of 1.5 %, whereas foreign institutional investors gather nearly half of these profits.

Overall, the empirical evidence from developed and emerging markets confirms that the trading behaviours of individual and institutional investors differ. Institutional investors are considered to be momentum traders (positive feedback traders), tending to buy winning securities and to sell securities that have performed badly; and follow past stock returns. In

contrast, individual investors are considered to be contrarian traders who exhibit a strong disposition effect, where they tend to sell their winning stocks and hold on to their losers. Thus, individual investors have different behaviours than institutional investors. Since this study focuses on individual investors (men and women) rather than institutional investors, the following section discusses further the investment behaviour of individuals when trading stocks.

2.5.2 The investment behaviour of individual investors in long and short term horizons:

Academic researchers in the behavioural finance field recognize a wide range of behaviours among individual investors that lead them trade stocks differently and thus cause an increase in the trading volume. Overall, individual investors mainly act irrationally and trade actively with speculation strategies (Barber and Odean, 2011); where their investment decision-making is mainly influenced by psychological, demographic and social factors (Baker and Wurgler, 2007). As a result of their irrationality, individual investors generally lose money when trading (Odean, 1999; Barber and Odean, 2000; Barber et al., 2009a,b), which eventually affects stock prices negatively. Studying their behaviours is therefore essential.

Studying the investment behaviour of individuals (categorized as households) is important because individuals are increasingly becoming responsible for their own future financial positions. Moreover, individuals' investment behaviours seem to be systematic rather than random when buying and selling financial securities (Kumar and Lee 2006, Barber et al., 2009a) and thus influence stock prices and returns (Barber et al., 2009b). Accordingly, increasing numbers of empirical studies attempt to explain the main investment behaviours of individuals and examine how their trading behaviours affect the performance of financial markets, especially past performance.

2.5.3. The behaviour of individual investors and past stock performance:

A) Long-time horizons:

A large and growing body of literature focuses on studying the behaviour of individual investors and its association with the past performance of stocks using short or long-time horizons data. The empirical results indicate that the choices of individual investors are influenced by the previous performance of stock prices and the use of contrarian investment strategies. Odean (1998a) analysed the trading records of 10,000 individual investment accounts from 1987 till 1993, selected from a large U.S. brokerage firm, to test the dispersion effect. The findings revealed that individual investors exhibit dispersion effects, where they tend to prefer realizing their winner stocks at a much higher rate than their losing stocks. Although the dispersion behaviour of the individual investors influences stock market prices, the extent of this influence depends also on the trading activities of other market participants. The findings also showed a tendency towards loss aversion, and indicated that the trading decisions in respect to individual stocks might depend on the previous price performance of these stocks. Moreover, individual investors tend to buy more shares of an owned stock when the stock current market price is below the purchase price, rather than when it is above it. This finding is consistent with the prospect theory of Kahneman and Tversky (1979), which indicated that individual investors are risk averse to gains and risk seeking to losses. Finally, Odean (1998a) suggested that individual investors trade heavily because of their overconfident behaviour, which is consistent with Benos' (1998) results.

Persisting with his examination of the investment behaviour of individuals, and using the same sample as in his (1998a) study, Odean (1999) explored whether or not trading heavily can decrease the expected utility of individual investors. Using a calendar-time approach, he confirmed strong evidence of a disposition effect and accordingly argued that the stocks purchased by these individual investors underperformed the stocks sold by 23 basis points

every month in the twelve months. The study concluded that the stocks bought by individual investors are consistently underperforming the stocks sold by these investors. On average, the bought stocks are mainly the stocks that first captured the attention of these investors when selecting among thousands of stocks. Following this specific trading strategy indicated individual investors' irrationality. Due to their irrationality, mainly overconfidence, individual investors trade too much and this lowers their returns. This finding is consistent with Odean's (1998a) findings.

In his study, however, Odean (1999) neglected to examine the aggregate performance of all stocks owned by individual investors. Moreover, he used only the trading records in his dataset while excluding other important data, such as the impact of demographic data on individual investors. Barber and Odean (2000), therefore, used not only the trading records in their dataset but also included position and demographic data. In addition, they used positions rather than trading records when analysing their larger sample of 78,000 investors for the different period of 1991 – 1996, although the study sample was taken from the same large discount broker. This study provided strong evidence that individual investors, who manage their own stock portfolios, underperform the aggregate market due to the trading costs. The 20% of individual investors who are actively buying and selling stocks earn (after trading costs) 11.4%. In contrast, the 20% of individual investors who are buying and holding stocks earn (after trading costs) 18.5%. Additionally, the study showed that individual investors tend to buy the stocks that first grab their attention, which is consistent with the findings in Odean (1999) and Barber and Odean (2008).

In general, Odean (1998a, 1999) and Barber and Odean (2000) argued that individual investors in the U.S. behave irrationally and seem to follow relatively unsophisticated trading strategies. They tend to buy losing stocks and sell stocks that had performed well in recent

weeks (“anti-momentum” investors). In addition, the overall trading volume in the stock markets is excessive due possibly to their overconfident behaviour, which leads individuals to encounter weak performance. Continuing their sequence of studies on individual investors in the U.S market, Barber and Odean (2005) studied their trading behaviour mainly in the presence of attention grabbing events. The results showed that news, abnormal trading volume and excessive returns are considered attention-grabbing events that lead individual investors to be net buyers of stocks. Seasholes and Wu (2007) have similar findings in a study of individual investors in the Shanghai stock exchange.

The results of Odean (1998a, 1999) and Barber and Odean (2000, 2005) clearly identify the investment behaviour of individual investors and their trading performance with respect to past stock returns. These studies, however, did not specify the gender of the individual investors in respect to showing which gender is more overconfident when trading. Furthermore, they did not clearly focus on explaining the investment behaviour of each gender in relation to past stock returns. Additionally, the data used in all these studies is based on U.S. investors only, and from the same large discount broker. The behaviour of individual investors in the U.S. may not apply to individual investors and their trading behaviours in other markets, particularly emerging markets. Individual investment behaviours and trading activities may vary from one market to another due to differences in culture, religion and language or due to differences in trading techniques (as online-trading). To diversify and expand their empirical results on the behaviour of individual investors, Barber and Odean (2001) examined the gender differences in investment behaviour in the U.S. Moreover, Barber et al. (2009) studied international individual investors by evaluating the trading records of Taiwanese investors, using data records that are not available in the U.S.

Continuing the examination of the investment behaviour of individual investors in the U.S., Kumar and Lee (2006) used database records of more than 1.85 million retail individual investor trades from a U.S. discount brokerage over the period 1991 to 1996. The results showed that individual investors' trades are correlated and contain systematic components (especially when they perform as a group); therefore these trades can move stock prices. The correlated systematic trading in and out of the equity market is attributed to changes in individual investor sentiment. Such results are consistent with the current noise trade models.

Confirming Kumar and Lee (2006) findings, Hvidkjaer (2008) analysed the effect of the trading behaviour of individual investors on a cross-section of stock returns; using signed small trades from the TAQ database (Trade and Quote data sets) from 1983 to 2005. His sample included all ordinary stocks listed in the New York and American Stock Exchanges, which are sorted into deciles based on signed small trade volume. His results revealed that stocks bought by individual investors underperform the stocks they sell; this indicates that individual investors trade for non-informational reasons (such as shifts in risk aversion or misperception of future returns). His results are confirmed by and consistent with Odean (1999), Barber and Odean (2000), Barber Odean and Zhu (2009) and Barber et al. (2009).

Barber, Odean and Zhu (2009) also used a signed small trade (those less than \$5,000 in value) from the TAQ database to imply the trading behaviour of individual investors and to identify their initiated trades from 1997 to 1999. The results showed that individual investors herd. Furthermore, stocks heavily bought by individual investors over periods ranging from one month to one year underperformed heavily sold stocks. Finally, the trading conducted by individual investors is highly correlated and systematic; and mainly driven by psychological biases, as overconfidence. Overall, the empirical results on the behaviour of individual investors in the U.S. market support a role for investor sentiment in the formation of returns.

Other studies also investigate individual investors and their trading behaviour but in forging markets.

Grinblatt and Keloharju (2000) analysed two years of trading for individual investors in Finland. Their results provided strong evidence of the weak gross returns earned by individual investors. Moreover, individual investors in Finland follow contrarian trading, tending to buy stocks with below-average previous performance. Similarly, Linnainmaa (2010) studied the behaviour of individual investors in Finland using simulation and trading records of all individual investors. The findings suggested that individuals in Finland suffer weak post-trade returns, lose money during the season of earnings announcements, conduct contrarian trades, and finally exhibit a disposition effect. Jackson (2003) examined the investment behaviour of Australian individuals. Unlike previous studies of small investors, the researcher used a larger database of Australian individual investors trades from 1991 to 2002. The results provided evidence of systematic patterns and a contrarian style in the trading behaviour of Australian individual investors.

Further investigations on individual investors come from Asia. Seasholes and Wu (2004) examined the trading behaviour of individual investors in the Shanghai stock exchange. The results argued that individual investors are net buyers of stocks that reach their upper price limit because these stocks are the first to grab investors' attentions. This is consistent with Odean (1999) and Barber and Odean (2000, 2008), who also confirmed that individual investors are net buyers of stocks that catch their attention first. Chen et al. (2007) also studied the trading behaviour of individual investors in China. The results documented that Chinese individual investors conduct poor trading decisions, holding stocks that depreciated in price while selling stocks that appreciated in price (the disposition effect). These investors believe that future returns can be predicted by previous returns (a representativeness bias).

Finally, Chinese investors seem to be overconfident when trading and tend to be more overconfident and exhibit a stronger disposition effect than U.S. investors.

Correspondingly, Barber, Lee, Liu, and Odean (2009) analysed the trading records of Taiwanese investors over the period 1995–1999. They used the complete transactions of all traders on the Taiwanese Stock Exchange. The findings showed that the trading of individual investors is systematic and caused economically huge losses. As a result, the trading losses decreased individual investors portfolios' returns by 3.8% annually, with the losses mainly caused by their aggressive orders. Overall, individual investors follow systematic and contrarian trading. Moreover, individual investors suffer from behaviour biases such as representativeness, overconfidence and the disposition effect in their trading. Overall, individual investors mostly perform poorly when investing over the long term and that negatively reflects their future returns. This is not the case when trading over short time horizons, however.

B) Short-time horizons:

The empirical evidence finds that over short-term horizons the returns earned by individual investors are relatively strong and positive. In their study, Kaniel et al. (2008) investigated how individual investor trading influences their future returns over short-term horizons for a large cross-section of NYSE stocks. The results signalled that individual investors tend to purchase stocks after declines in the past month and sell stocks after price increases. Thus, the trading behaviour of individual investors over short-term horizons (less than one year) affects future returns. Their results are similar to those of Barber, Odean and Zhu (2009) and Kelley and Tetlock (2013). Such studies confirm that, over short horizons, the trading behaviour of individuals in the U.S. positively forecasts future returns.

Additionally, Barber, Odean and Zhu (2009) argued that, over short horizons, imbalances in small trade orders positively forecast future returns, especially when this imbalance is measured at a weekly horizon. At a weekly horizon, heavily bought stocks outperform for the following two weeks but then underperform for the rest of the year. Furthermore, Hvidkjaer (2008) and Barber, Odean and Zhu (2009) indicated that stocks heavily purchased by individual investors underperform stocks heavily sold by individual investors. The existing findings provide support to the idea that individual investors' trading behaviours can affect stock prices and future returns in both the long and short horizons. These trading behaviours mainly cause individuals' to take higher risks, trade more, and thus decrease their expected returns.

2.5.4 Risk Tolerance level and investment behaviour of individuals:

Financial risk tolerance plays an essential role in individual investors' optimal portfolios and investment decisions. It is defined as the maximum amount of uncertainty, with the possibility of an identifiable negative outcome that individuals are willing to accept when making financial decisions (Grable, 2000). In general, an individual's financial risk tolerance is hard to measure because it is as a multidimensional attitude that is affected by influential factors, such as demographic factors (Trone et al., 1996).

Overall, individual investors are risk averse to some extent (Binswanger, 1980). Their ability to handle financial risks may be related to characteristics such as gender, age, time horizon, portfolio size, income/wealth, financial knowledge and attitude toward price fluctuations (Fredman, 1996). Various studies conducted on the risk tolerance of individual investors find that demographic factors (such as age, gender, income, education and profession) predict individuals' risk tolerance levels (see Sung and Hanna, 1996; Byrnes et al., 1999; Grable, 2000; Hallahan et al., 2004; Worthington, 2006). For instance, Hallahan et al. (2004) revealed

that gender, age, marital status, the number of dependents, wealth/income are significantly associated with individuals' financial risk tolerance.

More specifically, researchers (such as Hinz et al., 1997, Bertaut, 1998, Hartog et al., 2002) indicate a positive relationship between risk tolerance and wealth. Similarly, other studies (see Grable, 2000; Bertaut and Starr-McCluer, 2000; Grable et al., 2004) show a positive association between risk tolerance and income. In regards to gender, various studies indicate that gender is significantly related to financial risk tolerance, with men being more risk tolerant than women (see Bajtelsmit et al., 1999; Bernasek and Shwiff, 2001; Felton et al. 2003). Based on the existing literature, therefore, demographic variables affect individuals' trading behaviour and risk tolerance levels. In addition, there are other variables, such as confidence and financial/investment levels that affect the investment behaviour and the risk tolerance level of individual investors.

2.5.5 Confidence level and investment behaviour of individuals (Overconfidence):

Individuals, generally, overestimate their own abilities and knowledge, which lead them to take decisions based on their beliefs, especially when investing in financial assets. The existing literature on overconfident behaviour argues that individual investors overestimate the precision of information (Glaser and Weber, 2007) and thus trade with overconfidence (Odean, 1998b, 1999). Overall, this more overconfident behaviour in trading, where investors believe they know more than they actually do, explains individual investors' poor trading performance (Philip, 2007).

Benos (1998) and Odean (1998b) developed theoretical models based on their observations that individuals are overconfident investors, in which they trade often, underestimate the associate risks, and have lower expected utilities than they would have if they were fully rational investors. Similarly, Odean (1999) indicated that overconfident investors

overestimate their abilities and the accuracy of their financial information. Due to their overconfident behaviour, individual investors trade frequently and aggressively and this diminishes their returns. The study's result on the relationship between overconfidence and trading behaviour is consistent with those Barber and Odean (2000, 2001, 2002) and Statman et al. (2006).

Beyond the United States, Grinblatt and Keloharju (2009) evaluated overconfidence, sensation seeking and trading in the Finnish stock market. The researchers used a unique data source that combines investors trading in stocks with data from their psychological profile, tax filings and driving record. Controlling several variables (such as wealth, age, number of owned stocks, marital status and occupation), the results documented that overconfident Finnish investors, along with the investors who were most disposed to sensation seeking, tended to trade more often. The results also support the hypothesis that over-confidence is responsible for the sharp level of trading activities.

Researchers in the behavioural finance field have also expanded their examination to other foreign markets, such as Asian markets. Ho (2011) investigated the effect of overconfidence on the trading behaviour of individual investors in the Taiwanese stock market. Based on the accounts of 1185 individual investors, the scholar developed a psychological bias and trading behaviour model from January to September 2010 (to avoid the effects of the subprime mortgage crisis on the stock market). Using nonlinear regression models to analyse the monthly data, the findings revealed that Taiwanese investors exhibit the disposition effect, especially when the market is weak. Furthermore, the more overconfident investor tends to show a higher degree of the disposition effect. Such biased behaviour affects stock market trading volume and volatility.

In general, the consequence of the overconfidence bias is widely cited by existing literature as a possible driver of excessive trading volume and volatility (Kyle and Wang, 1997; Benos, 1998; Odean, 1998a; 1998b; 1999; Gervais and Odean, 2001). In their study, Glaser and Weber (2007) argued that individual investors who were more overconfident take more risks and trade more aggressively while generating higher trading volumes than rational investors. Overconfidence is one important factor that affects the trading behaviour of individual investors, but individuals' financial/investment knowledge (which is related to individuals' confidence) is another important factor that needs to be considered.

2.5.6 Financial/investment level and the investment behaviour of individuals:

Financial/investment literacy⁵ is essential for retirement planning (Lusardi and Mitchell, 2007b), important for investment decision-making (Bernheim, 1998) and has a significant impact on the stability of the overall economy (Jappelli, 2010). The empirical evidence from various markets indicates that most individuals are financially illiterate, have very limited knowledge about personal finance, and even are unfamiliar with the basic investment terminologies (such as interest rates and stocks), hence they manage their finances and investments poorly (Chen and Volpe, 2002; Christelis et al., 2005; Jappelli, 2010; Fornero and Monticone, 2011; Lewis and Messy, 2012).

Individuals with limited financial/investment literacy levels may behave as risk averse investors with low confidence levels. On the other hand, individuals with high financial and investment knowledge may take higher risks and exhibit overconfident behaviour when investing in stocks. Overall, financial/investment literacy levels, along with confidence levels,

⁵ The terms financial literacy, financial knowledge and financial education are often used interchangeably in the existing literature and media. Few studies attempt to define or differentiate these terms (Huston, 2010).

affect the investment behaviour of individual investors. Other factors, such as religious, cultural and social factors, can also affect the investment behaviour of individuals.

2.5.7 Cultural/religious factors and the investment behaviour of individuals.

The trading behaviours of individual investors vary across geographic regions, where cultural differences may play roles in such variation. Therefore, cultures need to be considered as an influence on individuals' investment behaviours. In general, cultural psychologists have developed models to help explain cultural differences: individualism versus collectivism (Triandis, 2001); independence versus inter-dependence (Markus and Kitayama, 1991), and cognitive processing (Nisbett et al., 2001).

In their study, Nisbett et al. (2001) argued that, due to cultural differences, East Asian people make very limited use of formal logic, while Western people make their valuations based on analytical cognitive processing. Such variations in cultures may potentially affect the trading behaviour of Western and Asian investors. In their study, Rieger et al. (2011) used a large scale international survey of students, conducted in 45 countries, to analyse international differences between risk preferences and indicate whether these differences are associated with economic or cultural factors. The results revealed significant differences in risk aversion, loss aversion and probability weighting across countries. In addition, risk attitudes depend on economic as well as cultural factors. Thus, cultural factors cause differences in risk preferences, including financial risk preferences.

In the investment domain, very few studies have examined the trading behaviour of individual investors across different cultures. Levinson and Peng (2007) examined the impact of cultural background on financial decision making in the United States and China. The findings confirm dramatic cultural differences in financial variables such as framing and morality

between two countries. Grinblatt and Keloharju (2001b) investigated the behaviour of institutional and individual investors in the Finnish stock market when incorporating distance, culture and language. The results showed that investors exhibit "home bias " where they tend to buy, sell or hold stocks of Finnish firms that are a short distance from the investor's location, share the same language, and have a CEO of the same culture. Similarly, Massa and Simonov (2006) found that Swedish investors, mainly individuals, invest in stocks that are most closely related to them either professionally or geographically; or invest in familiar stocks.

Based on this limited empirical evidence, cultural factors may be said to affect the investment behaviour of individual investors. In addition, religion (a major factor of culture) can potentially affect the investment behaviour of individual investors, particularly in countries where religion plays a major role in its followers' lives and decision-making. Thus, it is important to study the impact of religion on the investment behaviour of individuals. There is still scant research, however, on how religion affects an individual's investment decisions.

Regarding investment and its association with religion, Renneboog and Spaenjers (2012) examined and compared the economic behaviour and financial decision making between religious and non-religious households in a sample of Dutch Catholic and Protestant households. They found that the more religious households were more trusting, more likely to be savers than investors, and more long-term planners. Moreover, Catholics were more risk averse and less likely to invest in stocks, while Protestants were considered to be more risk takers. Likewise, Miller and Stark (2002) investigated the influence of religion on individuals' behaviours, using gender as a proxy. The results revealed women to be more religious than men and thus caused them to be more risk averse individuals.

More specifically, a number of studies have examined the impact of religion on the investment behaviour of Muslims. In their study, Tahir and Brimble (2011) investigated to what extent individual Muslim investors comply with Islamic laws on investment principles. Using an experimental design to examine the investment behaviour of a group of Muslims, the results showed that the degree to which Islam affects the investment behaviour of Muslim is mainly due to the degree of an individual's religiosity. Brimble et al. (2010) also showed that Islam influences investors' decision making: investors with Islamic faith try to avoid investing in stocks of companies that do not comply with Islamic laws, and this may lead them to have less diversified and smaller portfolios. Moreover, Islamic faith investors are more risk averse investors and select conservative stocks. In contrast, Haron and Wan Azmi (2008) examined the influence of religion on the saving behaviour of Malaysian Muslim customers, specifically Islamic bank customers. Their findings suggested that religion has an insignificant influence on customers' saving behaviours, with these customers choosing the profit motive over their religious motive when making financial decisions.

2.5.8 Social factors and investment behaviour of individuals.

Just as cultural and religious factors have an influence on individuals' investment behaviours, social factors may also have a role to play. People, on average, are concerned with fairness and trust, so they are not primarily driven by self-interest, but they are driven by real or imagined social pressure (Ackert and Deaves, 2010). For instance, many people follow a herd instinct, thus disregarding their own information and following the decisions and behaviours of others when taking important decisions, including financial ones. In the investment field, herding behaviour results from an obvious intent by investors to follow or even imitate the behaviour of other investors (Bikhchandani and Sharma, 2000). Further, and in the

perspective of financial markets, herding exist when various market players conduct the same investment decisions at the same time, leading to higher focus of similar market orders and also causing higher financial risks (Kellard et al., 2017).

Following the actions of other investors through herding, however, tends to form a collective decision that causes stock prices to drift away from their underlying fundamental values (Chiang et al. 2010). Furthermore, herding among market participants may increase trading volatility, destabilize financial markets, increase the fragility of the whole financial system and contribute to the instability of the financial market (Morris and Shin, 1999; Persaud, 2000; Kellard et al., 2017). Herding behaviour, which challenges the validity of the efficient market hypothesis, may be exhibited by both individual and institutional investors. In their recent study, Kellard et al. (2017) investigated how communication and collaborative decision-making between market participants (mainly hedge funds managers) contribute to the development of herding behaviour and whether this has an effect on market prices and risk. As a methodology, the researchers used qualitative approach, particularly, interviews and observations with hedge fund managers from Europe, USA and Asia. The study's findings indicated that herding behaviour exists in the hedge fund industry, a very competitive industry, and is linked to a network of social connection. The communication and the idea sharing between hedge funds managers lead to "expertise-based" herding, a term that differs from the ones previously discussed in the behavioural finance literature in terms of motivation and process. Further, the role of idea sharing and communication between hedge fund managers impact market prices by introducing added risk due to the negligence of any information outside the trusted connections.

Chiang and Zheng (2010) also examined the herding behaviour of market participants in 18

countries, including in advanced markets (such as the U.S., UK and Australia); Latin America (such as Argentina and Brazil); and Asian markets (China, South Korea and Malaysia) using data from 1988 through to 2009. The study's results showed strong evidence for the presence of herding behaviour in all markets (in both up and down markets) except in the U.S. and Latin American markets. Additionally, the results suggested that stock return dispersions play a major role in explaining the non-existence of herding behaviour among investors in the U.S. market. This study's results are consistent with those of Chang et al. (2000), which showed that market participants in the U.S. and Hong Kong exhibit no herding behaviour, while market participants in South Korea and Taiwan do exhibit herding behaviour. In the case of Japan, the results showed partial evidence of herding. Similarly, Lao and Singh (2011) found the presence of herding behaviour among investors in the Chinese and Indian stock markets, where herding is more prevalent in both markets specifically during large market movements. Based on the empirical evidence, herding behaviour may be higher among investors in emerging more conservative markets relative to other more open markets.

Overall, the existing findings indicate that individual investors herd when trading (see Christie and Huang, 1995; Barber, Odean and Zhu, 2009) mainly during market stress periods (Christie and Huang, 1995). In their study, Balcilar et al. (2013) examined the trading behaviour of retail investors, the dominant investors in the Arab Gulf stock markets (Qatar, Kuwait, Saudi Arabia and the United Arab Emirates) and their tendency to exhibit herding behaviour. The results documented the presence of herding behaviour in all Gulf stock markets under crash and highly volatile market regimes. Investors in the Gulf markets exhibit herding behaviour because the Gulf economies are associated with the global oil prices. Furthermore, the regional geopolitical factors can generate additional uncertainty in Gulf stock markets' performance, which may trigger fear and instability among investors causing

them to potentially exhibit herding behaviour when trading. Finally, the lack of an investment culture among retail investors can also lead to herding behaviour in these markets.

In general, social forces (mainly herding behaviour), along with cultural and religious factors, can affect the trading behaviour of individual investors in both developed and emerging markets, but it is arguable that these factors may have a greater effect on the investment behaviour of individuals in the Arab region.

2.5.9 The investment behaviour of individuals in the Arab region:

The Arab region has geographical, political and cultural differences that distinguish it from other regions. Such differences affect the trading strategies and investment behaviours of individuals. Arab individual investors in this region, on average, are overconfident about their own abilities without having financial knowledge in analysing stocks (Izraeli, 1997). Such behavioural bias may affect their trading performance negatively.

Few existing studies have examined the investment behaviours and trading strategies of individuals in the Arab region. Al-Abdulqder et al. (2007) investigated the trading behaviour and strategies used by individual investors and their local intermediaries in the Saudi stock market. Using a questionnaire as the study method, the results indicated that fundamental analysis is the most used strategy among Saudi individual investors, where a P/E multiple ratio is used heavily to predict future prices. The results also showed quarterly and annual reports, along with newspaper reports, are widely used by investors when valuing stocks. The study concluded that individual investors in Saudi Arabia act irrationally when trading and use various trading strategies when evaluating stocks.

Similarly, Haddad and Hakim (2008) examined the behaviour of individual investors in the Saudi stock exchange, the largest exchange in the region. The researchers evaluated the irrational behaviour of investors trading in the Saudi stock market from 2006 to 2008. They concentrated mainly on individual investors because these are the dominant traders, in terms of their numbers, in the stock market. Using a solid econometric analysis in vector auto-regression, the results indicated that Saudi individual investors exhibit irrational behavioural biases, such as overconfidence and disposition effect (sell winning stocks very soon). Moreover, the relationship between the current index and previous volume suggests an irrational behaviour by the marginal Saudi investor and a strong evidence of unhealthy trading activities. Due to their irrational behaviour, Saudi investors, mainly individuals, tend to generate unhealthy trading that hurts their returns and increases market volatility. Hence, this behaviour may also affect the stock market performance as a whole.

Likewise, Al-Najjar (2013) examined the investment behaviour of individual investors trading on TADAWUL (the Saudi stock exchange), by providing a complete psychological decision-making model for Saudi investors. Using questionnaires collected from random individual investors trading in TADAWUL, where 89.9% of respondents were men, the study's findings also indicated that Saudi investors behave irrationally when trading. Moreover, Saudi men invest more than women, due to women's low participation in business, which negatively affects their participation in stock investments. Married investors are more experienced and so they invest more than unmarried investors. As a result, these investors can be overconfident and take more risks. In general, the study's results present the investment behaviour of Saudi male investors only, since the majority of the study's respondents were males. Its results may, therefore, be biased towards Saudi male investors.

From Jordan, Alrabadi et al. (2011) investigated the investment behaviour of one hundred randomly selected individuals trading on the Amman stock exchange. More specifically, they examined the overconfidence phenomenon and its possible causes (such as age, education, financial knowledge, professional experience, opinions of financial advisors, previous stock performance, and the amount of information revealed to investors). Using surveys as their method, the researchers documented that Jordanian investors are overconfident about their trading and financial abilities. Due to their overconfidence, these investors highly appreciate their success and blame the market when they lose.

Likewise, Al-Horani and Haddad (2011) tended to classify the main psychological biases, which may affect investment behaviour and cause a momentum effect in the Amman stock exchange. In order to achieve this purpose, the researchers selected the six most used psychological factors applied in the existing behavioural finance literature (overconfidence, self-attribution, conservatism, opportunistic behaviour, sensitivity to rumours and a mimicking attitude). A structured questionnaire was used to collect the responses of the most active brokers in the Amman stock exchange. The findings showed that five factors, excluding conservatism, influenced the behaviour of individual investors in the Amman stock exchange, causing them to act irrationally (where they make errors in judgement and incapable decisions when faced with uncertainty).

Overall, the existing studies on the investment behaviours of individuals in developed and emerging markets show that demographic, social, culture and religious factors can play an important role in shaping individuals' investment behaviours. Furthermore, such factors may affect their risk tolerance, confidence and financial literacy levels differently.

2.6 Critiques on the existing literature on the behaviour of institutional and individual investors

Although studies conducted on both individual and institutional investors have attempted to explain their investments behaviours, the current literature is still facing some critiques. In regards to institutional investment behaviours, the existing literature produces mixed results. Although most of the empirical results indicate that institutional investors are momentum traders, some researchers contradict these results. Gompers and Metrick (2001), based on their sample data, found that institutional investors own a higher percentage of large and more liquid stocks rather than small and less liquid stocks. There is no evidence, therefore, that institutional investors are generally momentum traders because of their trading preferences. Moreover, most of the studies use quarterly data rather than daily data, although daily data can give more detailed results on investment behaviour (see Griffin et al., 2003).

More importantly, most of the studies conducted on the behaviour of both institutional and individual investors conclude that both types of trader use different investment strategies (momentum versus contrarian investment strategy) but they do not clearly explain the main reasons behind this difference. Additionally, most studies neither directly indicate the types and sizes of institutional investors nor show the gender of the individual investors used in their samples.

Regarding individual investors, the existing studies (mainly the ones discussed in this chapter) indicate that individual investors tend to underperform the market. The data used in these studies depends mostly on observable demographic variables (such as age, education and gender) as proxies for the underlying unobservable psychological procedures, which drive investment decisions (such as overconfidence and loss aversion). There are variables other

than demographic ones that may explain individuals' investment behaviours and trading underperformance, however. The existing work has tended to neglect the use of less-to-observe variables, such as investment strategy and objective, which might give a more comprehensive and detailed understanding of the individual investment decision process when examining the results of individuals' underperformance (Hoffmann et al., 2010). Accordingly, Hoffmann et al. (2010) investigated how systematic differences in investors' trading objectives and strategies influence their investment decisions. The results showed that investors who are driven mainly by objectives related to speculation have higher goals, more turnover, take more risks, and underperform relative to investors who are driven by the demand to save for retirement.

Furthermore, the empirical evidence reveals that trades made by individuals contain a systematic component (e.g. Kumar and Lee, 2006; Barber, Odean and Zhu, 2009), which can affect stock prices. Moreover, individual investors' unbalanced orders are correlated with the dynamics of stock returns, which can forecast the cross-section of the future returns over a long period of time (as Kumar and Lee, 2006; Hvidkjaer, 2008). Although the existing studies show the effect of individuals' trades on stock prices and returns, they do not specify its effect on the volatility of stock returns. Overall, the influence of individuals' trading on the volatility of stock returns has not been tested in the U.S. or other foreign market (Foucault et al., 2011). Therefore, Foucault et al. (2011) tested whether trading by individuals is a factor in the volatility of the stock returns' traded in the French stock market. They found that individual investors' trading has a positive influence on the volatility of stock returns, which confirms that individual investors behave as noise traders.

Additionally, various empirical findings indicate the existence of behavioural biases (such as

disposition effect and overconfidence) in the trading behaviours of individuals in various developed and emerging markets, but without distinguishing demographically between these investors. In contrast, Dhar and Zhu (2005) found substantial differences in the disposition effect at the individual investor level. Using socioeconomic and demographic variables as proxies for individual investor knowledge, the researchers pointed out that richer and more professional individuals exhibited a lower disposition effect than other individual investors. Another important finding was that there was no evidence of a disposition effect among a large part of the studied sample, and the study even proved that, in many situations, individual investors conduct opposite trading patterns to the disposition effect. This finding encourages further studies to investigate the reasons behind the disposition effect, rather than keeping on explaining the prospect theory.

Finally, few of the existing studies conducted on individual investors' behaviours specify the gender of their studied sample. Specifying the gender is very important because the trading behaviour of men and women differ, and thus their effect on the stock prices and returns vary. The existing studies conducted in the U.S. and foreign markets show that individual investors exhibit behavioural biases in their trading that influence the stock prices, returns and the aggregate market. These studies do not directly indicate, however, which gender exhibits more biases. For instance, several existing studies show that individual investors are overconfident but they do not indicate whether it is men or women who are more confident about their financial knowledge and abilities. For example, the results of the studies of Odean (1998a, 1999) and Barber and Odean (2000) clearly identified the investment behaviour of individual investors and their trading performance with respect to past stock returns. Nevertheless, they did not take into account the gender factor in their studies. Moreover, these studies did not focus on explaining the investment behaviour of each gender and its

relationship to past stock returns. Barber and Odean (2001), therefore, conducted a study examining the gender differences in investment behaviour in the U.S. Subsequently, a large body of literature has investigated gender difference in investment behaviour in the U.S. and foreign markets.

2.7 Summary and Conclusion:

This chapter provides an extensive critical review of the vast body of behavioural finance literature. It indicates how the behavioural finance paradigm presents an important challenge to the efficient markets hypothesis. Moreover, it explains the behavioural biases that affect the investment behaviour of market participants, such as overconfidence (Grinblatt and Keloharju, 2009) and herding (Nofsinger and Sias, 1999).

In addition, the chapter discusses the literature on the behaviour of institutional and individual investors, and highlights the differences in their trading strategies. The empirical evidence reveals the poor average performance of individual traders compared with institutional traders. Overall, individual investors appear to trade too much, hold undiversified portfolios, sell winning positions and hold on to losing positions (disposition effect), as well as trading with overconfidence (see Odean, 1998b; Grinblatt and Keloharju, 2001). Additionally, individuals often follow contrarian-trading strategies in relation to previous returns, and make systematic rather than random decisions when buying and selling stocks. Accordingly, such behaviours indicate individual investors' irrationality when trading, which may increase the stock market volatility and thus affect its performance negatively.

The chapter also discusses the investment behaviour of individuals in regards to their risk tolerance levels (Grable, 2000), confidence levels (Odean, 1999), and financial/investment literacy levels (Christelis et al., 2005) in both developed and emerging markets. Generally, the results show that individual investors are to some extent risk averse investors with limited financial literacy levels, but that they still trade mainly with overconfidence. Individual investors, however, do not all behave similarly when trading stocks; their investment behaviours depend on a number of, mainly demographic, factors. For instance, gender plays

an essential role in individuals' investment behaviours. The following chapter builds on these observations to present the extensive existing literature on gender differences in investment behaviour in both developed and emerging markets.

Finally, this chapter discusses the limited literature on the behaviour and trading strategies of individual investors in the Arab region. The results indicate that Arab individuals, like other individual investors, are mainly irrational investors when trading stocks. Such irrational behaviour may affect the stock market performance negatively. Overall, the findings of this chapter provide a motivation for an in-depth evaluation of the existing literature on individual investors so as to examine their impact on the performance of the stock market in both developed and emerged markets.

Chapter Three: Gender Differences in Investment Behaviour

3.1 Introduction

Gender is a key demographic factor that has a potentially influential effect on individuals' investment behaviours and risk attitudes. Thus, a large and growing body of literature in the field of behavioural finance investigates gender differences in investment behaviours, mainly in regard to risk tolerance, confidence and financial literacy levels.

The aim of this chapter is to provide a detailed discussion that critically reviews the existing empirical and theoretical studies on gender differences in investment behaviour in developed and emerging markets. The chapter starts with an overview of gender differences in investment behaviour then briefly discusses the early work conducted in this area. Afterwards, the chapter specifically focuses on critically evaluating the relevant literature on gender differences in risk tolerance, investment confidence and financial literacy levels, as well as their linkage to stock market participations. Finally, certain limitations of the existing research are highlighted before the chapter is summarized.

The critical review of the gender differences in investment behaviour's literature and its limitations are crucial to emphasize what is being done in this particular area, in order to assist the researcher in the development of the study's hypothesis and frameworks, and to identify the gaps in the existing literature that this study attempts to address.

3.2 Gender differences in investment behaviour (an overview)

An emerging and important field within the behavioural finance literature is the study of gender differences in investment behaviours. The field investigates how gender differences in investment can affect the trading strategy of both genders in regards to their risk tolerance, confidence, and financial/investment literacy levels. Gender differences in investment behaviours have captured the attention of many academic and professional researchers for many years, due to its importance for the field of behavioural finance. The empirical evidence indicates that men pick riskier portfolios due to their overconfidence, trade more aggressively, and take more financial risk than women (see Sunden and Surette, 1998; Agnew et al., 2003; Yilmazer and Lyons, 2010). The following section gives a brief background on this field.

3.3 Brief background on gender differences in investment:

Prior to the late 1990s, only a few studies had investigated gender differences in investment decisions, mainly for retirement purposes. The empirical evidence reveals that women are more risk averse than men in pension allocations. Consequently, women tend to invest their retirement pension funds in safer assets than men, adopting more conservative investment strategies (Bajtelsmit et al., 1996; Hinz et al., 1996; Yuh and Hanna, 1997).

In their study, Bajtelsmit and VanDerhei (1997) examined these gender differences in pension allocation in more detail using the 1993 administrative data provided by a large pension plan sponsor. For the purpose of the study, the sample (20,000 managers) participants have the choice to invest either in guaranteed interest funds, diversified stock portfolios, employer stocks, or government bond portfolios. The results showed that men tend to choose employer stocks for their pensions, while women choose guaranteed interest funds; indicating that

women mainly invest their retirement funds in less risky vehicles than men do. The study's findings revealed gender differences in their financial risk attitude.

Likewise, Sunden and Surette (1998) studied gender differences and asset allocations in retirement. They used data from the 1992 and 1995 Surveys of Consumer Finances to investigate if employees systematically differ by gender in the asset allocations in their saving plans. The results showed that gender and marital status are significantly associated with asset allocations in the retirement saving plans, with married individuals being less risk tolerant than single individuals. In addition, single women take fewer risks than single men. The study's findings signalled the impact of gender on investment decisions is more complex than prior researches implied. The study only focused on studying individuals in the U.S., however, who may not represent other individuals from different markets. Overall, Sunden and Surette's (1998) findings are similar to those of Sung and Hanna (1996), with both confirming that single women are less risk tolerant than single men.

Sung and Hanna (1996) also examined the influence of demographic factors on the risk tolerance level of households, by using logistic regression to analyse the responses in the 1992 Survey of Consumer Finances. Although the results indicated that single women are less risk tolerant than single men or married couples, it did not take into account the main reasons behind these low risk tolerance levels, which may be related to their confidence or financial literacy levels.

Over all, most of the studies conducted prior the late 1990s revealed important suggestions about women's investment strategies in their retirement and the allocation of their pension funds. Further, they indicated a linkage between the risk tolerance level and demographic factors, mainly gender. Nonetheless, they rarely explained the reasons behind gender differences in financial decision-making. Moreover, the findings only focused on the relation

between gender and financial risk level. More recent studies have therefore examined the gender differences in investment behaviour, particularly in regards to their risk tolerance, investment confidence or financial literacy levels using samples from the U.S. and/or other foreign markets. The following sections discuss the relevant literature on gender differences in financial risk tolerance, confidence and investment literacy levels, along with their relationship to stock market participation.

3.4 Gender differences in financial risk tolerance levels:

The common stereotype argues that women are more risk averse than men in every aspect including investment, which leads them to make different decisions and choices than men. In regards to investment, women often choose safe investment due to their risk averse behaviours.

In the recent decade, a large body of studies in the behavioural finance field has investigated gender differences in risk preferences when trading stocks empirically in the U.S. and in foreign stock markets. Powell and Ansic (1997) investigated gender differences in risk behaviour when making financial and investment decisions. To minimize the effect of methodological problems, the researchers used a computerized experimental approach entailing presenting participants with a series of real financial decisions, based on real financial data, rather than a simple monetary lottery experimental approach. They applied two new experiments that investigate the influence of familiarity (knowledge), cost, ambiguity, and framing as factors informing financial risk preference. The results suggested the presence of gender differences in risk attitude, with women being less risk seeking than men regardless of familiarity, cost, ambiguity and framing. Moreover, men and women used different strategies when making financial decisions, although these strategies have no important effect on their ability to perform. The study concluded that women, on average, are more risk averse

than men. The study extended the existing literature by using real financial data in their two experiments to study gender differences and financial risk preferences. Powell and Ansic (1997) did not, however, focus on investigating how gender differences in financial risk behaviour affect investment decisions and portfolio allocation. Such an investigation needed further research.

Jianakoplos and Bernasek (1998) also indicated gender differences in risk preferences, this time in respect to portfolio allocation. In regards to marital status and risk tolerance level, Sunden and Surette (1998) used a large set of data from the Survey of Consumer Finances (SCF) to study gender differences in investment behaviour among single men, single women and married couples. In addition, the researchers emphasized the division of wealth between risky and risk-free assets to investigate household holdings of risky assets and to verify gender differences in financial risk taking. The results reported that single women are relatively more risk averse than single men when making financial decisions. Moreover, single women invest a smaller percentage of their wealth in risky assets, confirming the work of Bernasek and Shwiff (2001). The results also argued that factors such as age, race and children affect gender differences in financial risk taking. The study concluded that due to women's lower level of wealth compared to men, they are more risk averse investors.

A possible limitation in both the studies of Jianakoplos and Bernasek (1998) and Sunden and Surette (1998), is their higher concentration on the investment decisions of single men and women rather than investment decisions of married couples. In addition, Jianakoplos and Bernasek (1998) focused only on examining single women's risk taking behaviours, which cannot be generalized to all women. Also, in respect to married couples, neither study specified who was mainly responsible for making the investment decisions (Croson and Gneezy, 2009). To overcome this issue, Bernasek and Shwiff (2001) revealed specific

information about married couples' investment decision-making process and indicated the gender of the household's financial decision-maker.

Bernasek and Shwiff (2001) examined gender differences in risk aversion and investment decision making for universities' faculty staff. Due to the large number of individuals who allocate most of their retirement savings in less risky assets with lower expected returns, the researchers used Tobit⁶ model estimation to evaluate the influence of gender in financial risk taking. After analysing the survey on the faculty staff pension investments, the findings confirmed that women are more risk averse than men when it comes to investing, but these results do not specifically indicate the reasons behind women's risk aversion, which may be due to their lower confidence and investment literacy levels. Moreover, the methodology used in the study, which was also used by Jianakoplos and Bernasek (1998), does not specifically consider possible bias in the sample selection. This kind of bias exists when individuals decide to hold risky assets and decide the amount of these assets, where they are correlated via observed or unobserved common factors (Badunenko et al., 2010).

To overcome this problem, Badunenko et al. (2010) applied a sample selection regression model using a Heckman two-stage estimation procedure (risk measurement approach) to examine the role of gender in financial risk taking. The researchers explored whether gender can be a good predictor of the tendency for risk taking in two types of portfolio decisions: allocation decisions and ownership decisions. The applied approach assisted the researches to focus equally on two different risk-taking features (the decision to buy risky assets and what amount of wealth should be allocated in these risky assets), thus allowing them to achieve more accurate results. The outcome suggested that women take fewer financial risks than men, although the influence of gender on the actual risk taking differs across countries and

⁶ The Tobit model uses all observations to estimate the regression line (McDonald and Moffitt, 1980)

also financial decision types. In general, gender differences in risk taking are based on the level of gender equality in a specific society or culture. Women in a society that have high inequality, invest less in risky assets than men, even if both are willing to take equal financial risks. The results emphasized that culture can play a major role in shaping the financial behaviour of individuals and therefore cannot be ignored when examining the overall investment behaviour of men and women using theoretical or experimental approaches.

Several existing scholars use experimental approaches to measure the risk taking behaviour with actual money at stake, to investigate gender differences in financial risk preferences in hypothetical lotteries. The findings of the experimental studies indicate significant gender differences in risk aversion, with women being more risk averse than men (see Hartog et al., 2002; Duda et al., 2004; Fehr-Duda et al., 2006; Fellner and Maciejovsky, 2007; Eckel and Grossman, 2008). More specifically, a number of the experimental studies showed that women's higher risk aversion behaviour is due to their pessimism about gain domain (Fehr-Duda et al., 2006).

Fellner and Maciejovsky (2007) applied an experimental study to examine the relationship between individual risk attitude, measured by binary lotteries and certainty equivalents, and market behaviour. After analysing 26 independent markets and 280 participants, the results specified a systematic correlation between risk attitudes and gender, with women being more risk averse than men, preferring to invest in less volatile investments, trade less often, and submit fewer bid and ask offers in the market than men. Although the findings reveal important elements of the effect of women's risk aversion on their trading behaviour, they do not specifically indicate the effect of women risk aversion behaviour on the aggregate performance of the stock market. This will be investigated further in this study.

Overall, various researchers (see Hartog et al., 2002 and Fellner and Maciejovsky, 2007) have used experimental studies to provide an incentive compatible measure of individuals' attitudes. A disadvantage of this method, however, is its difficulty and high cost when attempting it with a large sample, and this tends to prevent studies at a large scale (Dohmen et al., 2011). Accordingly, other studies use large-scale survey questions as a technique to examine gender differences in risk preferences. The subjective survey question is considered a reliable measure of risk attitude in that it forecasts real risk-taking behaviour in the experiment, even after controlling for various observable characteristics (Bertrand, 2011). It is important to note that, although the existing studies examining gender differences in financial risk behaviour may use different approaches and methods, they still all conclude that women are more risk-averse investors than men.

In addition, large numbers of empirical studies confirm that women choose less risky investments, but still earn higher returns on their financial investments relative to men (McDonald, 1997; Kahn, 1996). Most of these studies, however, do not take into account the investment decisions across gender types while controlling for potential gender differences in knowledge. Accordingly, Dwyer et al. (2002) measured the risk-taking behaviour of men and women investing in mutual funds, while controlling for investors' specific investment knowledge. Using a U.S. national survey of 2000 randomly selected mutual fund investors, the results documented that gender differences in risk taking among mutual fund investors are in part due to the systematic differences in the financial and investment knowledge between men and women. Additionally, women take fewer risks than men in their mutual fund investment decisions, even when controlling for financial/investment knowledge, although the effect of gender on risk taking declines when investors' financial/investment knowledge is controlled for in the regression equation. The different level of financial /investment knowledge between gender types might partially explain the greater extent of women's risk

aversion in investment. Accordingly, educational investment programmes targeted specifically to women are essential to improve their knowledge. Although Dwyer et al. (2002) linked women's risk aversion with their investment knowledge, they did not focus on examining how women's knowledge can affect their participation in the stock market itself. This study seeks to fill this gap.

Overall, various studies from the U.S. mostly confirm women's risk aversion compared to men, using different approaches and methods, and this picture is further confirmed by other studies in foreign stock markets. For example, Dohmen et al. (2011) studied the relationship between the eliciting of risk preferences and how well these predict individuals' behaviour using a large survey data and field experiment on the German population. The researchers used a simple survey to examine people's willingness to take risk. The results argued that gender, age and parental background have a quantitatively significant influence on individuals' willingness to take financial risk, and that women are more risk averse than men when making investment decisions.

Generally, several studies (such as Dwyer et al., 2002 and Dohmen et al., 2011) have used survey methods on account of their simplicity. Moreover, the statistics given by this method allow researchers to study the determinants of risk attitude in detail. Due to their simplicity, however, this method is not incentive compatible. There is a strong empirical evidence to show the importance of incentive compatibility in risk elicitation (see Holt and Laury, 2002). When using survey questions, therefore, researchers must be aware of the trade-off between the method's simplicity and the probability of irrelevantly expressed risk preferences (Charness et al., 2013). When designing the survey's questions, researchers may be influenced by their own thoughts and assumptions as to what is and is not important, so they may direct their respondents to answer in a way that supports their own prior assumptions.

Although the survey method may have some disadvantages, it is widely used by researchers in the area of gender differences in investment behaviour.

Resuming the journey of exploring gender differences in risk attitude, many academic researchers have expanded their research to examine whether gender differences in risk-taking behaviour vary across societies and cultures. Most of these studies' findings confirm that women exhibit higher risk aversion and, interestingly, find no changes in gender differences in risk-taking among cultures (Finucane et al., 2000; Thomas and Mueller, 2000). Such studies provide support to the idea that gender differences in risk attitude are caused by evolution (nature/biological) not by socialization (culture) (Croson and Gneezy, 2009).

Overall, the experimental and survey studies exploring gender differences in financial risk behaviour document that women are more risk averse investors than men. Further, individuals with higher financial knowledge tend to take greater risk (Ricciardi, 2008). Although, some studies indicate no differences in risk attitude between men and women (such as Sunden and Surette, 1998; Kruse and Thompson, 2003; Demaree et al., 2006; Carr and Steele, 2010), the majority of the existing literature does indicate gender differences in risk tolerance levels, and accordingly in investment behaviours. Since men are more risk takers than women, they become overconfident about their abilities, especially in perceived masculine tasks (Beyer and Bowden, 1997), such as investment. Gender differences in risk attitude can therefore be related to confidence level, where overconfidence may lead to more risk taking, where more risk taking may lead to aggressive trading and thus cause negative impact.

3.5 Gender differences and overconfidence:

In the behavioural finance literature, arguments on gender differences and risk preferences are often accompanied by arguments on gender differences and overconfident behaviour, with gender being seen as the most important explanatory factor affecting confidence in investment

decisions (Estes and Hosseini, 1988).

According to the existing findings, men take more risks than women due to their overconfidence about their own financial knowledge and investment abilities, causing them to trade stocks more often (see Barber and Odean, 2001; Graham et al., 2002; Christiansen et al., 2009). Overconfidence is a bias behaviour that causes individuals to distinguish themselves as more competent investors who are willing to behave based on their own beliefs (Graham et al., 2009). Additionally, overconfident investors, mainly men, trade more often (Barber and Odean, 2001; Grinblatt and Keloharju, 2009) and thus perform worse than women (Agnew et al. 2003).

In their most popular study on gender differences and overconfidence, Barber and Odean (2001) compared the investment performance of men and women in the U.S. stock market from 1991 through to 1997. By dividing investors on a gender basis, the researchers also tested the theoretical models that assume that overconfident investors tend to trade excessively but to their detriment. The study focused on the net returns of men and women rather than the cross-sectional performance. The researchers statistically examined the account data for over 35,000 households (men and women) from a large brokerage firm, along with analysing more demographic data (such as age, marital status, income and amount of income invested in stocks) to achieve better and more accurate results.

The study's findings revealed that men trade 45% more than women due to their overconfidence, with annual turnover rates of 80%, while those of women are 50%. This result is consistent with the theoretical models that predict that overconfident investors trade excessively. Since men are more overconfident investors, their investment portfolios suffer more than women because they take quick irrational investment decisions with higher risk. Additionally, women hold less volatile portfolios than men due to their less frequent trading

activities. As a result, women outperform men by 1% annually on a risk-adjusted basis. Finally, single men trade 67% more than single women and reduce their returns by 1.44% every year compared to single women. The study concluded that due to their overconfidence; men trade more, make more irrational investment choices than women, hurt their returns, run up transaction costs, and increase the volatility of stocks.

Overall, Barber and Odean's (2001) important findings support the behavioural finance theory and extend the existing literature to include gender differences and overconfident behaviour. Although the researchers discussed various explanations for the gender-based difference in trading performance, they did not take into account other important aspects related to gender investment behaviour, especially the financial literacy level. In addition, the researchers did not take into consideration the significant effect of important demographic data on gendered trading behaviour and performance, such as the presence of children in a household or household income (Bishop, 2011). Such data may generate more detailed and accurate analysis on gender differences in investment behaviour. Moreover, the scholars did not specifically investigate the effect of women investors on stock market performance. Investigating the relationship between women investors and the stock market performance is important in order to recognize how more rational, better earning, lower risk taking and less overconfident investors may affect that performance. This study, therefore, is the first to examine the impact of women investors on stock market performance using Arab women investors as its sample.

Graham et al. (2002) continued to investigate gender differences in investment behaviour in regards to risk tolerance and confidence levels. The study's results documented that women are less risky and less confident investors than men, which is consistent with the existing literature. They indicated, however, that gender differences in information processing (mainly

investors' perceptions of risk) affect their investment practices, causing lower risk-taking and the lower confidence level tendencies among women. The researchers concluded that women are more comprehensive information processors of all available signals relative to men, and so they trade less. Overall, various existing studies conclude that women take fewer risks and are less confident investors than men, using one country as their sample.

Other studies building on the existing literature find similar results but using more than one country as their sample. Thus, Jacobsen et al. (2008) tested gender differences in investment confidence level in eighteen countries. Their results indicated that there are strong gender differences in investment confidence for the selected countries including the U.S. They also documented that men are more optimistic about their future financial performance, and are willing to take more risks in the stock markets than women, due to their overconfidence. This explains why women hold less risky portfolios and trade less than men. Their findings confirm that women from various markets still behave similarly when investing.

Generally, a large numbers of experimental and survey studies have investigated the relationship between gender differences and overconfident behaviour, but this research has mainly been conducted in developed markets. In contrast, there is less research exploring this relationship in emerging markets (Kuo et al., 2007), especially in the MENA region.⁷ From Tunisia, Zoghalmi and Matoussi (2009) investigated individual behaviour and overconfidence when investing. To achieve their aim, the researchers used questionnaire distributed to random individual investors trading in the Tunisian stock exchange. Their findings also indicated that individual investors in Tunisia generally suffer from overconfidence bias, especially when beating the market. Moreover, women tend to lack confidence when investing, and therefore men trade more than women but perform less well. Their findings

⁷ Middle East and North Africa region

also argued that age and income are not related to self-confidence level when investing. The study's findings are consistent with the existing findings conducted in other developed and emerging markets. More importantly, the study's findings hint that gender differences in investment confidence levels are mainly due to nature (biological sex) more than culture. The researchers did not take into account the influence of religion on the investment behaviour of individual investors and their confidence levels, however. Since religion is an important factor in the Arab region and one that may affect investment behaviours, this study examines the effect of religion on the investment behaviours of Arab women.

To sum up, the empirical evidence from various markets signifies gender differences in financial risk and confidence levels, with women investors having lower financial risk tolerance and confidence levels than men.

3.6 Gender differences and financial/investment literacy level:

One explanation for the differences in financial and confidence levels may be the gender differences in financial/investment literacy levels. In recent years, individuals have become increasingly independently and directly responsible for managing their financial well-being, including their pension accounts (Lusardi and Mitchell, 2007). To manage their well-being, men and women should have financial literacy and investment knowledge, and low financial literacy may cause men and women investors to manage their investments poorly (Jappelli, 2010). In general, risk averse (mainly women), older, lower income, and lower educated individual investors tend to be less financially sophisticated. Accordingly, they hold less diversified portfolios because lack of portfolio diversification is mainly due to lack of financial literacy (Guiso and Jappelli, 2008). Since financial/investment literacy is essential for men and women investors, several researchers have examined this to show that financial

illiteracy is widespread among individuals, especially women, thereby raising significant concerns for women's future financial positions.

Moreover, financial illiteracy may cause women to be more risk averse with low confidence when investing. In their study, Lusardi and Mitchell (2007) emphasized that risk aversion is more prominent in women investors due to their limited financial and investment knowledge. Additionally, Lusardi and Mitchell (2008) and Bucher-Koenen et al. (2012) found women to be less financially literate than men, especially young women, leading them to plan less successfully for their retirements. Although the researchers indicated women's lower financial knowledge to men, they did not explore specifically how women's limited financial literacy levels affect their trading behaviours. This study therefore explores this effect using Arab women as its sample.

Using students as their sample, Chen and Volpe (1998) examined the investment literacy level among individuals. The researchers analysed the impact of literacy on students' own views and decisions. The findings revealed students to have little financial knowledge. Females, non-business majors, students in the lower class ranks, students under the age 30, and students with limited work experience are less financially knowledgeable than other students. As a result of their limited financial knowledge, students generally tend to make incorrect decisions that hurt their financial positions. The study's conclusion indicated that women are less investment literate than men. Clearly, however, this conclusion is based on specific sample, which probably does not represent all women, especially professional or experienced women investors.

To diversify the investigation, Volpe et al. (2002) examined the investment literacy of 350 investors, surveyed online, and analysed the association between literacy and online investors' other characteristics. The researchers used a 15-minute online survey, seeking to strike a

balance between the investment issues to be covered in the survey and the time participants were willing to spend answering its questions. Using ANOVA as the analysis method, the results showed that older investors (50 years of age or older) are more investment knowledgeable than younger investors. Additionally, women are less investment knowledgeable than men. Furthermore, investors with higher educational qualifications are more knowledgeable in investment concepts than those with lower educational qualifications. Finally, investors who trade online are more knowledgeable and perform better than those who trade physically. The study findings confirmed that investment knowledge has a positive relationship with education and age but did not directly indicate the reasons behind that. Furthermore, the researchers did not specifically indicate the reasons behind these gender differences in financial literacy. Overall, the findings from the U.S. market mainly report that women are less financially literate than men.

Building on this work in the U.S., Worthington (2006) used the 2003 Survey of Adult Financial Literacy to predict the level of financial literacy of individuals in Australia, examining several demographic factors (gender, age, ethnicity, occupation, education and income). The results showed that older individuals (mainly between 50 and 60 years), professionals, business owners and university graduates have the highest financial literacy compared to others in the study sample. In contrast, women, unemployed, non-university graduates, and those with a non-English speaking background have the lowest financial literacy. The results confirmed that demographic factors do influence financial literacy levels. Similarly, Bucher-Koenen et al. (2014) found a large gender gap in financial literacy levels across countries, particularly in the U.S., Germany and the Netherlands. Their findings also showed that both old and young women are less financially literate. Such findings highlight that although women may come from various cultures with different professional and academic backgrounds, they still have lower financial/investment literacy levels compared to

men. The study did not take into consideration any of the emerging markets, however, to test whether the gender differences in financial literacy are similar to those in developed markets.

Similarly, Almenberg and Dreber (2015) investigated the association between the level of financial literacy (basic and advanced) and the gender gap in stock market participations. The researchers used survey data from a random sample of 1,300 individuals from Sweden. They distinguished between basic financial literacy, a measure of numeracy, that does not require knowledge about stock investments, and advanced financial literacy that requires knowledge about the stock market and its investment techniques. The findings indicated that women investors participate less in the stock market due to their lower basic and advanced financial literacy levels. Additionally, women are significantly less risk tolerant investors, which cause them to participate less in the stock market than men investors. The study concluded that basic financial literacy can probably explain a large part of women's lower participations in the stock market.

Using data from the Arab region, Hassan and Bin Kalli (2009) examined the financial literacy of individuals investing in the local financial markets in the United Arab Emirates (UAE) using modified questionnaires. The findings revealed that the financial literacy of UAE investors (which is affected by income level, educational level and professional activity) is very low and far from the required level. Investors with high income, education and profession (mainly in finance and banking sector) have the highest literacy level among the participants, which is consistent with findings from developed countries. Regarding gender, the results argued that women have significantly less financial literacy than men. Additionally, there is a significant relationship between financial literacy and investment decisions.

Similarly, Mian (2014) examined the effect of various demographic factors (such as gender, age, educational level and current working status) on the level of financial literacy among Saudi investors, where the financial literacy is measured in reference to retirement planning and stock market participation. The findings confirmed that men are more financially literate than women, and also that older individuals are more financially literate than younger individuals. In contrast, education and current working situations have no impact on financial literacy. The findings also indicate that higher financial literacy levels lead individuals to participate more in retirement planning and stock market. Although the findings confirm women's lower financial literacy levels compared to men, they do not link women's low financial literacy levels to their confidence and risk tolerance levels. More specifically, Heshmat (2012) studied the major factors that influence Saudi female college students. The findings showed that these students might participate more in the stock market if they have a higher level of financial literacy. The low participation of Saudi female students is therefore due to their limited financial knowledge.

Although the literature discussed in this section focuses on examining the financial and investment literacy levels of individuals, but does not directly specify the reasons behind the differences identified in these levels. Moreover, most of the studies show that women are less financially knowledgeable than men, but rarely indicate the consequences of women's limited financial knowledge on their trading behaviour, although some studies do indicate that women shy away from participating in the stock market due to their low investment knowledge (van Rooij et al., 2011; Main, 2014; Almenberg and Dreber, 2015). Overall, various existing studies examine financial literacy levels in relation to demographic factors but not in relation to confidence and risk tolerance levels. Financial literacy levels may affect confidence and risk tolerance levels and thus affect stock market participation.

3. 7. Gender Differences and stock market participation:

The differences in risk aversion, confidence, and financial literacy affect the trading strategies of men and women. Due to their higher risk tolerance levels (Croson and Gneezy, 2009), overconfident behaviour (Odean, 1998b; Barber and Odean, 2001), higher financial knowledge (van Rooij et al. 2011; Almenberg and Dreber, 2015) and higher numeracy (Almenberg and Dreber, 2015), men tend to trade stocks more than women, but this increased level of trading is correlated with lower returns (Benos, 1998; Odean, 1998b; Gervais and Odean, 2001).

In their study of the systematic gender differences in financial investments, Christiansen et al. (2009) showed that 27% of men hold stocks versus 23% of women, and the value of the average stock holdings of men is 21% higher than that of women. Furthermore, the average stock holdings of married men are 170% higher than married women. Overall, men trade stocks more than women due to their overconfident behaviour. Halko et al. (2012) studied the relationship between gender and stock portfolio holdings in Finland, a country known for its gender equality. When analysing information collected on the risk attitudes of various investors, women were revealed to be less willing to take risks than men and to invest less in stocks. Similarly, Feng and Seasholes (2008) examined gendered investment behaviours in China. Their results also confirmed that men trade stocks more heavily than women, have larger average portfolios, and place slightly larger trades than women, due to their overconfident behaviour. The study's results are consistent with those conducted on Western investors.

Overall, gender plays a major role in the stock market. Men tend to behave differently than women when it comes to investment decision making and trading activities. Currently, there is very limited literature that focuses on analysing women's investment behaviours and

preferences, although they are worth studying. Women's investment behaviours (such as the right mixture of caution, a long-term investment strategy, and the ability to learn from their own mistakes (Muller, 2007)) help them take more rational investment decisions, hold more diversified portfolios, and earn better returns than men. Consequently, women's rational behaviours may stabilize the stock market volatility caused by the irrational behaviours of men, and thus have a positive association with stock market performance. Overall, women investors and their association with stock market performance cannot be neglected. Hence, Table (3.1) summarises the main authors and their key findings (discussed in chapters two and three) in the field of behavioural finance and specifically in the area of gender differences in investment behaviours.

Table 3.1 Summary of the main authors and their key findings/contributions

Authors' names	Key findings and contributions
Fama (1965, 1970) and Samuelson (1965)	- Established the same basic ideas of market efficiency, where market prices fully reflect all available information. Fama (1970) stated that financial markets are efficient and average investors cannot frequently beat the market.
Kahneman and Tversky (1979)	- Introduced a theory of loss aversion known as Prospect theory, where investors are risk averse to gains and risk seeker to losses, where decisions are framed around reference point.
Richard Thaler (1985)	- Developed descriptive model (mixed of psychology, finance and economics concepts) indicating psychological theories can explain investor irrationality.
Oslen (1998)	- Developed a model to understand systematic behaviour, which assist investors to make more accurate investment decisions.

Odean (1998a)	- Developed theoretical statistical model of financial markets where investors suffer from overconfidence behaviour, which causes excess trading volume.
Barber and Odean (2000)	- Revealed that overconfidence investors trade more frequently and cause to earn less than average returns
Grinblatt et. al (1995)	- Indicated that majority of institutional investors (in contrast to individual investors) are momentum investors and follow herding behaviour.
Badrinath and Wahal (2003)	- Indicated institutional investors are momentum traders when buying stocks and contrarian traders when selling stocks.
Choe et.al (1999); Ng and Wu (2005)	- Revealed institutional investors are momentum traders and individual investors are contrarian traders in Korea and China respectively.
Barber et.al (2009)	- Individual investors, in the Taiwanese stock market lose when trading due to their aggressive orders, while all institutional types win
Odean (1998a)	- Revealed that individual investors exhibit disposition effects and trade heavily due to their overconfident behaviour.
Odean (1998a,1999); Barber and Odean (2000)	- Concluded that individual investors in the U.S.A. behave irrationally and follow unsophisticated trading strategies. They trade heavily and this lowers their returns.
Haddad and Hakim (2008); Al- Najjar (2013).	- Indicated that individuals in Saudi Arabia exhibit irrational behaviour biases (as overconfidence and disposition effect).
Alrabadi et al. (2011); Al-Horani and Haddad (2011)	- Showed that Jordanian investors are irrational and overconfident investors.

<p>Brimble et al. (2010)</p> <p>Tahir and Brimble (2011)</p>	<p>- Showed that Islam affects investors' decision-makings, where investors with Islamic faith try to avoid stocks that do not comply with Islamic law.</p> <p>- Indicated that the degree of which Islam affects Muslim investors is mainly due to the degree of individual's religiosity.</p>
<p>Christie and Huang (1995); Barber, Odean and Zhu (1995).</p> <p>Balcilar et al. (2013)</p>	<p>- Showed that individual investors herd when trading stocks.</p> <p>- Revealed the presence of herding behaviour in all Gulf stock markets among retail investors (the dominant investors on those markets)</p>
<p>Powell and Ansic (1997); Jianakoplos and Bernasek (1998); Badunenko et al. (2010).</p>	<p>- Indicated gender differences in risk preferences, where women take fewer financial risks than men.</p>
<p>Sunden and Surette (1998)</p>	<p>- Revealed that single women are more risk averse than single men when taking financial decisions.</p>
<p>Fehr-Duda et al. (2006); Eckel and Grossman (2008).</p> <p>Dwyer et al. (2002)</p> <p>Croson and Grenzy (2009)</p>	<p>- Showed (using experimental methods) significant gender differences in risk aversion, with women being more risk averse than men.</p> <p>- Indicated (using survey methods) women take less financial risk than men and that might be due to their lower investment knowledge. Thus, educational investment programmes targeted for women are essential.</p> <p>- Supported the idea that gender differences in risk attitude are caused by evolution (biological) not by socialization (culture)</p>

Barber and Odean (2001)	- Indicated men trade 45% more than women due to their overconfidence behaviours, where their portfolios suffer more than women due to their quick irrational trading with higher risk.
Grahman et al. (2002)	- Revealed that women are less risky and less confident investors than men.
Zoghلامي and Matoussi (2009)	- Documented that individual investors in Tunisia suffer from overconfidence bias, where women tend to lack confidence when investing.
Lusardi and Mitchell (2008); Bucher-Koenen et al. (2012)	- Found women are less financial literate than men, especially young women, leading them to plan less successfully for their retirements.
Almenber and Dreber (2015)	- Indicated that women participate less in the stock market due to their lower basic and advanced financial literacy levels.
Hassan and Bin Kahlli (2009); Main (2014)	- Showed women have less financial literacy than men in UAE and Saudi Arabia respectively.

3.8 Gaps in the literature:

The existing studies investigate the investment behaviour of women, mainly Western women, for the purpose of gender comparison. They barely explore the main barriers that limit women's participation in the stock market along with the main motive factors that increase their participation. Furthermore, most of the existing literature examines gender differences in investment behaviours (in regards to their risk tolerance, confidence and investment literacy levels) independently; rather than the combined effect of these factors on the investment behaviour of both genders. More importantly, no studies have examined the relationship between women investors and the aggregate performance of the stock market in developed or emerging markets. Overall, women's role in the stock market and their relationship with its performance are under-researched. While there is very scant evidence on the role of women investors in developed markets, there is virtually no literature that addresses women's investment behaviours and their relationship with stock market performance in the Arab Region.

To the best of the researcher's knowledge, therefore, there is no research to date that specifically investigates Arab women's investment behaviour (in regards to their herding behaviour, risk tolerance, confidence and investment literacy levels, along with the effect of religion) relative to Arab men and in tandem with their investment barriers and motives. Moreover, Arab women investors and their correlation with stock market performance are completely ignored, possibly due to:

- Cultural and religion sensitivities, in that both affect the financial structure of the region. Cultural barriers in the region, such as gender inequality, may be an essential reason for neglecting Arab women investors.

- Data collection complexities, in that there are a lack of statistical data (Zamberi, 2011). Generally, there are obstacles in obtaining sufficient data on stock markets and investors in the Arab region.

Women in the Arab region are currently wealthier, more educated, more financially independent and a more powerful force to the region's prosperity than previous years. Their increased participation in the region's stock markets may, therefore, positively be associated with the performances of those markets. Since most of the wealth of Arab women is held in cash accounts rather than stocks (Williams, 2011), studying these women is important for the region's stock markets and its economy. Accordingly, this study mainly focuses on investigating the investment behaviours of Arab women, along with the investment barriers and motives. More crucial, it focuses on investigating the correlation between Arab women investors and the regions' stock markets (using the Saudi and Jordanian stock markets as examples).

3.9. Summary and conclusion:

Researchers in the field of behavioural finance perceive gender to be one of the most important demographic factors in explaining individual investors' trading behaviours. This chapter has reviewed extensive studies from this literature to provide a better understanding of the trading behaviour of men and women and to identify the gaps in that literature.

It is found that gender influences the investment behaviour of individuals differently. Women are more risk-averse (Agnew et al., 2003; Yilmazer and Lyons, 2010), less financially literate (Lusardi and Mitchell, 2007) and less confident (Barber and Odean, 2001) than men, even after controlling for the effects of other intervening demographic variables (such as age, education and wealth).

The literature based on behavioural finance theory, associated with the literature on gender differences in investment behaviours, present a wide-ranging source of empirical evidence, which aids the researcher to identify the gaps in current knowledge. The discussed literature also provides the initial reference base for the development of the study's main eight hypotheses and its two conceptual frameworks, which are presented in great depth in the following chapter. The developments of the study's hypotheses and frameworks aim to fill the gap in the existing literature on gender differences in investment behaviours, by addressing the investment behaviour of Arab women relative to Arab men, and their association with the stock market performance. Hence, the following chapter is built towards addressing the study's core aim and major objectives.

To conclude, this chapter contributes by highlighting the importance of studying the correlation between women investors and stock market performance and provides a motivation for examining this relationship in both developed and emerging markets.

Chapter Four: Research Hypotheses and Conceptual Framework

4.1 Introduction:

The aim of this chapter is to construct the study's main hypotheses and its two conceptual frameworks to meet its major objectives and fill the gap in the literature. The researcher develops the study's hypothesis and frameworks, depending mainly on the existing literature on gender differences in investment behaviour in the capital markets, as discussed in the previous chapter, along with the study's main objectives.

In this chapter, the researcher develops the eight main hypotheses that describe the investment behaviours of Arab women (in regards to the study's five independent variables), and their association with stock market performance. In addition, the researcher presents the process used to develop the study's two main frameworks (basic and extended), which gives a clear path as to what is being examined (Leshem and Trafford, 2007). The aims of the study's conceptual frameworks are to test the combined effect of the five main independent variables (herding behaviour, risk tolerance, confidence, investment literacy levels and the effect of religion) on the investment behaviour of Arab women; and to determine how this investment behaviour, along with investment barriers, affect Arab women's participation in the stock market. Additionally, the intention is to provide suggestions as to how increased participation of women investors might be associated with the performance of the stock market (the dependent variable). Hence, the two frameworks incorporate all the relationships between the study's variables in a dynamic way, where the interactions between these variables are based on the existing literature and the study's objectives.

Overall, the researcher develops the study's first six hypotheses that together comprise the basic framework; followed by developing the last two hypotheses (hypotheses 7 and 8). With all eight hypotheses comprised, then, the extended framework is emerged. Hence, the study's two frameworks can be used, with adjustments, by other researchers to examine the investment behaviours of women and their association with stock market performance in various markets.

4.2 The study's selected variables

In regards to the study's independent variables, most are selected because various existing studies have used them separately to investigate their effects on the investment behaviour of men and women in different markets. Thus, these variables were used to extend the existing literature by including Arab women investors. To illustrate, the three main independent variables (risk tolerance, confidence and investment literacy levels) were selected due to their direct effect on the investment behaviour of men and women, along with their direct impact on the participations of men and women in the stock market. Various researchers have used these three variables separately to examine the investment and trading behaviours of men and women investors and identify the differences between them (see Daniel et al., 1998; Barber and Odean, 2001; Dorn and Huberman, 2005; Philip, 2007; Grinblatt and Keloharju, 2009). To build upon the existing literature, however, this study used the three independent variables together to investigate their combined effect on Arab women investment behaviours and to explore their influence on Arab women's limited participation in the stock market.

Along with the three major variables, two additional variables (social influence and religion) are used in this study due to their probable influential effect on Arab women investment behaviours. To illustrate, since religion plays a vital role in Arab women's lives and decision-making, so it might also have influence on their investment behaviours. Thus, religion is an

important variable to use when examining Arab women's investment behaviours. Furthermore, there is very scant literature on the effect of religion on the investment behaviours of women, so this study contributes to the literature by testing the effect of religion on Arab women's investment behaviours, in tandem with the study's other four variables. In regards to the herding behaviour variable, Arab women are generally influenced by the opinions of others, especially family members, due probably to cultural factors. Thus, the researcher wants to examine whether Arab women are influenced by others, especially family members or financial advisors, which lead them to exhibit stronger herding behaviour than Arab men when trading stocks. Additionally, although there is limited literature examining gender differences in herding behaviours in developed markets, there is none at all in respect to the Arab region. Accordingly, this study explores these differences in herding behaviour when investing. Overall, the five independent variables are tied together to test the study's hypothesis, meet its objectives, and build its two conceptual frameworks, while also filling the gap in the existing literature.

4.3 Hypothesis Development-Basic research model:

Overall, the existing literature investigating the investment behaviour of men and women finds strong evidence of gender differences in risk taking (Croson and Gineezzy, 2009), confidence levels (Barber and Odean, 2001) and financial/ investment literacy (Fonseca et al., 2012). The empirical evidence also argues that other demographic factors (such as age, education and wealth) affect the investment behaviour of men and women (see Zissimopoulos et al., 2008; Lin, 2011; Das and Jain, 2014).

4.3.1 Demographic factors and women's investment behaviour

Demographic factors act as key drivers for individuals' investment behaviours (Shaikh and Kalkundrikar, 2011; Jain and Mandot, 2012; Jamshidinaid et al., 2012; Das and Jain, 2014;

Nguyen, 2014). These factors influence the investment behaviour of both women and men, mainly in regards to their risk tolerance, confidence, and investment literacy levels. For instance, Fares and Khamis (2011) found that demographic factors (mainly age and education) are among the most important factors having a positive effect on Jordanian investors' trading decisions. More specifically, Grable and Lytton (1998) indicated a strong correlation between demographic factors and financial risk tolerance levels. Likewise, Kiran and Rao, (2005) found that the risk tolerance level of an individual investor is strongly dependent on demographic and psychographic factors.

Over the years, several studies have explored the effect of particular demographic factors on individuals' risk tolerance, confidence and investment literacy levels. Wallach and Kogan (1961) (cited in Grable, 1997) argued that younger individuals are more risk tolerant than older individuals. Their findings motivated other researchers to study the relationship between age and financial risk behaviour. For example, Brown (1990) showed that portfolio composition tends to be age dependent. Older individuals are risk averse in their portfolio selections; while mid and younger aged individuals are more risk tolerant in their portfolio choices. Similarly, Palsson (1996) found a linkage between risk tolerance and age, with decreasing risk tolerance being correlated with increasing age. Brinig (1995) showed that when gender is associated with age, it becomes a significant predictor of risk-taking behaviour. Similarly, other studies (Finke and Huston, 2003; Jianakoplos and Bernasek, 2006; Hira et al., 2007) also confirmed that age is negatively associated with risk tolerance levels, i.e. risk tolerance decreases with age. In contrast, other studies, such as those of Wang and Hanna (1997) and Grable (2000), have indicated a negative relationship between age and risk aversion, where risk aversion decreases as people aged, if other demographic variables are held constant. Young individuals might appear more risk averse due to the difficulty of engaging in risky investments with limited financial resources.

In addition to age, wealth/income are major demographic factors that have an impact on the investment behaviour of individuals, especially their risk tolerance levels. Existing studies (Grable, 2000; Hallahan et al., 2004) have indicated that wealth and income are significantly associated with individual investors' financial risk tolerance levels. As wealth increases, individuals' risk tolerance levels increase (Bernhsdeim et al., 2001) because wealthy and higher income investors can afford to incur more losses resulting from risky investments (Grable and Lytton, 1998; Watson and McNaughton, 2007) than less wealthy investors. Overall, accumulated wealth/income may be a reflection of individuals' level of risk tolerance and also their investment confidence (Hallahan et al., 2004). In regards to women investors, wealth/income levels probably affect their investment behaviours differently than men investors, since they have less wealth and earn less income compared to men (Fisher, 2010)

Education is another demographic factor that is associated with individuals' investment behaviours, especially their investment literacy and financial tolerance levels. Several studies (see Volpe et al., 2002; Beal and Delpachitra, 2003) have revealed that the financial and investment literacy levels of individual investors are associated with level of income and level of education, with higher levels of education and income associated with higher financial/investment literacy.

Furthermore, other studies have indicated that investors with higher levels of education, especially financial education, are more risk tolerant than investors with a lower level of education (Al-Ajmi, 2008; Anbar and Eker, 2010). Similarly, Graham et al. (2009) also showed that higher educated wealthier investors take more risks due to their overconfidence in their investment abilities. On the contrary, Hallahan et al. (2003) found that educational level is not a significant factor in determining individual's risk tolerance level.

Overall, the majority of the empirical evidence indicates the effect of wealth and education on investment behaviours among men and women. To illustrate, women (including Arab women) are becoming wealthier (own about 22% of the region's wealth (Damisch et al., 2010)) and more educated, so wealth/income and education are probably associated with their investment behaviours. Therefore, income (an earned wealth) may be a major factor affecting Arab women investment behaviours. Additionally, education may also have an influence on the investment behaviours of Arab women due to their higher educational levels compared to their male counterparts. In Saudi Arabia, 52% of women attend universities compare to 48% of men (Davies, 2012). Accordingly, education may be an important factor in shaping the investment decisions of Arab women.

Based on the aforementioned arguments regarding demographic factors, the first main hypothesis of the study is:

H1: The investment behaviour of Arab women is associated with demographic factors (age, annual income and level of education).

H1.1: There are differences in the investment behaviour of Arab women from different age groups

H1.2: There are differences in the investment behaviour of Arab women from different annual Income groups

H1.3: There are differences in the investment behaviour of Arab women from different educational groups

4.3.2 Social factors (herding behaviour) and women's investment behaviour

Men and women differ in how influential and in how easily influenced they are. Men are more influential than women (Carli, 2001). Men and women tend to differ in many ways, which mainly due to the gender inequalities in society, however, where men are more likely to have high-status roles and power over women (Eagly, 1983; Carli, 1999) and so are considered more influential individuals. Women, on average, are more easily influenced by others in many aspects (such as in investment) and thus they are more willing to follow the ideas of others compared to men (Feingold, 1994). In the investment domain, the various existing studies that examine gender differences in investment behaviour do not take into account all the social complexity that influences human behaviours (Diouf and Hebb, 2016). Investing in financial assets may be considered to be a social activity, where people spend their leisure time discussing peoples' failure and success in financial investments. Such activity may lead them to follow other investors' actions. Thus, the investment behaviour of individuals is influenced by social factors (Shiller, 1984), such as herding behaviour.

In the investment field, individuals often exhibit herding behaviour (Barber et al. 2009b). Such behaviour exists when investors ignore their personal beliefs and start receiving opinions and emotions from other investors through social interaction (Redhead, 2008). This social interaction leads individual investors to herd, where they follow the behaviour of the majority more than following their own rational thinking (Sherif, 1966, cited in Lin, 2011; Bikhchandani and Sharma, 2000). Since herding behaviour influences individuals' investment decisions (Bikhchandani and Sharma, 2000), it may also affect stock price movements and thus investors' risk and returns characteristics (Tan et al. 2008). For instance, when investors are influenced by others' choices, they may herd towards inappropriate investment decisions that hurt all of them (Bikhchandani and Sharma, 2000).

Although herding behaviour is documented mainly for institutional investors, a few studies also document it for individual investors across different developed and emerging markets (Merli and Roger, 2013). Such studies are conducted in the U.S. (Barber et al., 2009), France (Merli and Roger, 2013), Germany (Dorn et al., 2008), China (Tan et al., 2008), Taiwan (Lin, 2011), the Gulf countries (Balcilar et al., 2013) and Saudi Arabia (Rahman, 2015). Moreover, some findings indicate that herding behaviour is more present among less confident individual investors (see Jamshidinavid et al., 2012) and, since women are less confident investors than men (Barber and Odean, 2001), they probably exhibit stronger herding behaviour. Regarding gender, the limited empirical findings show women investors tend to imitate other investors' actions when making investment decisions (Eagle and Carli, 1981; Lin, 2011).

Women in emerging countries may exhibit more herding behaviour than men. In his study, Choi (2013) confirmed that women investors may show stronger local herding behaviour compare to men in the Korean stock exchange because they are more likely to acquire new information from their neighbours than men do. In regards to the Arab region, women are most likely to be dependent on their families due to cultural and social values, and this may limit their ability to participate in the workforce (Markle, 2013) and in the stock market. When it comes to investing, Arab women may prefer to follow the advice of others, such as their husbands or financial advisors, and this is probably due to cultural factors and/or to their limited level of financial experience and knowledge. For instance, Saudi women mainly rely on their family members or financial brokers in managing their investments due to their very limited experience in stock trading (Naffee, 2014).

Based on the above arguments, the following hypothesis is proposed:

H2: The propensity for herding behaviour is greater among Arab women investors than Arab men investors.

4.3.3 The impact of religion on the investment behaviour of women

Various studies in the behavioural finance field have argued that cultural and religious factors affect individuals' economic and investment decisions (Chui et al., 2010; Guiso et al., 2006; Beugelsdijk and Frijns, 2010; Renneboog and Spaenjers, 2012). In general, people are influenced by their cultural and religious beliefs in many important aspects of their lives, including their financial decision-makings. According to Guiso et al. (2006) cultures are customs that social, religious, and ethnic groups transfer from one generation to another.

Cultural factors affect individuals' investment decisions and their risk preferences (Grinblatt and Keloharju, 2001; Statman, 2008; Wang and Fischbeck, 2008; Rieger et al., 2011). In the Arab world, cultural values and traditions have a tremendous impact on society, particularly for women. To illustrate, the existing cultural barriers, gendered laws and weak support services (O'Sullivan et al., 2011) limit Arab women from being economically active.

The traditional stereotype that considers men as the breadwinners and head of the family, limits the employment of women and their contribution to society (Hattab, 2012), and this includes their limited participation in the stock market. Furthermore, legal obstacles, along with the traditional societal restrictions, prevent many Arab women from becoming influential in the Arab region's economy (Husseini, 2010), and this may be considered a missed opportunity for the region's economic growth and development (Chamlou et al., 2008). For instance, the cultural barriers in Lebanon (one of the most liberal Arab countries) limit women entrepreneurs and investors from succeeding (Jamali et al., 2005; Jamali, 2009). Although cultural barriers affect individuals across the Arab world, they may have more of an effect in the more religious countries in the region. Moreover, such barriers may affect Arab women more than Arab men, since women (on average) are more committed to local norms and also more religious (Miller and Stark, 2002).

In general, when examining the impact of culture on individuals' investment decisions, religion cannot be neglected because it is an important element of culture (Keister, 2003). For this reason, some scholars have investigated the impact of religion on individuals' behaviour, including investment and trading behaviour. The limited number of existing studies, mainly from developed countries, argue that there are obvious religious differences in various aspects such as family issues, education, income and female labour (Wuthnow and Scott, 1997; Sherkat and Ellison, 1999; Lehrer, 1999; Scott, 2002; Lam and Hung, 2005;; Sullivan, 2006). In regards to the investment domain, religious beliefs are considered as potential determinates shaping individuals' saving and investment behaviours as well as their wealth accumulation (Keister, 2003). Such religious beliefs have an effect on the values and behaviours of individuals (Delener, 1994). In their study, Guiso et al. (2003) examined the influence of religion on peoples' economic attitudes towards different variables, including the market economy. Their findings also highlighted that religion affects individuals' financial decisions, and this effect varies based on the individuals' level of religiosity. For instance, the effect of religion may be higher for individuals in Islamic countries relative to others.

In Islamic countries, religion plays an essential role in shaping people's lives and decision making. On average, Islam with its law (Sharia) affects its followers' daily behaviours and activities, including their business and the investment activities (Muhamad and Ghani, 2006). In regards to investment activities, Muslims are allowed to buy stocks but under specific conditions; as they can only invest in firms whose major businesses are compliant with Islamic Sharia laws (Usmani, 1999). For instance, stocks related to sinful activities (such as alcohol and gambling stocks) are discouraged from Islam (Hood et al. 2014) because their core businesses do not comply with Sharia laws.

Overall, Islam⁸ has a major impact on individuals' investment behaviour, but the degree to which it may affect their behaviours is largely associated with the degree of the individuals' religiosity (Tahir and Brimble, 2011). Only a few scholars have examined the relationship between Islam and individuals' investment behaviour. Tahir and Brimble (2011) investigated the factors that affect Muslims' investment behaviours and their asset allocations. Their results revealed that Islam plays an important role in Muslims' investment decision making and asset allocations, with 77.3% of the Muslim respondents indicating that their investments comply with Islamic law. In contrast, less than 3% of Muslim respondents chose to invest in casino stocks, which adds more support to the argument that Islam impacts Muslims' investment behaviours and decisions. Regarding asset allocations, the researchers found evidence of a wealth-maximizing factor in Islamic investment decisions. Moreover, the results indicated that Muslims, generally, are risk averse investors.

Another piece of research carried out by Muhamad et al. (2006) examined the influence of Islam on individuals' investment decision making. Using a survey of a sample of Malay Muslim accounts, the authors demonstrated that the extent of Islamic religiosity has a significant effect on individuals' investment behaviours. Other studies, however, argue that religion does not significantly affect individuals' investment decisions in the UAE, Malaysia, and Pakistan, respectively (Al-Tamimi, 2006; Jamaludin, 2013; Shahzad et al., 2014).

Islam is the dominant religion in the Arab world, with Muslims comprising 93% of the Arab population, followed by Christianity and Judaism (Arab Cultural Awareness: 58 Factsheets, 2006). In general, Islam encourages individuals, particularly women, to be active players in the economies (Hattab, 2012) and motivates women in business, finance and investment

⁸ Islam is the world's second largest religion, after Christianity, with nearly 1.3 billion Muslim followers (Esposito, 2005) located mainly in the Middle East and Southeast Asia.

(Pasha, 2010). Accordingly, religion (mainly Islam) has a dominant role in Arab individuals' decision making (Zgheib, 2006), including investment decisions. Thus, it is essential for researchers to take account of the effect of religion when studying Arab individuals' investment behaviours.

Currently, there is scant literature that examines the influence of religion on the behaviours of Arab individual investors. In their study, Al-Tamimi and Bin Kalli (2009) found that religious factors are considered to be one of the most important factors influencing the investment decisions of individual Emirati investors, majority of whom are Muslims. As an illustration of the importance of religion to Muslim individuals, Islamic investment funds have grown rapidly among Muslim investors, especially in the Gulf countries and in Malaysia (El Qorchi, 2005; Hoepner, 2011). The growth of these funds highlights the important effect of religion on the investment behaviour of Muslim individuals, including women.

Overall, women are considered more religious than men (Beit-Hallahmi and Argyle, 1997) because they follow religious and cultural customs more than men do (Loewenthal et al., 2002). It follows that religion may also have a greater influence on their investment behaviours.

Based on the above arguments, the following hypothesis is proposed:

H3: Religion has an effect on the investment behaviour of Arab women.

4.3.4 Financial Risk tolerance level and the investment behaviour of women

Risk tolerance level, an individual's approach towards accepting risk, is an important concept that has implications for investment managers, financial advisors and individual investors (Hallahan et al., 2004). The risk tolerance levels of individual investors are often associated with demographic factors such as gender. Indeed, there is a systematic correlation between

gender and investment risk attitude (Fellner and Maciejovsky, 2007), with women tending to be more risk-averse than men (Byrnes et al., 1999). On average, women choose to invest more in fixed investments (such as gold and fixed deposits) with lower mean, lower variance, and lower volatility, due to their risk aversion and conservative behaviours (Hira and Loibl, 2007).

The empirical evidence reveals that women tend to be more risk-averse and have lower financial risk tolerance levels compared to men when trading stocks (see Jianakoplos and Bernasek, 1998; Agnew et al., 2003; Agnew et al., 2008; Borghans et al., 2009; Dohmen et al., 2011; Charness and Gneezy, 2012) and therefore invest their funds more conservatively (Hinz et al., 1997; Bajtelsmit et al., 1999; Mittal and Vyas, 2011; Hohnish et al., 2014) and accordingly trade less frequently and submit fewer offers than men do (Fellner and Maciejovsky, 2007). Men, meanwhile, have higher risk tolerance levels than women due to their higher optimism, which lead them to invest in more risky financial assets. As a result, men incur greater variability in their final portfolio values than women investors do (Felton et al., 2003). In contrast, women investors' pessimism may lead them to exhibit higher risk aversion behaviour than men, and thus invest less in stocks (Fehr-Duda et al., 2006).

In their study, Graham et al. (2002) argued that the different styles of information processing employed by men compared to women when making financial decisions (with women paying more attention to negative information than men do) may be one potential reason explaining the tendency of women investors towards lower risk taking and lower confidence when trading. Thus, their pessimistic information processing style and risk-averse behaviour may cause women investors to be less confident but more rational investors, meaning that they tend to pick more conservative investments compared to men.

Additionally, Statman (2008) investigated gender differences in risk tolerance levels using a sample from different developed and emerging markets, to examine the effect of culture on

individuals' financial risk behaviours. The findings showed that cultures matter but vary when it comes to individuals' investment risk tolerances. His findings confirmed, however, that, in mainly all the studied cultures, men investors are willing to take more risks than women investors; with the differences being statistically significant. He concluded that risk tolerance is associated with trusting and since women are less trusting than men (Statman, 2008) they are more risk-averse investors. From the Arab culture specifically, Al-Ajmi (2008) also revealed that men investors take more risks than women investors in Bahrain.

The existing studies, therefore, find that being a man is positively correlated with willingness to take risks in financial matters. The empirical findings also reveal that women are more risk-averse investors than men, which may be related to their confidence and investment literacy levels. Since men are considered more overconfident and more financially literate investors than women, they are more risk loving and tend to be involved in more risky investments compared to women (Casanovas and Merigó, 2012). The confidence and the investment literacy levels of women relative to men's are discussed in the following sections.

H4: Arab women are risk averse investors.

4.3.5 Confidence level and women investment behaviour

When people believe in their skills or knowledge, they become more willing to bet on their own judgments, which may lead them to be overconfident (Griffen and Tversky, 1992). Overconfidence exists in many professions such as clinical psychologists, physicians, engineers, investment bankers (Barber and Odean, 1999) and also individual investors. Overconfident behaviour causes individual investors to overestimate their own beliefs and opinions (Barber and Odean, 2000; Graham et al., 2009) and thus underestimate the financial risk associated with traded securities (Odean, 1998). As a result of their overconfidence, individual investors become irrational and trade more aggressively and excessively;

negatively affecting their portfolios' returns (Odean, 1999; Dorn and Huberman, 2005; Glaser and Weber, 2007; Yeoh and Wood, 2011).

Generally, overconfidence causes investors to increase their trading volume and thus lower their returns (Gervais and Odean, 2001; Scheinkman and Xiong, 2003). Furthermore, overconfidence affects the whole stock market because it is expected to increase the trading volume and the market depth while decreasing the expected utility of overconfident traders (Odean, 1998). Overconfident behaviour is associated with men investors more than with women investors (Barber and Odean, 2001).

A substantial literature in the field of behavioural finance field has indicated that, across various markets, women are more risk averse (Croson and Gneezy, 2009; Schubert et al., 200) and invest less than their men counterparts (Charness and Gneezy, 2012). Relevant findings in this field also reveal that women investors have lower confidence in their investment (Estes and Hosseini, 1988; Lundeberg et al., 1994; Barber and Odean, 2001; Christiansen et al., 2009). Hence, investors who prefer risk are more likely to exhibit overconfident behaviour (Hassan et al., 2014) and participate more in stocks investments.

The limited studies conducted on gender differences in investment confidence level in emerging markets, including the Arab region, find similar results to those in developed markets. For instance, studies from China (Feng and Seasholes, 2008); Malaysia (Albaity and Rahman, 2012); Pakistan (Hassan et al., 2014); Tunisia (Zaiane and Abaoud, 2010); Jordan (Alrabadi et al. 2011) and Saudi Arabia (Al-Najjar, 2013) each concluded that men investors are more overconfident and trade stocks more than women investors. According to the empirical evidence from developed and emerging markets, men investors tend to be more overconfident and more risk taker investors relative to women.

Based on the existing literature the following hypothesis is proposed:

H5: Arab women have lower confidence levels relative to Arab men investors

4.3.6 Financial/investment literacy level and investment behaviour of women

Various scholars have explored financial and investment literacy levels, revealing that the majority of individuals are not financially literate (see Jappelli, 2010; Fornero and Monticone, 2011; Lewis and Messy, 2012). This financial illiteracy may restrain individuals' ability to save for future retirement and to invest properly in financial securities, as well as decreasing their financial well-being in old age (Lusardi and Mitchell, 2007).

Women (from different backgrounds, cultures, and professions) have lower financial and investment literacy levels compared to men (Goldsmith et al., 1997; Chen and Volpe, 2002; Delavende et al., 2008; Lusardi and Mitchell, 2008; Lusardi et al., 2010; Fornero and Monticone, 2011; Fonseca et al., 2012; Bucher-Koenen et al., 2014). Thus, women's low financial knowledge negatively affects their personal finances and investments as well as their future savings and portfolio selections (Lusardi and Mitchell, 2007) and portfolio diversification (Guiso and Jappelli ,2008; Abreu and Mendes, 2010).

A number of studies focus on investigating the level of financial literacy among college students and graduates. Zissimopoulos et al., (2008) indicated that less than 20% of middle-aged female college graduates were able to answer a basic finance question correctly (such as on compounded interest rates) compared to about 35% of men college graduates of a similar age. Similarly, Volpe et al. (1996) indicated that male students have higher financial and investment literacy levels compared to female students. Lusardi and Mitchell (2010) documented that a college-educated male (especially if his family has experience in stock

investments and retirement savings) has higher investment knowledge than females (especially with less education and less wealth).

In the context of emerging markets, individuals are considered less experienced and educated with financial and investment processes (Chen et al. 2004). In their study, Cole et al. (2008) examined the relationship between financial literacy and participation in the financial markets using a sample from India and Indonesia. The results showed that financial literacy is a significant predictor of demand for financial services. Thus, the lack of financial literacy, which is more profound among women than men, can be a factor for the limited demand for financial products in the emerging markets. Similarly, Lee and Hanna (2014) examined gender differences in financial knowledge in Asia. The researchers found gender differences in financial knowledge and therefore, it would be more effective to construct different educational programmes for men and women in Asia because they have different financial literacy levels.

The scarce evidence from the Arab world also indicates gender differences in financial literacy, with women being less financially literate. Al-Tamimi and Bin Kalli (2009) examined the level of financial literacy of Emirati individuals (UAE). Their findings indicated that the financial literacy within the UAE is very low and far from the required level; with income level, education level, and profession all affecting the level of financial literacy: a highly educated individual with high income working in the finance sector is more financially knowledgeable than others. Additionally, there is a significant difference in financial literacy between genders, with women having lower financial literacy than men. Similarly, Main (2014) studied the impact of demographic factors (mainly gender) on the financial literacy of Saudi individuals. The findings confirmed that men have higher financial literacy levels

compared to women. Furthermore, individuals with more financial literacy have a greater drive to participate in the stock market.

In general, women are still considered to be less financially literate than men due to their traditional roles in society (Bucher-Koenen et al., 2012). Women, on average, are less likely to deal with long-term financial matters and investments due to their limited financial knowledge. Women's limited financial knowledge causes them to be less confident investors, lower financial risk takers (Lusardi and Mitchell, 2007), and less satisfied with their current portfolios (Deb and Chavali, 2009), and thus to participate less in the stock market than men (Almenberg and Dreber, 2015). Based on the above arguments the following hypothesis is proposed:

H6: Arab women have lower investment literacy levels relative to Arab men investors.

A summary of the hypothesis examined in the basic research is shown in table (4.1)

Table 4.1 The study's basic hypotheses

Hypotheses	Supporting Literature
<p>H1: The investment behaviour of Arab women is associated with demographic factors (age, annual income and level of education).</p> <p>H1.1: There are differences in the investment behaviour of Arab women from different age groups</p> <p>H1.2: There are differences in the investment behaviour of Arab women from different 'Annual Income' groups</p>	<p>Palsson, 1996; Hallahan et al., 2004; Jianakoplos and Bernasek, 2006; Fares and Khamis, 2011; Shaikh and Kalkundrikar, 2011; Jamshidinavid et al., 2012; Das and Jain, 2014; Ton and Nguyen, 2014.</p>

H1.3: There are differences in the investment behaviour of Arab women from the different education groups	
H2: The propensity for herding behaviour is greater among Arab women investors than Arab men investors.	Eagle and Carli, 1981; Bikhchandani and Sharma, 2000; Lin, 2011; Choi, 2013.
H3: Religion has an effect on the investment behaviour of Arab women.	Keister, 2003; Muhamad et al., 2006; Acker and Duck, 2008; Al-Tamimi and Bin Kalli, 2009; Beugelsdijk and Frijns, 2010; Tahir and Brimble, 2011.
H4: Arab women are risk averse investors.	Jianakoplos and Bernasek, 1998; Grable, 2000; Fellner and Maciejovsky, 2007; Agnew et al., 2008; Al-Ajmi, 2008; Borghans et al., 2009; Anbar and Eker, 2010.
H5: Arab women have lower confidence levels relative to Arab men investors	Barber and Odean, 2001; Christiansen et al., 2009; Grinblatt and Keloharju, 2009; Alrabadi et al., 2011; Albaity and Rahman, 2012; Al-Najjar, 2013.
H6: Arab women have lower investment literacy levels relative to Arab men investors	Volpe et al., 2002; Lusardi and Mitchell, 2007, 2008; Zissimopoulos et al., 2008; Al-Tamimi and Bin Kalli, 2009; Lusardi et al., 2010; Fornero and Monticone, 2011; Almenberg and Säve-Söderbergh, 2011; Fonseca et al., 2012

4.4 Basic conceptual framework:

Existing empirical research has separately indicated gender differences in investment behaviour; mainly in regards to the risk tolerance level, confidence level, and financial/investment literacy level (see Powell and Ansic, 1997; Gervais and Odean, 2001; Grinblatt and Keloharju, 2009; Rieger et al., 2011; Van Rooij et al., 2011). Figure (4.1) represents a summary of the existing studies conducted on the area of gender differences in investment behaviours in regards to risk tolerance, confidence and financial literacy levels.

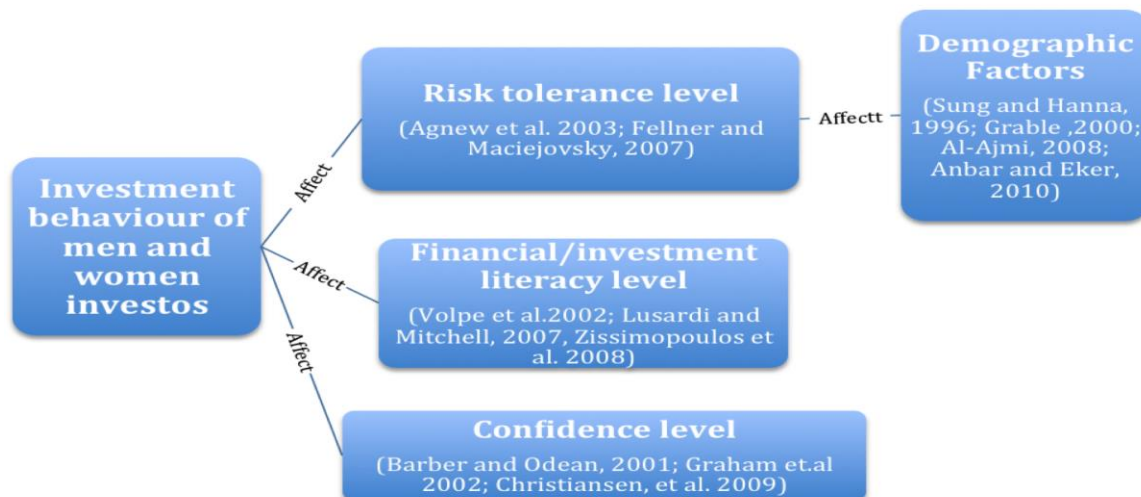


Figure 4.1 Summary of the existing studies on gender differences in investment behaviours

In regards to this specific study, the three most examined variables (risk tolerance, confidence levels and financial/investment literacy) in the existing literature, along with two additional important variables (the effect of religion and herding behaviour) are used to study their combined effect on Arab women investment behaviours. The study's main five variables are tested all together using a systematic new research framework (figure 4.2). Based on the findings of existing studies, along with this study's first six hypotheses, the study's basic framework is developed. The main purpose of this new framework is to show the

relationships between the selected independent variables (herding behaviour, religion effect, risk tolerance, confidence, and investment literacy levels) and how these variables affect the investment behaviour of Arab women.

In addition, the basic framework indicates the linkage between the demographic factors (age, level of income and level of education) and the study's main variables, which represent the association of these demographic factors with the investment behaviour of Arab women as a whole. Based on the existing literature and the study's proposed outcome, the basic framework also represents the effect of women's investment literacy levels on their confidence levels, and thus their risk tolerance levels. Overall, the basic framework is unique because there are currently no frameworks that represent the combined effects of all the independent variables on the behaviour of women investors, especially for Arab women. The basic framework is developed to build on the existing literature, test the first six hypothesis, and address the second and third objectives.

Overall, the real world is complex and various variables may simultaneously influence the specific situation and contribute to causing specific actions or behaviours. Accordingly, the study's basic framework (which adopts a more methodological approach) attempts to provide a more objective and realistic framework designed especially to understand and analyse the investment behaviour of Arab women.

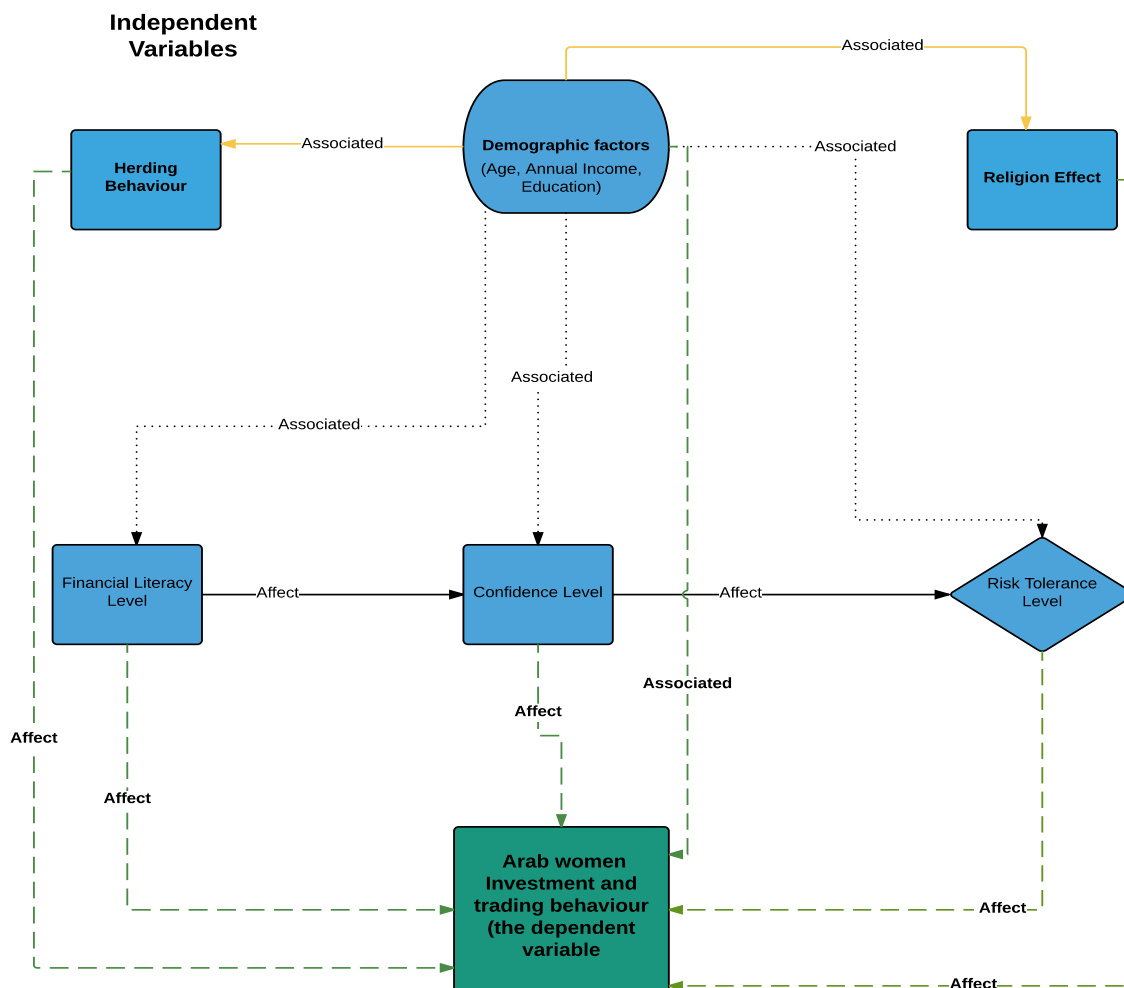


Figure 4.2 The study's basic framework

4.5 Development-of extended research model hypotheses:

In regards to hypotheses 7, 8 and 9, the researcher uses Saudi and Jordanian women investors to represent Arab women investors. The reasons for this are explained in chapter 5.

4.5.1 Stock market participation and women investors

Women, on average, create and control an increasing proportion of wealth, but they still favour investing in real estate and luxury assets, holding 16% of their total wealth in such assets (World Ultra Wealth Report, 2014), rather than investing in stocks.

The empirical evidence has found women trading stocks less than men, because women find

investment decision making more difficult, stressful, and time-consuming (Hira and Loibl, 2008) and this may be related to their lower financial/ investment literacy levels. Due to their limited financial knowledge, women tend to be more risk-averse and less confident investors compared to men and thus participate less in the stock market.

Traditionally, investing in the financial markets is categorized as a masculine task (Gervais and Odean, 2001; Scheinkman and Xiong, 2003; Peng and Xiong, 2006), where men, due to their investment behaviour, tend to invest more than women (Harris and Raviv, 1993). In the United States, men still represent around 80% of investors (Feng and Seasholes, 2008). This figure seems to have remained broadly consistent for decades: Lease et al. (1974) concluded that 80% of U.S. individual investors in the 1960s were men and a quarter of a century later Barber and Odean (2001) found comparable results with men still dominating the U.S. financial markets. Furthermore, their study revealed that due to their overconfidence, men tend to trade 45% more than women. Among all investor groups, single and young male investors trade the most.

Other scholars from the U.S. market also indicate similar results. Agnew et al. (2003) selected 7,000 U.S. retirement portfolio accounts, in which men represent 75% of the sample, to examine their portfolio allocations and trading activities. The study's findings showed men invest 56% more in equities than women and thus trade more actively, with a portfolio turnover 53% more than for women.

Additionally, Dreber et al. (2011) illustrated significant gender differences in the amount invested and the level of financial risk taken. Based on their study sample, 80% of men invest in equities compared to 48% of women. The results also indicated that women investors are more risk averse than men investors and that probably causes women to invest less in equities. In their two experimental studies, Charness and Gneezy (2010, 2012) found strong evidence

for gender differences in investment, with women tending to invest less and take less financial risk than their men counterparts. Their findings are very consistent with the existing findings on gender differences in investment conducted in the U.S. market.

Strong evidence from European markets also documents consistent results as in U.S. In their study of German individual investors, Dorn and Huberman (2005) examined their failure to buy and hold diversified portfolios. After combining survey responses along with the trading records of individual investors at a German retail brokerage, the findings indicated investors with higher risk tolerance and confidence levels tend to hold less diversified portfolios and trade more aggressively. Since men investors are more risk tolerant and more overconfident investors, they tend to trade more actively and hold less diversified portfolios compared to women investors. Similarly, Grinblatt and Keloharju (2009) examined how overconfidence and sensation seeking (a psychological attribute linked to gambling behaviour) affect the trading behaviour of men and women investors. To measure overconfident behaviour, the researchers use the number of speeding tickets received by an investor. The results showed speeding tickets received by an investor are strongly related to trading and overconfidence. Additionally, the results reveal men are more overconfident and more prone to sensation seeking compared to women; therefore they trade stocks more regularly and aggressively than women. This excessive trading conducted by men investors probably affects performance negatively (Odean, 1998). Overall, the existing findings link stock trading with both overconfident behaviour and higher risk taking or with higher financial literacy and trading.

In their study, Van Rooij et al. (2011) argued that financial literacy influences financial decision making; using a representative sample of 2000 households from the Dutch population. Investors with high financial literacy and sophistication trade more in the stock market and invest more in risky stocks. In contrast, investors with lower financial literacy tend to depend more on families and acquaintances as their main source of financial advice

concerning financial decisions (social influence) and therefore invest less in stocks, especially alone. Women are most likely to trade less in stocks and invest more conservatively than men, which can be explained by the discrepancy in financial literacy between the genders. Similarly, Almenberg and Dreber (2015) used a sample of Dutch individuals to confirm that women participate less in the stock market due to their limited financial knowledge. In general, people with higher financial literacy probably invest more in risky assets such as stocks (Jappelli and Padula, 2015) and thus trade more actively. In addition, social influence and connections (including families and community) can affect individuals' financial behaviour and stock market participation (see Hong et al., 2004; Brown et al., 2008; Li, 2014; Zetterdahl, 2015). In general, social interaction affects individual investors' trading activities, such as trading frequency (Shanmugham and Ramya, 2012). Since men in the Arab region interact more with peers due to cultural norms they probably tend to trade more frequently than women.

The relevant limited literature from emerging markets also investigates gender differences in stock market participation. Although cultures in emerging markets differ from those in developed countries, the findings still confirm that women tend to trade stocks less than men. Willows and West (2015) used a sample of 19,021 individual investors from a South African investment firm between 2007 and 2011 to investigate trading behaviours and returns. The findings documented that men trade stocks more significantly than women, and that overtrading lowers investors' returns and increases variability. As a result of their overtrading, South African men exhibit higher variability in their returns and earn lower returns compared to women investors. Hence, the study's results suggested, on a risk-adjusted basis, women are better investors than men. The results are consistent with Barber and Odean's (2001) results.

From Asia, Feng and Seasholes (2008) investigated the investment behaviour of men and women in China. The results showed that men hold larger average portfolios than women and

place slightly bigger trades. Additionally, the results indicated when men and women hold the same stocks, men are 20.73% more likely to sell first. Meaning, men trade stocks more aggressively than women due to their higher risk tolerance levels. Using a random sample of 30 brokers and 417 individual investors from the city of Bangalore in India, Manjula (2013) indicated that women tend to trade stocks less compared to men. Similarly, Bhushan and Medury (2013) studied gender differences in investment behaviour among Indian employees. They found that men trade stocks more than women (46% of men compared to 20.8% women invest in shares). Moreover, women prefer to invest more in fixed deposits as compared to men (53% of men compare to 77.4% of women invest in safe securities). The results indicated that due to their risk averse attitude, women invest less in stocks and this can explain the gender inequality in stock market participation. From Pakistan, Bashir et al. (2013) examined the investment behaviour of professional individual investors, specifically salaried finance teachers and bankers in Gujrat and Sialkot cities using a sample of 120 individuals. After analysing the respondents' answers (66.7% men and 33.3% women), the results confirmed that women are more risk averse investors and invest less in the stock market. The findings also explained that the low participation of women is due to their traditional roles as housewives, where they have very small opportunities for investment. In addition, women's low income, fear of losing money when investing, combined with religious beliefs, caused women to lose interest in stock investing and thus trade less than men.

From the Arab region, Zaiane (2013) examined individual investors' overconfidence and trading behaviour in the Tunisian Stock Market. The results showed that men tend to be more overconfident than women (76% of men versus only 23.5% of women have confidence in their perceptions and skills) and consider themselves luckier investors. Due to their overconfident behaviour, men in the Tunisian stock market participate more and trade their securities more aggressively than women. Such results may indicate that women's lower

investment confidence level may be one variable that limits their participation in the stock market. From the Gulf, Al-Najjar (2013) analysed 119 questionnaires (comprising 89.9% men respondents) to examine investors' irrational behaviours when trading in the Saudi stock market (TADAWUL). The results showed that men are more overconfident and more irrational investors than women, so they trade more frequently in TADAWUL. The findings also indicated that the low participation of women in the stock market is associated with Saudi Arabian culture, where men are the dominant gender in the society. From the study's findings, we can conclude that cultural factors can limit Arab women from investing in stocks often. In their study of individual investors in the UAE, Al-Tamimi and Bin Kalli (2009) found a significant difference in the financial literacy level among the respondents (58.3% males and 41.7% women) based on their gender, with women tending to have a lower level of financial literacy than men. The findings also reveal that women tend to be more emotionally affected than men, with religious and social influences (such as reliance on advice from family or friends) affecting their investment decisions more than men. Accordingly, women probably participate less in the local UAE financial markets than men. In addition, Heshmat (2012) indicated that the low participation of Saudi female students in the stock market might be explained by their limited financial knowledge.

Overall, the cultural norms in emerging markets, specifically in the Arab region, are different from those in Western cultures. Women in emerging markets generally have more family responsibilities and less financial independence than men. Such factors can affect women's lives including their professional and financial positions, investment decision making and stock market participation. Accordingly, women in emerging markets tend to invest in conservative securities (such as gold, cash and time deposits) than riskier securities (such as stocks). This is especially the case for women in Arab countries (Williams, 2011).

The empirical evidence on gender differences in stock market participations from developed

and emerging markets consistently indicates that women participate less in the stock market compared to men and that this is probably due to their limited confidence level, low financial literacy, or risk aversion behaviour. In addition, cultural and religious factors can also explain women's low participations in the stock market, especially in emerging Islamic countries, such as Arab countries. Although, women participate less in the stock market than men, however, they actually trade more successfully and earn more, and that may be positive for stock market performance. Women's association with stock market performance is discussed in the following section.

Based on the above arguments the following hypotheses are proposed:

H7: Arab women investors have lower participation in the local stock markets than men investors.

H7.1: Jordanian women investors have lower participation in the Jordanian stock market than Jordanian men investors.

H7.2: Saudi women investors have lower participation in the Saudi stock market than Saudi men investors.

4.5.2 Stock market performance and women's investment behaviour

In the behavioural finance literature, gender is one of the most important factors when examining individuals' investment behaviours. Gender differences in investment have an influential effect on trading behaviours, portfolio selections, asset allocations, investment returns and participation in the stock market; they can also be associated with the aggregate performance of the stock market. Since men and women trade stocks differently, depending on their investment behaviour, they may be associated with the aggregate stock market

performance differently. Women may have a positive association with the stock market performance for the following reasons:

Investment behaviour: in the field of investment, individual investors, in many cases, make irrational financial decisions depending on their emotions. According to the behavioural finance theory, individual investors are irrational and make systematic induced errors in the way they process available information due to several cognitive biases such as overconfidence (Daniel and Titman, 1999). A large body of empirical research indicates that men investors exhibit specific behaviour biases that lead them to make irrational investment decisions that do not maximize their expected utility. Overconfidence causes men investors to overestimate their financial abilities, which leads them to enjoy the thrill of trading, take higher unnecessary risks, and trade stocks aggressively and more frequently than women (Grinblatt and Keloharju, 2009).

Overconfident investors lower their expected utility by trading frequently while underestimating the associated risks (De Long et al., 1990; Kyle and Wang, 1997; Odean, 1998; Wang, 2001), earning below average returns (Barber and Odean, 2000) and speculating, which drives stocks bubbles (Scheinkman and Xiong, 2003). Additionally, overconfident investors achieve lower gains as they increase both trading volume and volatility (Gervais and Odean, 2001) and exhibit lower performance as they trade aggressively (Benos, 1998). Overconfident behaviour therefore has a negative influence on trading performance (Biais et al., 2005).

Overall, women investment behaviours lead them to trade less frequently but still hold less volatile more diversified portfolios, invest in less risky assets, make more rational investment decisions, and earn higher returns than men (Barber and Odean, 2001; Bauer et al., 2007; Willows and West, 2014). In their study, Bauer et al. (2007) revealed that women outperform

men especially during bearish stock markets because they incur lower trading costs, have less risky portfolios, and hold larger accounts with lower turnover than men. The study concluded that women are more successful investors and more persistent winners than men investors. This outperformance of men in bearish volatile markets can confirm women's rational investment behaviours and hints at their positive association with stock market performance as a whole.

Rationality when investing: Individual investors act irrationally where they tend to trade excessively (Barber and Odean, 2000), make trading mistakes (Chen et.al 2004), exercise stock options early in an irrational manner (Potesman and Serbin, 2003), hold losing stocks too long while selling winning stocks too soon (Odean, 1998b), and hold undiversified stock portfolios (Barber and Odean, 2011). The irrational behaviour not only affects the financial well-being of the individuals but may also affect the aggregate stock market performance. For instance, Odean (1999) found the stocks bought by individual investors underperform the stocks sold by 23 basis points every month. Meaning, individual investors trade frequently but with poor performance, which hurts their returns and may possibly also reduce stock returns and performance. Since men individuals participate more frequently in the stock market than women (Almenberg and Dreber, 2011; Charness and Gneezy, 2012), they incur poorer performance that lowers their returns.

Overall, men investors make more irrational investment decisions, which negatively affect their trading performance and increases stock market volatility; with the extreme volatility producing instability in the stock market (Bhowmik, 2013) and its aggregate performance. On the contrary, women's more rational behaviour leads them to hold more diversified portfolios, earn higher returns than men (Barber and Odean, 2001), and probably provide stability to the

stock market. Therefore, the participations of women may be positively associated with the performance of the aggregate stock market.

Gender diversity in the stock market (importance of women participation): Gender inequality in stock investments is obvious, where men tending to be the dominant players in the stock market. The overtrading of men investors due to their irrational investment behaviours, explains the excessive trading volume (Statman et al., 2006), market depth (Odean, 1998), stock market volatility (Daniel et al., 1998; Yeh and Yang, 2011), formation of financial bubbles (Scheinkman and Xiong, 2003), and financial crises (Jlassi et al., 2014), which probably influence the performance of stock markets negatively. An increased participation of women (as more rational investors) is important in order to reduce the current volatility in the stock market caused by irrational investors, and to decrease the chances of future financial crises or bubbles caused by overconfident speculative investors. Further, an increased participation of women investors may help diversifying among investment styles and financial approaches in the stock market, which can reduces its volatility. Accordingly, the greater participation of women's in this male dominated sector, may stabilize the stock market and be positively associated with its performance. Thus, gender diversity in the stock market is important.

Overall, diversity in any sector can improve its performance. For instance, scholars indicate that board diversity, where there is a high percentage of female directors, is correlated with better corporate performance, higher stock values, greater profitability and market valuation (Erhardt et al., 2003; Joy et al., 2007; Campbell and Mínguez-Vera, 2008; Carter et al., 2010; Bart and McQueen, 2013; Ntim, 2015). Accordingly, gender diversity (by increasing the participation of women investors who are more rational investors) can probably improve the performance of the stock market.

Based on the above three arguments, the participation of women investors may be positively correlated with the aggregate performance of the stock market. Accordingly, the researcher assumes that Arab women investors (represented by Jordanian and Saudi women investors) have a positive correlation with the performance of their local stock markets relative to Arab men.

Based on the above arguments the following hypothesis:

H8: Arab women investors have a statistically significant positive correlation with the stock market aggregate performance relative to Arab men investors.

A summary of the hypotheses examined in the extended research model is shown in table (4.2).

Table 4.2 The study's extended hypotheses

Hypotheses	Supporting Literature
<p>H7: Arab women investors have lower participation in the local stock markets than men investors.</p> <p>H7.1: Jordanian women investors have lower participation in the Jordanian stock market than Jordanian men investors.</p> <p>H7.2: Saudi women investors have lower participation in the Saudi stock market than Saudi men investors.</p>	<p>Barber and Odean, 2001; Agnew et al., 2003; Al-Tamimi and Bin Kalli, 2009; Barber and Odean, 2011; Van Rooij et al., 2011; Charness and Gneezy, 2010, Bashir et al., 2013; Al-Najjar, 2013; Zaiane 2013; Almenberg and Dreber, 2015.</p>
<p>H8: Arab women investors have a statistically significant positive correlation with the stock market aggregate performance relative to Arab men investors.</p>	<p>Odean, 1998; Barber and Odean, 2001; Fenton-O'Creevy et al. 2003; Cheng, 2007; Bauer et al., 2007; Grinblatt and Keloharju, 2009; Yeh and Yang, 2011; Carter et al., 2010; Jappelli and Padula, 2015; Ntim, 2015.</p>

4.6 Extended conceptual framework:

The aim of the basic conceptual framework is to investigate the combined effect of the study's five independent variables on Arab women's investment behaviours. Further, the aim of the extended conceptual framework is to investigate the association between Arab women investors and the aggregate performance of the stock market.

The extended framework (Figure 4.3) is a new stimulating framework because it indicates how women's investment behaviours, along with the investment barriers they face, cause their limited participations in the stock market. In addition, the extended framework reveals a proposed outcome to increase the participation of women investors by identifying the factors that motivate women to invest in stocks. This in turn may encourage other women (through herding) to start investing in the stock market (Brown et al., 2008). Finally, the framework also investigates how the number of women participants can be associated with the aggregate performance of the stock market. The extended framework is developed to extend the basic framework, test the study's last two hypotheses, and address the first, fourth and the five objectives. Hence, the extended framework is the first framework that investigates the associations between women investors and stock market performance. Such a framework may be easily adjusted and amended to use on women investors in developed and emerging markets and during bullish and bearish periods.

Overall, investment behaviour is complex due to the various constraints that affect a specific situation and contribute towards the emergence of a specific action that may have an impact on women's investment behaviours. The analysis in the extended framework may be complicated, especially when examining women's investment behaviour and their association with stock market performance. Figure (4.3) presents the study's extended framework.

4.6 Summary and Conclusion:

This chapter has formulated the study's eight main hypotheses and developed the two conceptual frameworks to address the study's main objectives. The empirical findings in the area of gender differences in investment behaviours guided the researcher to highlight the gaps in the existing literature, develop the study's hypotheses, and build the study's basic and extended conceptual frameworks. The study's two frameworks present a conceptual understanding of the main issues relating to this study.

The existing literature indicates that demographic (Jain and Mandot, 2012), social (Choi, 2013), and religious (Renneboog and Spaenjers, 2012) factors affect the investment behaviours of women. In addition, women's limited financial knowledge (Zissimopoulos et al., 2008) and their limited level of confidence in their financial abilities (Graham et al., 2002; Christiansen et al., 2009) cause them to be more risk averse investors (Lusardi and Mitchell, 2007) and thus participate less in the stock market (Charness and Gneezy, 2012) relative to men investors. Building on this literature, the researcher developed the study's first six hypotheses and the basic framework. The basic framework examines the combined effect of the study's five independent variables on Arab women investment behaviours to provide a more realistic view to understand these behaviours. Since Arab women and their investment behaviours are under-researched they represent an appropriate point of focus.

Furthermore, the existing findings on men's irrational behaviours (mainly overconfidence) along with women's rational behaviours when trading stocks, led the researcher to develop the last two hypotheses and thus the extended framework. According to the existing findings, men's overconfident behaviour causes higher volatility and trading volume (Gervais and Odean, 2001) and poorer trading performance (Cheng, 2007) that negatively affects stock trading performance (Fenton-O'Creevy et al., 2003). In contrast, women's rational behaviours

lead them to hold more diversified portfolios and earn higher returns than men (Barber and Odean, 2001). The participation of women investors in the stock market is therefore important and may have a positive association with its performance. Accordingly, the extended framework is developed to indicate the association of women investors with the aggregate performance of the stock market. Overall, the study's two frameworks are unique because they focus particularly on women's investment behaviours and their associations with the stock market performance. Thus, both frameworks can be extended and used in other developed and emerging markets.

After developing the study's main eight hypotheses and frameworks, the researcher needs to test the hypotheses and ensure that the objectives are achieved by applying the appropriate methodology. The next chapter describes the research design, and the methodology used to collect and analyse the data, the selected sample size, the data collection process, and the statistical methods used for analysis.

Chapter Five: Research Methodology

5.1 Introduction:

In this chapter, the researcher designs a methodological framework (including the pragmatic stance of the research, design, methodological approach, and methods used) that is appropriate to test the study's hypotheses and address its objectives. At this stage, it is crucial to understand the philosophy and methodology of the research. Accordingly, the researcher details how she intends to achieve the research objectives by selecting the appropriate research design (including the philosophical and methodological approach) along with justifying the selection of the study's methods in the light of these objectives.

This chapter begins with an elaboration on the philosophical debate underlying the selection of the study's main methodology and research design. The main focus is to present and explain the researcher's pragmatic stance. This is followed by giving a detailed description of the study's overall research design, especially in terms of justifying the use of quantitative methods to examine the investment behaviour of women and their relationship with the stock market performance. The chapter carries on by justifying the strategies used to collect the study's primary and secondary data along with explaining the questionnaire, its aims, and sections. The researcher then discusses briefly the statistical techniques used to analyse the study's primary and secondary data. Finally, the researcher concludes with a summary of the whole chapter.

5.2 Research Philosophy and Paradigm Positioning

Research is a method of intellectual discovery and search for knowledge that people adopt in order to figure out things in a systematic and logical way so as to increase their knowledge

and understanding (Saunders et al., 2009, p.5). The philosophy of research includes essential assumptions about the way the researchers view the world, which in turn support the strategies and methods they choose. Accordingly, the supporting philosophy that explains a piece of research's worldview or paradigm⁹ is a primary starting point for any research (Creswell, 1994). The research philosophy and research paradigm help to clarify the research design, assumptions, approach, methodology, strategies, methods, data collection and analysis (Blumberg et al., 2005).

At every research stage, a researcher makes several types of assumptions (Burrell and Morgan, 1979). The three major types of research assumptions to distinguish research philosophies are: epistemological assumptions, ontological assumptions and axiological assumptions. Each assumption contains significant differences that affect the way in which a researcher thinks about the research process (Thietart, 2001). In regards to this study, the philosophy adopted includes essential assumptions about the way the researcher views the world. As a result of these assumptions, the researcher can support her research strategy and the chosen methods as part of that strategy.

5.2.1 Epistemology and ontology

Research paradigms can be categorized through their components: ontology (What is reality?), epistemology (How do you know something?), methodology (How do you search to find out?) (Guba, 1990), as well as the methods used (for data collection and analysis) (Eriksson and Kovalainen, 2008).

Ontology is concerned with the theory of social entities, which deals with what exists to be examined (William, 2006). Ontology has two aspects (objectivism and subjectivism), both of

⁹ Paradigm represents a worldview that explains for its holder the nature of the world and the range of possible relationships to this world and its parts (Guba and Lincoln, 1994)

which are supported by many business and management researchers. **Objectivism** suggests social phenomena and their meanings have an existence that is independent of social actors; i.e. reality exists independent of researcher (Bryman, 2012). In contrast, **Subjectivism** (also referred as constructionism) – indicates that social phenomena and their meanings are continually accomplished by social actors; i.e. reality is constructed by the researcher (Bryman, 2012).

Epistemology is closely connected to ontology and its consideration of what establishes reality. Epistemology is mainly concerned with the views regarding the most appropriate ways of questioning the nature of the world (Easterby-Smith et al., 2008). The main epistemological positions are positivism, interpretivism and realism. **Positivism** argues that the methods of natural science are appropriate to the study of societies (Walliman, 2006). It is an objective method, which can test theories against observations and establish scientific laws. In contrast, **interpretivism** argues there are fundamental differences between natural science and society. It indicates that subjective meanings play a critical role in social actions (Walliman, 2006). Finally, **realism** argues that reality is actually the truth. Researchers can select from the ontological aspects along with the epistemological positions depending on the social phenomenon they are investigating.

5.2.2 Research Approach: deductive and Inductive

Deductive and inductive research approaches are ways of bringing knowledge of the world into the research (Eriksson and Kovalainen, 2008). The **deductive approach (testing theory)** starts with general statements (or questions) and comes to particular conclusions through logical arguments (Walliman, 2006). In contrast, the **inductive approach (building a theory)** begins from particular observations and derives general conclusion from these observation (Walliman, 2006). The **Abductive approach**, meanwhile, uses both approaches in different

phases of their studies (Eriksson and Kovalainen, 2008) to generate new or modify existing theory. The deductive approach is linked with positivism and quantitative methods, while the inductive approach is associated with interpretivism and qualitative methods (Bristow, 2015).

5.2.3 Research strategy: quantitative and qualitative

Researchers can select quantitative, qualitative or mixed strategies; depending on the level of existing knowledge, available resources and the philosophical underpinnings of the research. A quantitative strategy addresses the main objectives of a piece of research via empirical valuations, which include numerical/mathematical measurements and analysis of data collected from surveys (Zikmund, 2010). A quantitative approach starts with a theory or hypothesis and then tests for acceptance or rejection of the hypothesis (Newman and Benz, 1998). Quantitative research therefore is linked with positivism, objectivism and a deductive approach (Collis and Hussey, 2009; Bryman, 2015).

In contrast, the qualitative approach addresses research objectives via methods that allow the researcher to arrive at interpretations of phenomena without using numerical/mathematical measurement (Zikmund, 2010). Researchers use a qualitative approach to develop a theory that explains what is experienced during their interpretations of reality (Newman and Benz, 1998). Thus, qualitative research is linked with subjectivism, interpretivism and an inductive approach (Bryman, 2015). Other researchers use mixed methods by collecting, analysing and integrating both quantitative and qualitative data in a research study (Creswell, 2013). In the following section, the researcher carefully explains this study's research design, which reflects its conceptual frameworks

5.3 The study's research design

This study is based on reasoning (theory) and observation (data). It obtains knowledge and develops understanding by collecting facts and interpreting them to build a complete picture of women's investment behaviours and their effect on stock market performance in the Arab region. In order to obtain such knowledge, the researcher builds a design in a process that entails a series of decisions that collectively explain how the research is conducted. The research design used is adapted mainly from the existing behavioural finance literature.

5.4. The study's research design methodology

The study's methodology summarises the main questions the researcher should answer when conducting a research starting with the study's philosophy, approach, strategy, and methods used for data collection and analysis.

5.4.1 The study's research philosophy

The philosophical underpinning is a vital start for any research (Creswell, 1994). This study is characterized by an objectivist approach regarding ontological considerations because it indicates a social reality (phenomenon) that is external to the researcher and also independent from the researcher's mind. The aim of this study is to investigate a specific independent phenomenon (the investment behaviour of Arab women and their influence on the stock market performance) that is external and independent from the researcher. Thus, objectivism is more suitable than constructionism/subjectivism. Moreover, since the views of the researcher are independent from the research participants and have no value to the study's sample (Arab men and women investors) so objectivism is the appropriate strategy for the study.

In regards to epistemology, this study leans more towards the positivist position since it aims to discover Arab women investment behaviours and their effect on stock market performance.

The researcher aims to produce an overall rule in order to generalize for the entire population, rather than attempting to explain the meanings of such behaviours. Since the main purpose of positivism is to synthesize general laws for behaviour prediction (Fisher, 2010), so this purpose is consistent with the study's aim. Further, the aim of this study is to investigate women's investment behaviour and their impact on stock market performance to generalize and predict, while the researcher is external from the study and its aim. Thus, positivism (the attitude of the natural scientist) is more appropriate for this study than interpretivism (the attitude of social actors). Moreover, since the researcher aims to discover an external reality rather than the object of study, positivism is used. Finally, positivism is appropriate for the study because it generates hypotheses that can be tested in order to allow explanations. Additionally, positivism creates a body of research that can be replicated by other researchers to generate the same results. For the reasons stated above, positivism is the most appropriate for this study.

Since the researcher uses close-ended on-line questionnaire to collect her primary data, the research is taken in a neutral way. Accordingly, the questionnaires' respondents are not influenced by the researcher's views. Overall, the study's assumptions are consistent with the assumptions of positivism. Objectivism/positivism is therefore the appropriate philosophical aspect for the study.

5.4.2 The Study's research approach (deductive approach)

The process of the deductive approach moves from an existing theory to a research hypothesis, to data collection, to findings, to a rejection or confirmation of the research hypothesis, and finally to a revision of the existing theory. Based on the behavioural finance theory and its literature, this study attempts to explore the investment behaviour of women and their influence on stock market performance. Thus, the researcher tests the study's

hypotheses (reject or confirm) and uses this to revise the behavioural finance theory; rather than building a new theory. Accordingly, the deductive approach is more appropriate for this study than the inductive approach. Furthermore, since the deductive approach is associated with quantitative methods and positivism, it is appropriate for this study (Bryman and Bell, 2007).

The researcher begins by reviewing behavioural finance theory and also the gender differences in investment behaviour in stock trading in particular. Reviewing the theory assists the researcher to obtain the theoretical framework and the existing empirical findings conducted in this field, in order to build the study's frameworks and develop its main hypotheses. Subsequently, the researcher collects the data (both primary and secondary) and analyses it using quantitative techniques to accept or reject the study's hypothesis and revise the theory. This process is consistent with the deductive approach. Since the researcher is following the deductive approach, she is mainly using quantitative methods for data collection and analysis.

5.4.3 The study's research strategy (online survey)

Research strategy is the orientation for conducting the research practically using quantitative or qualitative methods. There are various choices in respect to the research strategies that researchers can employ to collect the data (such as experiment, survey and case study). Some of those strategies are better used with the deductive approach, while others with the inductive approach (Saunders et al., 2009). Selecting a research strategy is associated with the study's philosophy, approach and type. Since one of the primary objectives of the study is to investigate the investment behaviour of Arab women, a survey research strategy (using a structured online questionnaire) is appropriate for collecting the study's primary data.

Surveys are the most well-known quantitative (non-experimental) research strategy choice in the social sciences (Muijs, 2004), and are associated with deductive approach (Sapsford, 2007). They are mainly used when a researcher's aim is to collect data on a social phenomenon that cannot be directly observed (Basharat et al., 2013) by sampling a population to investigate the phenomenon. Since the investment behaviour of Arab women as well as the investment motives and barriers they face are not directly observed, a survey is an appropriate strategy for this study.

In general, the designs of surveys (which use standard questionnaires to collect large amount of data) are flexible, inexpensive, and can generate statistical data (Sapsford, 2007). Surveys (such as telephone, face-to-face, postal or online) are targeted to collect primary data based on communication with a representative sample of people at a given point of time (Zikmund et al., 2013). Hence, online surveys (whether web-based or by e-mail) are increasingly commonly used forms of surveys (Muijs, 2004). These are highly economical, inexpensive, and fast ways of collecting large amounts of responses (Sapsford, 2007), and potentially yield a higher number of respondents than traditional surveys (Fricker and Schonlau, 2002). Thus, the advantages of online surveys over the traditional surveys are mainly technology driven ones (Ilieva et al., 2002),

Since the Internet's popularity keeps increasing, more segments of society are using the Internet for different purposes (such as communication, knowledge and trading) (Nie et al., 2002). For instance, the numbers of citizens in the Arab world using the Internet is steadily increasing (Ghannam, 2011). In 2014, there were more than 135 million people in the Arab world using Internet (The Arab World Online, 2014). More specifically, 64.7% of people in Saudi Arabia use the Internet (Saudi Arabia Internet Users, 2016). Using an online survey to reach Arab individual investors in Saudi Arabia and Jordan is appropriate because it allows access to many Arab individual investors.

In addition, the Internet is currently considered a rich and promising domain to conduct surveys in various fields (Wright, 2005), including the behavioural finance field (see Volpe et al., 2002). Choosing online survey for this study can provide a broader sample of individual investors from different segments in Saudi and Jordanian societies, which helps in analysing the investment behaviour of Arab women more accurately. Additionally, online surveys give the opportunity to reach individuals outside one geographical area (Vlope et al., 2002). Overall, the online survey is a valued choice to obtain a large amount of information from respondents living in different parts of a country or around the world, easily and at low cost (Evans and Mathur, 2005).

Online surveys also provide access to individuals who would be difficult, if not impossible, to reach through other means (Wellman, 1997). Overall, researchers investigating the investment behaviour of individual investors, particularly in the Arab region, use surveys as a strategy choice because they allow access to large groups of investors from different segments of the society (see Al-Abdulqder et al., 2007; Zoghلامي and Matoussi, 2009; Al-Horani and Haddad, 2011; Alnajjar, 2013). Since this study investigates the investment behaviours of women relative to men in the Arab region, an online survey is the most appropriate strategy choice due to the cultural and societal complexities. Using an online survey helps the researcher to avoid obstacles that are related to gender and socio-cultural norms in the Arab region. Due to these cultural and religious factors, women in Saudi Arabia are largely segregated from men (Doumato and Posusney, 2003, p.3), so it is hard for the researcher to conduct a face-to-face survey, especially when it comes to male investors. Further, in Jordan, male investors mainly dominate the trading rooms in Amman stock exchange, so the researcher would also have difficulty reaching these male investors and conducting a face-to-face survey. Since the researcher is a female and the study is conducted mainly in Saudi Arabia and Jordan, and particularly in the investment sector, an online survey is the best choice to reach large

numbers of respondents (male and female individual investors) without causing any conflict to the researcher and the respondents to occur due to cultural factors.

Although online surveys¹⁰ may lack some validity (e.g. as how truthful the respondents are being, how much thought/ time they have put in to answer the questions (Ackroyd, 1992)), it is still considered the most appropriate strategy choice to approach the respondents easily without causing any conflict. While there are other available used techniques, but the religious, cultural and societal complexities of the study's sample limit the researcher from using these techniques. However, an online survey is able to collect reliable and valid information to test the study's relevant hypotheses and achieve its main objectives.

5.4.4 The Study's Research Choice (Quantitative)

The researcher uses quantitative methods rather than qualitative or mixed methods for several reasons. First, quantitative research is usually associated with objectivism, positivism and a deductive approach (Collis and Hussey, 2009, p.58). A quantitative strategy highlights quantification when collecting and analysing data. Since this study emphasizes quantification in the collection and analysis of its primary and secondary data, rather than words, along with a positivist/objectivist deductive approach, so the quantitative strategy is the most appropriate strategy.

Moreover, quantitative research is generally used as a basis for data collection techniques (such as a questionnaire) or/and data analysis techniques (such as statistics) that use or produce numerical data (Saunders et al., 2009, p. 151). This study use an online questionnaire as a technique to collect its primary data and existing statistical data to collect its secondary data, so as then to generate numerical data from which to test its hypothesis and finalize its results. Thus, using only quantitative strategy allows the researcher to test the study's main

¹⁰ In the following sections of this study the online survey is referred to as an online questionnaire.

hypotheses and generate its findings by applying statistical methods. Additionally, quantitative research mainly relies on determining the relationship between variables (Saunders et al., 2009), which is specifically used to examine the relationship between the known dependent and independent variables (Creswell, 2005). Since the major objective of the study is to investigate the relationship between the participation of women investors (independent variable) and the stock market performance (dependent variable), so a quantitative approach is a more appropriate strategy for the study. In addition, the quantitative strategy is more reliable and objective about the findings of this study relative to qualitative strategy. According to the study's objectives, a qualitative strategy is not appropriate because it is used to discover unknown variables (Creswell, 2005), while the main five variables in this study are known. Moreover, since a qualitative strategy is linked to an inductive approach (Bryman and Bell, 2015) it is not appropriate because this study adopts a deductive approach and it emphasizes quantification to test its existing hypothesis, analyse its results based on numerical/statistical means, and generalize from these. In order to achieve effective results that can be reliable and generalizable, a large sample Arab individual investors (living in Saudi Arabia and Jordan) is selected to represent the bigger population. Thus, the quantitative strategy allows researchers to study a large number of people and to analyse the results using statistical methods (Johnson and Onwuegbuzie, 2004).

Quantitative strategies are used by various researchers in the social sciences, including behavioural finance, but still have some limitations. For instance, the researcher's existing theory and hypotheses may not reflect the real phenomena. Additionally, the knowledge produced from the obtained results may be very general for direct application to particular individuals (Johnson and Onwuegbuzie, 2004). The final results may also be biased because researchers are confirming their existing theory and hypotheses instead of developing them from the research results (Muijs, 2004). Nonetheless, a quantitative strategy is still the most

suitable one for this study, since it allows for findings to be generalized.

Since the researcher uses a quantitative strategy, she must evaluate the quality of her quantitative research (using validity and reliability measurements) before generalizing her findings. In a quantitative research, researchers must not only give consideration to the study's results but also to the effort devoted to enhancing the quality of the research using validity and reliability measurements (Heale and Twycross, 2015).

The measure of validity is concerned with the integrity of the findings generated by a particular research (Bryman and Bell, 2015, p. 50). According to Bryman (2015, p. 41) validity can be categorized by external validity (concerned with the question of whether results can be generalized); internal validity (concerned with whether the researcher's design follows principles of cause and effect); construct validity (concerned with the question of whether a measure that is developed really reflects the idea that it is supposed to be representing). Construct validity is important for questionnaires that are administered by the researcher and particularly sent by postal or online (Greener, 2008, p. 37). Since this study uses online questionnaires it is therefore important to approve it using statistical methods (such as factor analysis).

On the other hand, reliability measures are concerned with the question of whether the study's findings are repeatable and consistent (Bryman, 2015, p. 41). In other words, reliability refers to the extent to which the methods used to collect and analyse the data produce consistent results (Saunders et al., 2009, p. 156). Assessing the validity and reliability of the study helps the researcher to produce good quality research and also to decide whether or not she should apply the findings in the area of behavioural finance (especially the area of individuals' investment behaviours and their impact on stock market performance). Hence, the validity and reliability of this study are treated in greater depth in chapter six.

To sum up, the researcher adopts objectivism/positivism along with a deductive approach and a quantitative strategy, using an online questionnaire for primary data collection (see figure 5.1). Due to the behavioural complexity of this study, which includes a sample from a region that is governed by religion and cultural norms, the chosen methodology for collecting the primary data is the most appropriate one. In the following section, the researcher describes the process of selecting the primary and secondary data.



Figure 5.1 The study's research design

5.4.5 The Study's Data Collection

Data collection in any piece of research is based on the methodological approach used and is considered to be the key point of the research (Bryman and Bell, 2015, p. 12). Thus, the data collection stage is important because it contributes significantly to the study's overall reliability and validity (Saunders et al., 2009, p. 156-157). The data collection stage includes decisions on the sample as well as the methods used to collect the data. All of the methods used in this stage have to fit in with the study's main design to obtain valid results that answer the study's questions. In this study, the type of data collected is divided into two types: primary and secondary.

The primary data is original and is collected for the first time by the researcher for the purpose of the study, to answer its questions, particularly when secondary data is not available or cannot answer the study's questions. On the other hand, the secondary data is information that was previously collected by others for different purposes than the study's purpose (Ghauri and

Grønhaug, 2005, p. 91). These can be gathered from official published statistics or from historical studies. Although secondary data may sometimes lack control of quality, it is considered more accessible than primary data.

Regarding this study, both primary and secondary data are used to answer all the study's questions, address its objectives, and test its hypotheses. Using both types of data, by collecting facts in numerical form, allows the researcher to investigate the investment behaviours of Arab women and their correlation with the stock market performance accurately. To illustrate, the primary data is used to investigate the investment behaviours of Arab women compared to Arab men in regards to the study's five main variables (herding behaviour, religion effect, risk tolerance, confidence, and investment literacy levels). Further, the primary data is applied to highlight the investment barriers and motives that encourage Arab women to invest more in stocks. The secondary data is used particularly to examine the relationship between women's participations in the stock market and its performance. Depending on the secondary data in tandem with the primary data allows the researcher to achieve reliable and factual results.

5.5 The study's sources and selection of data

For the sake of the consistency of the study's results, both the primary and secondary data are collected from Arab individuals (mainly Saudi and Jordanian males and females) investing or interested in investing in stocks living in Saudi Arabia or Jordan. Since the study is on Arab women and their investment behaviours, the researcher focused only on selecting Arab women who are currently investing or interested in investing in stocks to answer the study's questions and meet its objectives. Accordingly, Arab women who only prefer to save their wealth in banks rather than investing in stocks were not included in this study. In addition, the researcher selected Arab women investors or interested in investing to answer the study's

questions, reach its objectives, and test its main hypotheses. Hence, savers might be included in future research.

5.5.1 The Study's Primary Data

The aim to collect the primary data is to attain the first, second, third and fifth objectives of the study (which investigate the investment behaviour of Arab women compared to Arab men, along with the investment barriers and motives) using a closed-ended online questionnaire as the main strategy. The questionnaire was distributed via investment brokers specifically to Arab males and females (from different ages, educational, and professional backgrounds) living in Saudi Arabia or Jordan, and investing in or interested in investing in stocks.

5. 5.1.1 Sources of Primary Data

From the start, the researcher sets her objectives to study the investment behaviour of women in the Arab region (mainly women living in Saudi Arabia and Jordan) because they are under-researched in the behavioural finance field, although they are worth studying.

Arab women (as employees, entrepreneurs, investors and consumers) are potential drivers of growth and development to the region's fragile economy and its financial markets. The region has a unique chance to improve its economic productivity, financial stability and social unity by enabling women to participate more fully in the economy and society (Opening doors: gender equality and development in the Middle East and North Africa, 2013). According to the World Bank (2014), Arab women represent 48.2% of the region's population and 23.5% of the region's labour force, with a gradual increase from 21.3% in 2012 (Vishwanath, 2012). More specifically, Saudi women represent 15.2% of the total labour force and Jordanian women represent almost 18.4% of the total labour force (World Bank, 2014). The low percentage of Arab women in the labour force is due mainly to issues related to cultural and

social traditions in a male-dominated society (Omair, 2008). Accordingly, there is still a gender gap in employment with Arab men dominating most sectors, including the investment sector.

Despite their low participation in the region's labour market, Arab women represent the majority of the university population in two thirds of the region's countries (United Nations statistics, cited in Davies, 2012). Arab women's high educational levels lead them to increase their economic activity. For instance, Saudi women represent 52% of university graduates inside the kingdom, while more than 35,000 Saudi women studied abroad in 2014 (More Women than Men in Saudi Universities, Says Ministry, 2015). Such a high percentage of educated women can help to improve the development of the Saudi economy, especially after the recent decline in the global oil prices. In addition, women in Jordan are also very educated and have the highest level of literacy in the Middle East and North Africa region at 89.2%. (Haddad, 2013). In recent years, Jordan has faced a major loss in its potential growth embodied in the huge numbers of highly educated women who are not participating in the labour market (Jordan Economic Growth Assessment, 2012). Overall, the high percentage of Arab educated women, especially in Saudi Arabia and Jordan, give them the opportunity and power to be more financially independent, and thus open their own firms.

In recent years, various Arab women have leant towards opening their own businesses and managing them to generate their own income. Arab women own about 21% of the region's companies that are mainly managed by themselves (Booz and Company's Identification Center, 2014; Hoteit, 2014), and thus contribute significantly to the development of the region's economy. The numbers owning businesses and running them are increasing among Arab women (Hattab, 2012). More specifically, Saudi women alone own 25% of Saudi businesses (Al-Dehailan, 2007), 16% of which are large manufacturing firms (AlMunajjed,

2010). In regards to Jordanian women, El Kharouf et al. (2007) showed that these businesswomen are highly educated, young (between age of 24 and 44), and have been owners/or shareholders of private businesses for more than five years. These results indicate the high level of experience, knowledge and expertise Jordanian women have in the business field.

Arab firms owned by women (mainly in manufacturing and exporting sectors) are as large and as well established as firms owned by men (Mondiale, 2007). Indeed, in Arab countries (mainly Egypt, Jordan, Saudi Arabia and the West Bank and Gaza) the share of firms owned by women has recently exceeds the share of firms owned by men (Mondiale, 2007). Furthermore, Arab women run and manage well-established businesses, which generate profits of over USD \$100,000 annually compared to the number of women-owned firms in the United States generating similar amounts (Strengthening Access to Finance for Women-Owned SMEs in Developing Countries, 2011). Overall, the increased number of educated, professional and entrepreneurial Arab women in the region, contributes to the growth of the economy and may also improve the region's financial markets by encouraging more participation in stock trading

Moreover, the increased numbers of wealthy women in the region may also help improve the region's financial markets by injecting more funds into the markets and economy. Women in the Arab region, especially in the Gulf, are considered to be very wealthy (Damisch et al., 2010), mainly because of the Islamic inheritance law. Islamic law provides women with the right to own and manage their assets before and after marriage and prohibits the husband from taking or managing the personal wealth of his wife without her agreement (GCC Women: Challenging the Status Quo, 2012). Accordingly, Saudi women own a 59.6% stake in private business in Saudi Arabia (Al-Derailing, 2007) and have more than \$100 billion in ready cash

deposited in banks (Jawhar, 2014) but without investing them mainly in stocks. Overall, the wealth of Saudi women is an untapped resource, and this lack of utilisation probably has a negative effect on the financial positions of Saudi women, the Saudi financial industry, and the Saudi economy.

Overall, the participation of Saudi women in stock trading is lower than Saudi men investors. For instance, there were 892,000 Saudi women trading stocks in TADAWUL, the Saudi Stock Exchange, in 2014, compared to 3.51 million men investors (Gaffe, 2014). Increased participation of Saudi women investors may therefore have positive impact on the performance of the Saudi stock market by inducing money into the stock market in a rational way. Similarly, women in Jordan also choose to put their wealth in savings investment. For instance in 2010, only 10% out of 1 million investors in the Amman stock exchange (ASE) were women. Such inequality in the number of investors negatively affected the performance of ASE during 2010 (Amman Stock Exchange Report, 2010). Since Arab women have recently become more interested in managing their own wealth independently (GCC Women: Challenging the Status Quo, 2012), they still shy away from taking risks and investing in stocks. Overall, Arab women are worth studying theoretically and practically, so the researcher selects them (mainly in Saudi Arabia and Jordan) as her study's sample.

The Arab region consists of 22 countries located in the Middle East and North Africa (with many of these countries facing high political instability, mainly due to the Arab Spring). Thus, the researcher selects her sample from Arab countries that have internal political and economic stability, such as Saudi Arabia and Jordan, because stable economic situations probably encourage individual investors (including women) to invest more in stocks rather than investing in safe securities. The Arab spring that started in Tunisia and spread out to include other Arab countries (such as Bahrain, Egypt, Libya, Syria, Iraq, and Yemen) has led

to political conflict, financial volatility, and economic instability in these countries and in the region as whole (Deb, 2015). Accordingly, the researcher selects Saudi Arabia and Jordan for her sample due to their current economic and political stability, along with their importance to the region.

To illustrate, Saudi Arabia (the biggest economy in the region) has grown rapidly with very low government debt and a large fiscal surplus in recent years. The recent growth in Saudi Arabia has been due to the output of high oil prices, strong activity in the private sector, and the implementation of various domestic reform enterprises (Al-Darwish et al., 2015). Despite the turbulence in the oil prices and its risk for the country's economy, Saudi Arabia has currently strong financial assets (where foreign exchange reserves are currently around USD60 billion) that protect its economy and its stock market from the decline in the global oil prices (Weaker oil revenues, but strong financial assets, 2015). In regards to Jordan, it has an open and liberal economy with strong relationships to the Arab region, the U.S. and Europe. Despite the recent political and economic situation in the region and globally, Jordan's economy still performs relatively well (Bekhet and Matar, 2013). Additionally, it is still able to sustain a stable currency, maintaining a fixed exchange rate to the U.S. Dollar since 1995 (Al-Rushoud, 2010). Furthermore, Jordan's economy in 2010 recovered strongly after overcoming the negative effects of the global financial crises (Bekhet and Matar, 2013). Despite the volatile environment in the neighbouring countries, Jordan has managed to avoid being drawn into violent conflicts with regional actors (Jordan Country Report, 2016). This highlights Jordan's strong domestic regime that protects its people and its economy. Overall, due to Saudi Arabia and Jordan having maintained political and economic stabilities in the turbulent Arab region, the researcher decided to select her study sample from these two countries.

In addition, the choice of these countries allows a more diverse sample incorporating, in Saudi Arabia, a high-income conservative country from the Gulf, and, in Jordan, a middle income country from the Arab Levant region. Additionally, Jordan is considered to have a distinct culture that has a good blend of old and new (Khalaf et al., 2015) and is also considered to be a tolerant Islamic state that accepts all religions (Jordan embassy in U.S.). Generally, it is beneficial to study the investment behaviours of women living in a country that have diverse ethnicities, backgrounds and religions. The main ethnic groups in Jordan are; Arab 98% (which include mainly Jordanians, Palestinians and Iraqis), Circassians 1%, and Armenians 1% (The World Factbook: Jordan, n.d.).

In regards to Saudi Arabia, it is important to study the investment behaviour of Arab women (particularly Saudi women) to see how the strong influence of culture and religion, which is mainly Islam (The World Factbook: Saudi Arabia, n.d.), can affect their trading behaviour. Saudi Arabia is among the richest oil producing countries with a relatively highly-developed society, characterized by strong religious and tribal roots (Zamberi, 2011). Overall, cultural values and religious beliefs have a significant impact on people and their investment decisions in the Arab region, especially in Saudi Arabia (Al-Abdulqder et al., 2007). Additionally, women investors in Jordan and Saudi Arabia are largely absent from the literature due to the difficulty of obtaining statistical data on these women, especially in Saudi Arabia (Niblock, 2015). Thus, the researcher selects her sample from Jordan and Saudi Arabia.

5.1.2 The sample selected for the primary data

To achieve the main objectives of the study, a relatively large sample size is recommended. The larger the study's sample size is, the more representative it can be and the more reliable the results are (Saunders et al., 2009, p.219). That said, the sample size is also based on the researcher's objectives and available resources including time, finance and human (Saunders

et al., 2009, p.212).

In regards to the study's sample size, the researcher distributed the web-administered (online) questionnaire to a large number of Arab men and women located in Saudi Arabia or Jordan who are investing, or interested in investing, in stocks (from different demographic, educational, and professional backgrounds). Collecting a sample of more than 500 participants was encouraging for the researcher due to the cultural barriers in both countries and the nature of the questionnaire contents, which are considered fairly new to Arab investors (especially women).

The questionnaire was organized and distributed via the online survey tool, Survey Monkey.com (a leading provider of web-based survey solutions). The online survey tool helped the researcher to reach a larger numbers of participants, especially women, without causing any inconvenience for them and without dealing with obstacles linked to local traditions.

The researcher was cautious to select a sample that would meet the study's objectives and answer its questions. Specifically, the researcher selected the respondents according to the study's sample criteria and size. The sample size was determined based on published tables that provide sample sizes for a given set of criteria. Such tables present sample sizes, confidence levels, and variability. According to Yamane (1967), a population size of more than 10,000 should have a sample size of 400 to give a confidence level of 95% and a 5% a desired level of precision ($e = 0.05$). In addition, since the study's sample size is large, the researcher used the Cochran (1963, pp. 73) formula to calculate the sample for large populations. According to the Cochran (1963) formula, the sample size for the purpose of this study should be equal to 385 (given a desired level of precision (e) = 5%). The detailed calculation for determining the study's sample size is provided in Appendix (5.1). The

researcher therefore sent the online questionnaires to individual investors in the hope of receiving more than 500 responses.

Stratified random sampling was used to identify respondents. Although convenience sampling is usually considered the best method to reach the highest rate of responses (since it is easier to get responses from participants known to the researcher), this approach is more suited to situations where the research has access to particular sites (Muijs, 2004, p.40) or where the researcher works in the same field as the potential respondents. Since the study's sample in this case consists of individual Arab investors living in Saudi Arabia or Jordan, the researcher is external to and independent from the study, so convenience sampling is not appropriate (Muijs, 2004, p.40). Moreover, convenience sampling cannot offer a representative sample so the results cannot be generalized for the whole population (Bryman and Bell, 2007, p.198). Since the aim of this study is to find out the investment behaviour of Arab individuals, thus convenience sampling is not the best method to use.

Stratified random sampling, on the other hand, is more appropriate for this particular study because the sub-groups of Arab men may have different investment behaviours than Arab women. Stratified sampling is also appropriate because the population from which the sample is selected does not comprise a homogeneous group. In stratified sampling, the population is divided into several sub-groups that are individually more homogenous than the total population, to get a better estimate of the whole population and also achieve more reliable results (Kothari, 2004, p.60). Under the stratified random sampling method, the researcher stratifies the population by a standard (in this case, Arab female and male individuals investing or interested in investing in stocks), and then chooses a random sample from each stratum (Bryman and Bell, 2007, p.187).

After selecting the appropriate sampling method, the researcher sent the link of the

questionnaire, through Survey Monkey, to the targeted investors either directly or through the help of brokers in the major security firms located in Saudi Arabia and Jordan. The brokers were responsible for linking the researcher with their clients, Arab men and women investors in both countries (via e-mail), in order to help the researcher in distributing the questionnaire and encouraging their investors to answer the questionnaire (by highlighting the benefits of the study for them and for other Arab individual investors). Further, the researcher sent the link to educational investment institutions (owned by investment banks) with members who were Arab individuals investing or interested in investing in stocks. Due to the time constraints and the political turmoil in the region, the researcher chose only Arab individuals (investors or interested in investing in stocks) living in Saudi Arabia or Jordan. Selecting Arab individual investors living in Saudi Arabia and Jordan from different backgrounds and sectors can to some extent be considered as well representative of the bigger population in both countries.

The numbers and diversity (in terms of chosen countries, backgrounds and investment experiences) of the respondents make them an eligible representative sample. To illustrate, the sample includes diversity in respondents' characteristics (such as age, wealth, earned income, level of education, field of study, occupation) that make them representative sample because all Arab individual investors in Jordan and Saudi Arabia have some opportunity of being included in the study's sample. For instance, the respondents' age ranges from 18 till 74, which implies the sample includes students, employees, and retirees from different educational backgrounds. In addition, the sample includes respondents from various occupations (as private/public employees, business owners, entrepreneurs) who may have different investment behaviours and different investment goals. Thus, the study's sample is representative because it provides an accurate reflection of the variations and diversity represented within the population in Jordan and Saudi Arabia

Overall, the researcher has demonstrated the sample is representative of the entire population in Jordan and Saudi Arabia, and this, follows stratified random sampling technique. Nonetheless, this sample cannot represent the whole Arab population. This may be considered a limitation of this study, and will be discussed further in chapter 8. After selecting the study's sample, the researcher carefully designed the research instrument (the online questionnaire).

5.5.1.3 The design of study's research instrument (online questionnaire):

In order to address the study's objectives and test its hypotheses, the researcher carefully designed the online questionnaire with seven main sections that are related to the relevant literature. Prior to designing the questionnaire, the researcher extensively reviewed existing studies that assist her in setting the questionnaire goals and questions. The researcher also used already validated measures adapted from existing studies, wherever possible.

While designing the questions, the researcher ensured that they were as short, clear and direct as possible so the respondents could easily answer them and complete the questionnaire in less than 20 minutes at most. Since the way in which questions are worded influences the respondents' answers (Muijs, 2004, p. 58), the researcher attempted to use simple wordings in each question so that all respondents can understand the content without facing difficulties. Furthermore, the researcher used only structured short multiple-choice questions that do not take lots of effort and time to answer, in order to increase the response rate. A further consideration was to ensure that the questions were suitable for Arab individuals in regards to cultural and religious factors. For instance, the researcher avoided using words such as gambling stocks to measure individuals' risk tolerance levels because gambling stocks are considered sinful stocks and are discouraged in Islam (Hood et al., 2014). After carefully designing the questionnaire, the researcher translated it (using the help of professional and academic translators) from its original language (English) to the target language (Arabic) to capture the linguistic distinctions.

Additionally, the researcher used a back-translation method, from Arabic to English, which is considered to be good practice in cross-cultural research (Maneesriwongul and Dixon, 2004), so as to confirm that all the items were clearly interpreted in the Arabic language. After the translation process was completed, the researcher reviewed the Arabic version and compared it to the English version to ensure the accuracy of translation. Moreover, to confirm that the questions do not lose their actual meanings during the translation process (content validity)¹¹ and to ensure that it looked like a decent translation of the constructs (face validity), the researcher also presented a clear introduction about the study's aims and highlighted how the findings may motivate Arab investors, mainly women, to invest more in stocks. Giving the respondents a clear idea about the study and its importance to them and to the wider population of Arab investors, may increase the number and accuracy of the questionnaire's responses (Dillman, 2007).

An additional role played by this introduction was to confirm the protection of the participants' identity (by indicating that the identity is anonymous). Moreover, the researcher took into account some major ethical issues (such as invasion of privacy and harm to participants) when designing the questionnaire (Bryman and Bell, 2007, p.132-142). The research does not inform the participants about all the study's objectives, however, but only included sufficient relevant information to encourage participation in the questionnaire without having any concerns.

The questionnaire comprised seven sections with a set of three to eight questions in each section. All questions were designed to measure the investment behaviour of Arab individuals (males and females) along with investment barriers and motives, when trading stocks. The

¹¹ Content validity (non-statistical method): is the extent to which a measuring instrument provides sufficient coverage of the studied topic (Kothari, 2004, p. 74).

questionnaire's sections included the following: respondents' background (demographic factors), investment preferences and stock investment experiences, risk tolerance levels, social influence (herding behaviour), effect of religion, investment confidence levels, investment literacy levels, and investment barriers and motives. Hence, risk tolerance level, herding behaviour, effect of religion, confidence level, and investment literacy level are the study's main variables selected to understand the investment behaviour of Arab women relative to Arab men. Table (5.1) lists each section of the questionnaire with its type of questions, aim, and importance to the study's objectives and hypotheses.

Table 5.1 The study's questionnaire structure

Sections	Types of questions in the section	Aim of the Section	Importance to the study's objectives and hypotheses (H)
1) Background section	- Nominal and ordinal scale questions (8 questions)	- Study how demographic factors (mainly age, annual income and education) are associated with the investment behaviour of the sample Arab women.	- Use to test H1
2) Investment experience in the stock market	- Ordinal Scale questions (classifying and ranking order of items on investment preference and experience) (7 questions)	- Understand the investment preferences of the study's sample (mainly Arab women) regarding major financial assets, mainly stocks AND - Indicate the respondents' investment experiences in the stock market in terms of investment years, time horizon, investment in local stock market, and online investment.	

3) Risk Tolerance Level	- Category and rating questions (4 questions)	- Examine the maximum amount of uncertainty Arab women are willing to accept when investing in stocks AND - Study Arab women' risk tolerance levels relative to Arab men investors.	- Designed to meet objective Two, and test H4
4) Social Influence (Herding)	- Category and rating questions (4 questions)	- Investigate whether Arab women are more socially influenced and exhibit higher herding behaviour than men when investing	- Designed to meet objective Two, and test H2
5) Religion Influence	- Category questions (3 questions)	- Indicate whether and to what extent religion influences Arab women's investment behaviour AND - Examine whether Arab women are more religious than men when investing	- Designed to meet objectives (Two and Three) and test H3
6) Investment Confidence Level	- Category and rating questions (5 questions)	- Test the investment confidence level for Arab women compared to Arab men investors.	- Design to meet objective Two, and test H5

7) Investment literacy Level	- Category; Exam style questions: (Multiple choice and true/false questions) (8 questions)	- Investigate Arab women's investment knowledge about stocks compared to Arab men investors. All questions target to test the actual investment knowledge of respondents.	- Design to meet objective Two, and test H6
8) Investment Barriers and motives	- Ranking questions (Matrix style) (2 questions)	- Highlight the main three barriers that limit women investment in stocks along with the three most important motives that increase Arab women participation in the stock market.	- Designed to meet objectives Two and Five

The questions in each section were targeted carefully at the study's objectives, while taking into account the cultural and religious sensitivity of the Arab individual investors. It is important for the research instrument to be culturally sensitive (Muijs, 2004, p.64). Accordingly, the researcher adapted already validated questions from existing studies mainly on risk tolerance, social influence, investment confidence, and investment literacy respectively (Grable and Lytton, 1999; Wood and Zaichkowsky, 2004; Lusardi and Mitchell, 2007; Kourtidis et al., 2011; Van Rooij et al., 2011; Almenberg and Dreber, 2015). Overall, adapting questions from previous studies in order to replicate or compare results can allow reliability to be measured (Saunders et al., 2009, p.374). Furthermore, the researcher developed other questions (mainly on the effect of religion, barriers and motives) that met the study's objectives and which were suitable for Arab individual investors, their culture and their religious beliefs. In regards to investment motives and barriers, the researcher designed

the questions based on the views of various individual investors and experienced investment managers who are familiar with the Arabic culture. The researcher also analysed the existing findings on gender differences in investment behaviour in an attempt to develop the questions; since there are no studies that directly examine the investment barriers and motives for Arab individual investors (especially women). To illustrate, many studies find that women are risk averse investors with limited financial knowledge, so several barriers and motives are designed based on these findings.

Accordingly, the researcher developed eleven potential motives with consideration of women's nature and investment behaviour. For instance, several barriers and motives were identified in regards to women's limited investment literacy. Such barriers and motives emerged based on several existing findings (such as those of Chen and Volpe, 1998; Lusardi and Mitchell, 2007; Bucher-Koenen et al., 2012) that reveal women's limited financial and investment literacy relative to men, and how this causes them to manage their investment poorly (Jappelli, 2010) and limit their participation in the stock market compared to men investors (van Rooij et al., 2011). Furthermore, the researcher developed a couple of barriers and motives that were tailored particularly to Arab women, taking into consideration religious and cultural factors. The barriers and motives are designed to Arab women investors, but (with some modification) they can be used for other women investors from different regions.

The questionnaire contains questions of different types and with different measurements. Questions related to the behaviours of Arab individual investors are category questions, so each participant's response only fits one category (Saunders et al., 2009, p.376). These were used when the intention was to test the investment behaviours of women relative to men in regards to the study's main variables (risk tolerance, herding behaviour, effect of religion, investment confidence and investment literacy levels). Additionally, the researcher designed ranking questions to rank the investment motives and barriers according to their importance

(important, moderately important, not important). The researcher also developed rating questions, when asking about investors' opinions (Saunders et al., 2009, p.378), where she asked the respondents how strongly they agree or disagree with a statement or series of statements. The rating questions were used in the social influence and investment confidence sections, using mainly the 5-Likert-style rating scale (agreement rating type). Furthermore, the researcher used exam type questions (multiple choice and true/false questions) in the investment literacy level section to test the investment knowledge of the respondents.

In regards to the investors' backgrounds and investment preferences sections, the researcher designed nominal and ordinal scale questions. Nominal scale questions were: classifying; gender, marital status, occupation, field of education, investment in local market and online investing. Ordinal scale questions were: classifying and ranking order: age, educational level, income level, years of investing/investment time horizon and investment preference. The researcher tested the questionnaire by reviewing it with her supervisor and then conducting a pilot study on investors and financial experts.

5.5.1.3 .1 Pilot Study:

Pre-testing a research instrument is important to avoid ambiguous, misleading and double-barrelled questions (Dillman 2007), which may cause respondents difficulties when answering them. Thus, the researcher first reviewed various drafts of the questionnaire with her main supervisor for the purpose of content and face validation for all the questions. Then, the questionnaire was reviewed with financial experts to ensure the quality and accuracy of the questions in relation to the investment aspects.

After the questionnaire's final revision, the researcher selected a random sample of forty Arab individual investors (males and females from Saudi Arabia and Jordan) studying or working in the business sector for a pilot study. The respondents easily understood and answered all of

the questions, which was considered to be a good indication of the validity of the questionnaire. Their main feedback, however, was regarding the length of the questionnaire. As a result, the researcher reduced the questionnaire's length by choosing the most appropriate and easy-to-understand questions for each variable. After these modifications, the researcher distributed the questionnaire to the study's target sample to collect the primary data (see Appendix (5.2) for the questionnaire's English and Arab versions).

5.5. 2 The Study's Secondary Data

In order to address the study's fourth objective and to test the hypotheses (H7 and H8) the researcher collected annual internal official statistics on the numbers of male and female investors trading in the Saudi and Jordanian stock exchanges from 2008 to 2015. This secondary data was used to examine the relationship between Arab women investors (represented by Saudi and Jordanian men and women investors) and the performance of the Saudi and Jordanian stock exchanges (represented by the yearly return on Index for both stock exchange) from 2008 until 2015. Due to the limited availability of data from both stock exchanges, the researcher could only select data on the numbers of Saudi individual investors (males and females) and the numbers of Jordanian individual (males and females). Hence, the available data from both stock exchanges are only on local individual investors.

The requested statistical data was prepared especially and separately for the researcher (since this data is not public or previously requested) from the research and the IT departments in both stock exchanges. The data related to the annual numbers of local individuals investing in each stock exchange, as Saudi female and male investors trading in TADAWUL and Jordanian male and female investors trading in ASE from 2008 till 2015. Neither stock exchange had data available on the numbers of local individual investors classified by gender prior to 2008.

According to the data availability, the researcher investigated the impact of Saudi women investors on the performance of TADUWAL, and, similarly, the effect of Jordanian women on the performance of ASE compared to their male counterparts from 2008 until 2015. Overall, it was interesting to investigate the correlation between these educated, professional and wealthy women¹² and the aggregate performance of the stock market (measured by the general Index of each stock exchange). The performance of the stock market was measured using the annual free float index, which is published in both stock exchanges' official webpages and annual reports. Most of the world indices (including TADAWUL and ASE) adopt the free float methodology because it is considered a better way of calculating market capitalization, and gives a better reflection of the change in stock prices in the market (Breaking Down 'Free Float Methodology')

TADAWUL and ASE were selected so that secondary data was consistent with the primary data. Furthermore, both countries and their stock exchanges have their importance in the region.

5.5. 2.1 The Saudi Stock Exchange (TADAWUL)

Saudi Arabia is considered the wealthiest and most powerful country with the biggest economy (dependent mainly on oil revenue) in the Arab region (Hankir and El Baltaji, 2015). Regarding its stock exchange, the Saudi stock market started operating officially in 1983, and has gradually developed through the years (Hokroh, 2013). The name of the Saudi Stock Exchange (TADAWUL) refers to the name of the company responsible for operating the market, which was officially formed in March 2007, and the TADAWUL all share index is called TASI (About TADAWUL, n.d.).

¹² Refer to section 5.1.1 (Sources of Primary Data) for more detailed facts on Saudi and Jordanian women.

TADAWUL is considered to be the region's largest market, with the value of its listed companies reaching approximately \$570 billion, which makes it larger than the major markets in both Russia and Mexico (Petroff, 2015). TADAWUL is also considered the most liquid and most mature stock market in the region, and most diverse in terms of its financial instruments that include equity, sukuk and bonds, exchange traded funds (ETF), and mutual funds (Recent CMA announcement related to TADAWUL, 2015). Furthermore, TADAWUL has the largest/healthiest initial public offerings (IPOs), has the largest amount of raised capital, and has the largest market capitalization in the Arab region (TADAWUL Listing Guide-English, 2013). In fact, TADAWUL is bigger (in terms of size and total equity) than all the stock exchanges in the six other Gulf countries combined (Hankir and El Baltaji, 2015). Individual investors are the dominant investors in TADAWUL, with Saudi investors account for 95% of the total investors (Haddad and Hakim, 2008). In 2014, individual investors played a major role in TADAWUL, before it was opened to foreign investors (The report: Saudi Arabia, 2014, p.95); mainly big institutional investors to reduce its dependence on oil (Omran and Jones, 2015)

TADAWUL has performed strongly for many years, with TASI improving from 6,020 points at the end of 2010 to 8,535 points at the end of 2013 (TADWAL Indices Performance, n.d.). This sharp improvement was mainly due to the increase in the global oil prices from \$77.38 in 2010 to \$105.87 in 2013 (Average annual OPEC crude oil price from 1960 to 2016 (in U.S. dollars per barrel, 2016). Moreover, TASI showed strong growth of 25.5% followed by an increase of 11.50% in first half of 2014 (No more shall we swap, 2014). Although in 2015, TASI showed weak performance (17.5%) due to the political instability in region along with the recent decline in global oil prices (Amman Stock Exchange 2015 Annual Report, 2015), the new Capital Market Authority rules (implemented in first half of 2017) will have a

significant impact on TADAWUL. These rules attempt to cement TADAWUL's regional position by allowing additional market instruments, serving to increase market liquidity and add more confidence and choice for investors (Recent CMA announcement related to TADAWUL, 2015). Figure 5.2 shows the performance of the Saudi Stock Index (TASI), including during the study period (2008-2015) ¹³



Figure 5.2 TASI performance (2007-2016)

5.5. 2.2 Amman Stock Exchange (ASE)

The Jordanian capital market is one of the first and most mature stock markets in the Arab region, and has been in operation for 30 years (Saadi-Sedik and Petri, 2006). It was first established as the Amman financial market and then replaced by the Amman stock exchange

¹³ Source: www.tradingeconomics.com (for TADAWUL and ASE Figures).

(ASE), gradually developing and maturing to ensure safe trading, improve market liquidity, and attract more local and foreign investors.

The ASE was established in March 1999 as a non-profit organization with administrative and financial independence (Hayter, 2001). It is one of the most efficient stock exchanges and one of the biggest and fastest growing markets in the Arab region (Rawashdeh and Squalli, 2006). The ASE is considered unusually large in terms of market capitalization (nearly 300% of GDP) for an emerging market such as Jordan, making the ASE a major player in channelling capital into the Jordanian economy (Saadi-Sedik and Petri, 2006). Overall, ASE is considered an emerging market in terms of fast growth (Almujamed et al., 2015).

The ASE index is divided into major sectors: banking, services and industrial, with each sector further divided into various sub-sectors (Abdel-Aziz et al., 2013). Furthermore, the ASE includes a diverse set of financial instruments (mainly debt and equity), focusing mostly on the equity market (dominated by the stable and powerful financial sector) and less on the debt market. In 2015, the trading value of the financial sector was 68.7% (ASE Annual Report, 2015).

The performance of the market index has varied with the political situation in the region. In 2005, when the political situation was stable in the region, the ASE increased by 96% compared to 2004 (Saadi-Sedik and Petri, 2006). The performance of the ASE in 2009 and 2010 was exceptionally poor, however, with the trading value of the ASE falling from JD9.7 billion in 2009 to JD6.7 billion in 2010 (Bekhet and Matar, 2012).

Recently, the ASE's index performance has weakened due to the on-going political instability in neighbouring countries, which has had an effect on its performance. The ASE was ranked eighth out of 15 Arab stock exchanges in terms of best performance in 2014 (ASE Annual Report, 2014). Furthermore, although the ASE's performance in 2015 decreased, this decrease

was limited compared to other Arab stock exchanges. The ASE decreased slightly (1.3%) in 2015, while the Qatar, Bahrain and Kuwait Stock Exchanges decreased by 15.1%, 14.8% and 14.1% respectively (ASE Annual Report, 2015). Figure (5.3)¹⁴ presents the performance of Amman stock exchange Index (ASE) including the study period (2008-2015).



Figure 5.3 ASE performance from 2007-2016

To sum up, figure 5.4 summarizes the selection of primary and secondary data.

¹⁴ Source: www.tradingeconomics.com

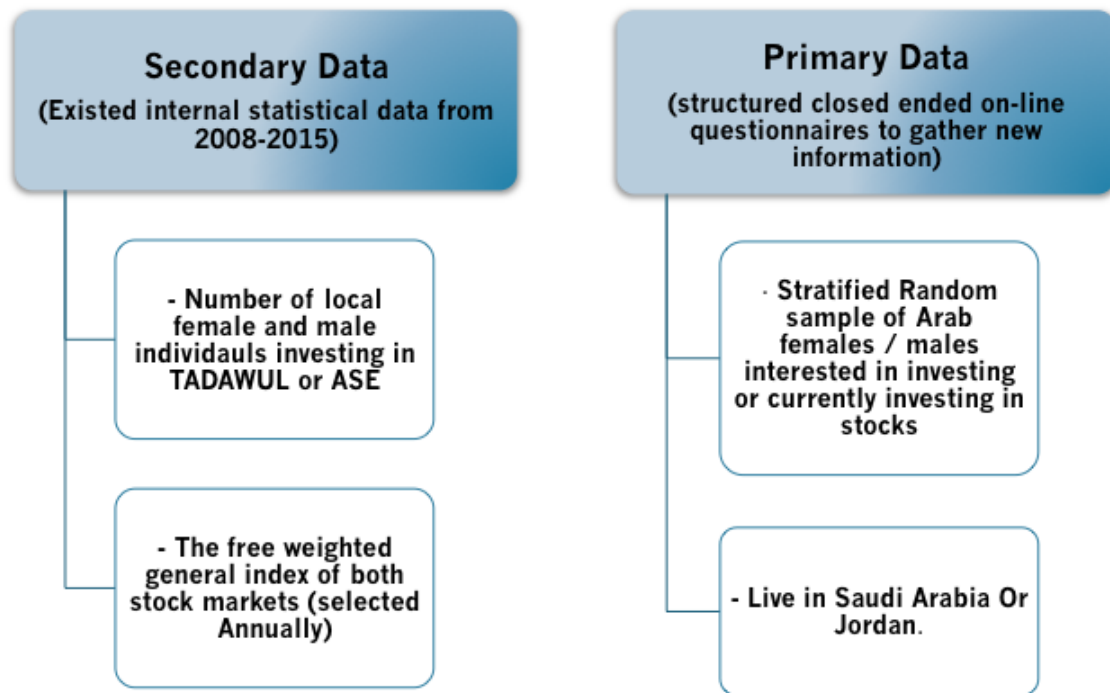


Figure 5.4 Summary of the study's data collection

5.6. The statistical methods used for data analysis

The researcher selected the most appropriate methods to address the study's objectives, test its hypotheses, and measures its validity and reliability. Prior to that, the distribution of the study's variables was tested to determine whether they were normally distributed or not. SPSS software was used throughout for the statistical analysis.

Shapiro-Wilk's test: To know the distribution of the study's data, the Kolmogorov-Smirnov and Shapiro-Wilk's tests were applied. These are the most frequently used tests to measure the assumptions of normality (Mendes and Pala, 2003). The Shapiro-Wilk's test is the most effective, however, because it gives the most powerful results in most situations and because of its good power properties compared to other normality tests (Shapiro et al., 1968). Thus, it is superior to the Kolmogorov-Smirnov test (d'Agostino, 1971).

Regarding the recommended sample, the Shapiro and Wilk (1965) test initially limited the

sample size to less than 50. Royston (1995), however, gave an improved approximation weight to α in the Shapiro and Wilk (1965) test, which makes the test useable for any sample in the range of $3 \leq n \leq 5000$ (Razali and Wah, 2011). Accordingly, the Shapiro-Wilk's test is used in this study to test the variables for normality. Further, the researcher tests the reliability and validity of the research instrument using Cronbach's Alpha test and Factor Analysis, respectively.

Cronbach's Alpha: The Cronbach's alpha test was used to evaluate the study's instrument items (the online questionnaire) for internal consistency (reliability). The test is applied to determine the internal degree of consistency or the average correlation of items in the research instrument to measure its reliability (Santos, 1999).

In this test, the alpha (expressed between 0 and 1) measures internal consistency to show the extent to which all the instrument's items gauge the same construct. The value of alpha increases when the instrument items are correlated to each other and testing the same construct. In itself, however, a high coefficient alpha does not often indicate a high degree of internal consistency because alpha is also affected by the length of the instrument and dimensionality (Tavakol and Dennick, 2011).

Overall, Cronbach alpha along with corrected item-total correlations (which indicates the correlation of each item and the total score for all other items in the questionnaire (Reliability analysis, 2009) are often applied in social and behavioural studies as a measure of internal reliability (Liu et al. 2010,p. 5). More specifically, it is also used in studies that examine the trading behaviours of investors (such as Wood and Zaichkowsky, 2004).

Factor Analysis: is widely used in psychology and social science studies to test construct validity because they usually encounter large sets of observable data (Fabrigar and Wegener, 2011). Factor analysis contains multivariable statistical techniques, which aim to reduce and

simplify complex sets of variables to smaller groups called factors (Sheppard, 1997). These factors include correlated variables that are quite similar in terms of meaning or content. In the social sciences, factor analysis is often used to determine correlations between variables (Kline, 2014, p. 3).

Factor analysis has two major types: exploratory factor analysis (EFA) and Confirmatory factor analysis (CFA). EFA is a variable reduction method, which aims to explore the underlying structure of a large numbers of variables where the underlying factor structure is identified (Suhr, 2006). The aim of EFA is to find the underlying associations between measured variables. In contrast, CFA is applied to confirm the factor structure of a set of observed variables (Suhr, 2006). In this study, EFA is used to identify the factors that underlie the dataset depending on the correlation between the questionnaire's items (Field, 2009), as well as to explore the factors that the study's main variables belong to.

The researcher also uses important measures of EFA, such as the Kaiser-Meyer-Okin measure of sampling adequacy (KMO) to indicate in advance whether the sample size is large enough to extract factors reliably (Field, 2009, p.645). Hence, KMO should be between 0.5 and 1.0 to ensure that factor analysis is suitable for the data (Ali et al. 2006, p. 16). KMO values between 0.8 and 0.9 are great values and values above 0.9 are excellent because they are close to 1.0 (Field, 2009, p.647). The Barlett's test of sphericity is often applied together with the KMO test to examine whether the variables do not correlate too high or too low with other variables (Field, 2009, p.650). This test is applied before generating the correlation matrix because, if it gives a significant result, the researcher can assume that the items correlate somehow (Hof, 2012). In addition, the total variance explained is used, which is suggested to be more than 50% (Hair et al., 1998, p.111). In respect to Eigen-value (which gauges the proportion of the variance of the observed variables a retained factor explains) Kaiser (1960) proposed that this needs to be greater than 1 if factors are to be retained for interpretation.

Frequency Distribution: After testing the reliability and validity of the study's instrument, the researcher used various statistical methods to address the study's objectives and test its hypotheses. To highlight the three most important investment barriers and motives based on the sample Arab women's responses, a frequency distribution table was constructed. Frequency distribution summarises data in a table, in which the data is organized into established numerically ordered class groupings or categories (Levine et al., 2003, p.50). The Frequency table is a simple way to show the number of occurrences (frequency) of a specific category in a visual presentation. Here, this table is used to identify separately the three most important motives and barriers depending on the number of occurrences. Hence, a frequency distribution table is used often in studies examining the investment behaviour of individuals via questionnaires (see Lee et al., 2010; Eckel and Grossman, 2002).

Non-Parametric Tests: Several non-parametric tests were used to investigate the investment behaviour of Arab women relative to Arab men, (since the study's data is not normally distributed). Nonparametric tests are hypothesis tests that do not make assumptions about the population's parameters and do not make use of the parameters' distribution (Kothari, 2004, p. 283). Further, these tests (which test the group median instead of group mean) are applied to analyse data when outcomes do not follow a normal distribution, such as when the outcome is an ordinal variable or a rank (Sullivan, 2016). Since the study uses an ordinal scale and rank and data are not normally distributed non-parametric tests are appropriate. Table (5.2) shows the popular parametric tests with their equivalent non-parametric tests.

Table 5.2 Lists of parametric tests with their equivalent non-parametric tests

Parametric Test	Non-Parametric Equivalent
1 sample T-Test	1 sample Wilcoxon Signed-Rank Test
2 sample T-Test	Mann-Whitney <i>U</i> Test
One-Way ANOVA	Kruskal -Wallis <i>H</i> Test
Pearson's Product Moment Correlation Analysis	Spearman's Rank Correlation Analysis

Overall, non-parametric tests are considered universal and are recommended where they can be sufficient for testing non-normally distributed data (Cleophas and Zwinderman, 2011, p.11). Regarding this study, the following non-parametric tests were used to test several of the main hypotheses and address a number of objectives:

- Kruskal-Wallis *H* test: a popular rank sum non-parametric test used to compare outcomes between more than two independent groups (Vargha and Delaney, 1998). It indicates if there are statistically significant differences between more than two groups of an independent variable on a continuous or ordinal dependent variable. Additionally, this test is applied to compare medians among *K* comparison groups, where *K* is greater than 2 (Sullivan, 2016). In this study, the Kruskal-Wallis (*H*) is used to test separately how age, income and education are associated with the investment behaviour of the sample Arab women (i.e. used to test *H*₁).
- Mann-Whitney *U* Test: another very popular non-parametric test among the rank sum tests; used to compare differences between two independent groups when the dependent variable is

continuous or ordinal. It is used to determine whether two independent groups are both drawn from the same population, where the populations sampled are continuous (Kothari, 2004, p.293). Overall, the Mann-Whitney test is more powerful than the t-test unless the data is normally distributed (Vickers, 2005). The researcher uses the Mann-Whitney test to identify gender differences in investment behaviour (in regards to risk tolerance, herding behaviour, effect of religion, confidence level, and investment literacy level), where gender is the independent variable with two groups of males and females.

- 1 Sample Wilcoxon Signed-Rank Test: this is a non-parametric signed rank test that does not require the data to be normally distributed as the t-test does. Furthermore, it is mainly used to test for a specified median, under the assumption that the distribution is symmetric (where this symmetric assumption does not assume normality) and serves as a test for symmetry if the median is known (Thas et al., 2005). This test is used in this study to compare the risk tolerance median of the sample Arab women investors against the hypothetical median, represented by the risk tolerance median of the whole sample (i.e. male and female investors).

In general, the non-parametric tests are applied to investigate the investment behaviour of Arab women compared to Arab men. Furthermore, regression analysis is used to investigate the impact of Arab women investors on stock market performance and to verify the type and size of this impact. The researcher tests the five regression model assumptions (linearity, multicollinearity, homoscedasticity, normality of error distribution and independence of errors).

Regression Analysis: is a statistical method used to predict the values of the dependent (response) variable based on one or more independent (explanatory) variable (Levine et al. 2003, p.420). Regression analysis has two types; simple liner regression and multiple

regression analysis. Simple linear regression uses a single numerical independent variable (X) to predict or explain a single dependent variable (Y). This analysis develops a statistical model that gives a straight line between the two (independent and dependent) variables; otherwise the model is called a non-linear regression model (Mann, 2007, p. 556). The regression analysis is based on the following assumptions (Levine et al., 2003, p. 436):

- Linearity: The relationship between X and Y is linear.
- Independence of Error: Error values are statistically independent for each value of X.
- Normality of Error: Error values are normally distributed at each value of X.
- Homoscedasticity (equal variance); Probability distribution of errors has constant variance; the errors vary by the same amount when X is a low value as when X is a high value.

Pearson's Product-Moment Correlation Analysis:

The Pearson product-moment correlation coefficient (r) is a measure of the strength of a linear association between two variables, where r can range from +1 to -1 (Levine et al., 2003). A value of 0 shows that there is no relationship between the two variables, while a value greater than 0 indicates a positive relationship. As the value of one variable increases, so does the value of the other variable. On the contrary, A value less than 0 shows a negative correlation; where the value of one variable increases, the value of the other variable decreases. Hence, the correlation analysis in this study is used to examine the direction and the strength of the linear association between Arab women investors and stock market performance in Jordan and Saudi Arabia.

Table (5.3) summarises the statistical tools used in this study and their purposes.

Table 5.3 Summary of the study's statistical tools and their purposes

The statistical tools used	The purpose of their use
Frequency Distribution	Address objectives one and five (The investment barriers and motives)
Kruskal -Wallis H Test	Test H1 (The link of age, income, education with Arab women's investment behaviour).
Mann-Whitney U Test	Test H2, H5, H6 and address objective two (The investment behaviour of Arab women relative to Arab men). Test H7 (The participations of Arab women investors in the stock market compared to Arab men).
1 sample Wilcoxon Signed-Rank Test	Test H4 (Arab women's risk aversion behaviour)
Regression Analysis	Test H3 and address objective two (The effect of religion on Arab women's investment behaviours).
Pearson's Product-Moment Correlation Analysis	Test H8 and address objective four (Determine the correlation between Arab women investors and stock market performance; then verify the type and size of the relationship).

5.7. Summary and Conclusion

This chapter has explained the study's research design in detail and the quantitative-based methodological approach. Furthermore, this chapter has justified in detail the statistical methods used to analyse the primary and secondary data.

The chapter began by discussing the study's main design (including its philosophy, approach and strategy), the selection of the study sample, and the statistical methods used in this study. According to the study's nature and objectives, an objectivist/ positivist philosophical approach is adopted, which leans towards a deductive and quantitative methodology, in line with the dominant trend in the behavioural finance area.

The positivism/objectivism strategy is used because the researcher's aim is to investigate specific independent phenomena (the investment behaviour of females) with the help of objectivity, by collecting numeric data from a large sample through questionnaires. Furthermore, the deductive approach helps the researcher to develop the study's main hypotheses based on the existing theory and scholarship in behavioural finance.

Additionally, the researcher adopts a quantitative approach to collect her primary data (using online questionnaires) and secondary data (using statistical data) then converts both data to a numerical form so conclusions can be drawn. The statistical tools used are mainly non-parametric tests (e.g. the Mann-Whitney U test and the Kruskal-Wallis H test) along with regression analysis.

In regards to the sample selection, the primary data sample is selected from Arab women and men individual investors, or those interested in investing in stocks, living in Saudi Arabia or Jordan. To obtain the primary data, a close-ended online questionnaire was designed with several sections. The aim of the questionnaire was to investigate the investment behaviour of Arab women compared to Arab men in regards to their risk tolerance levels, herding

behaviours, effect of religion, confidence levels and investment literacy levels. Moreover, the questionnaire examines the main investment barriers and motivators facing Arab women.

The secondary data entailed statistical data on the numbers of Saudi and Jordanian individual investors trading in their local stock markets from 2008 until 2015. The aim of selecting the secondary data was to investigate the effect of Arab women investors (represented separately by Saudi and Jordanian women investors) on the stock market performance of TADAWAL and ASE (represented by the general index of each market) from 2008 through to 2015. Hence, this study is one of the very first studies in this area that uses both primary and secondary data to address its objectives.

After developing the study's main hypotheses and selecting the appropriate methodology for collecting its data, the researcher needed to analyse the collected data to test the original hypotheses and address the study's overall objectives. In the next chapter, therefore, the researcher presents the descriptive analyses of the study's empirical findings.

Chapter Six: Empirical Findings

6.1 Introduction:

This chapter analyses the study's primary and secondary data to meet its objectives and test its hypotheses. First, the study's main variables are tested for a normal distribution. Then, the reliability and validity of the study's online questionnaire is tested using Cronbach's Alpha and factor analysis, respectively. The data background of the questionnaire sample is then described; followed by an examination of the investment barriers and motives (which encourage women to invest more in stocks) using frequency distribution analysis. Finally, the eight hypotheses are each tested and the study's objectives addressed through the analysis of both the primary and secondary data, using non-parametric tests along with regression and correlation analysis.

6.2 Distribution of the study's main variables (primary data):

This study describes the investment behaviour of Arab women using five main variables: herding behaviour, effect of religion, risk tolerance, investment confidence and investment literacy levels. Prior to analysing the questionnaires, the normality distribution of the data was tested using the Kolmogorov-Smirnov and the Shapiro-Wilk's tests at ($\alpha = .05$). Since the sample size is less than 2000 ($N = 549$), however, only the Shapiro-Wilk's test results are used. Outputs for the normality test (Table 6.1) illustrate that none of the main study variables has a normal distribution.

Table 6.1 Tests of normality for raw variables						
Variable	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Risk Tolerance Total Score	.076	526	.000	.985	526	.000
Herding Effect Total Score	.126	526	.000	.926	526	.000
Religion Effect Total Score	.168	526	.000	.894	526	.000
Investment Confidence Total	.097	526	.000	.984	526	.000
Investment Literacy Total	.118	526	.000	.954	526	.000

a. Lilliefors Significance Correction

According to this finding, the researcher attempted to normalize the data through standardization to the z-scale and the seven (Box-Cox) transformations (inverse; square root; inverse square root; square; inverse square; log base e (ln); and log base 10 (log) transformations). Overall, the Box-Cox transformation (Box and Cox, 1964) signifies a family of power transformations, which includes and extends the traditional options to easily find the optimal normalizing transformation for every variable and eliminate the need to try various transformations randomly to determine the best option (Osborne, 2010). The results indicate, however, that neither standardization, nor transformation lead to normalization of the aforementioned variables (Table AA1, Table 1 in Appendix A).

Based upon this result, non-parametric, rather than parametric statistical techniques were applied in data processing. According to Qualls et al. (2010), implementing parametric statistical tests on non-normally distributed data decrease power and raise the probability of type II error, which is the failure to identify true differences or associations, leading to lower than true explanatory power (smaller value of the coefficient of determination, R^2). Furthermore, the true problem with parametric tests is they lack power when their assumptions are violated, such as when they are applied to non-parametric data. Vickers (2005) and McCrum-Gardner (2008) indicated that parametric statistics should not be applied

to data with non-normal distributions; they are preferred when their assumptions can be satisfied or justified. Accordingly, non-parametric tests are applied to the data in this case, although subsequently the reliability and validity of all the questionnaire's items are tested.

6.3 Instrument Reliability:

The instrument reliability is tested using Cronbach's Alpha test, which assesses specifically the internal consistency of the questionnaire items. It is used to estimate the reliability of all the participants' responses to the measurement (Helms et al., 2006, p.633). In social and behavioural research, specifically, the Cronbach's Alpha test is used as an indicator of reliability (Liu et al., 2010, p.5). Since this study is in the behavioural finance area and the questionnaire consists mainly of 5-point-Likert measurements, the Cronbach's Alpha test is used. The main findings are presented in Table 6.2 and Table AB1 (Table 1 in Appendix B).

Table 6.2 Reliability analysis: reliability and scale statistics			
Reliability statistics			
Cronbach's Alpha	N of Items		
.584	58		
Scale statistics			
Mean	Variance	Std. Deviation	N of Items
117.71	104.917	10.243	58
a. Listwise deletion based on all variables in the procedure.			

Table 6.2 shows that the value of Cronbach's Alpha coefficient (α) is 0.584. Generally, the accepted lower limit for Cronbach's α is 0.70 (Cronbach, 1970; Nunnally, 1978, p. 245) for measurements to be considered reliable. Lance et al. (2006), however, argued that Nunnally's (1978) acceptable reliability of 0.7 or higher is a myth, in that Nunnally (1978) did not state

that 0.70 is a universal standard of reliability and did not indicate that a reliability of 0.70 is adequate for research or practice. Similarly, Schmitt (1996) argued there is no sacred level of acceptable or unacceptable alpha, so a low level of alpha may still be useful. Further, Pedhazur and Schmelkin (2013) suggested that the reported reliability should be assessed by taking into account the particular circumstances of every study before claiming a lack of reliability for a developed outcome measure. A low size of the coefficient alpha may not always suggest problems with the construction of the instrument, therefore, because it may be related to the data characteristics of the construct (Spiliotopoulou, 2009).

Additionally, Kline (1999) noted that when dealing with related psychological concepts, reliability values of lower than 0.70 are acceptable because of the diversity of the measured concepts. Furthermore, Tavakol and Dennick (2011) revealed that a low value of alpha can result from a small number of questions in questionnaires. In this regard, it should be noted that the religion and social influence sections in this study's questionnaire consist of only three and four questions respectively. Since this study is in the field of behavioural finance and its structured questionnaire measures the investment behaviour of women (which includes psychological behavioural aspects) using five different variables along with measuring the investment preference, motives and barriers, a reliability of 0.584 is acceptable for this study. Moreover, since the measurements of investment behaviour along with investment motives and barriers are relatively new in respect to Arab individual investors (specifically women), an Alpha of 0.584 is acceptable. Overall, it is not sufficient to depend on published studies of reliability if the measure is to be used with different sample. It may be important to verify a new measure if the sample is different, particularly with regard to its homogeneity (Streiner, 2003). Here, since the study's sample is different from other samples used in existing studies the researcher cannot rely on published studies. Further, Hinton et al. (1980, 2004) suggested a categorization of Cronbach's α into four levels reliability: low reliability (≤ 0.50), moderate

reliability (0.50-0.70), high reliability (0.70-0.90) and excellent reliability (≥ 0.90). Accordingly, it is suggested that the research instrument in this study has moderate reliability, which is acceptable given the novelty of subject-matter.

The 'Corrected Item-Total Correlation' column (Table AB1 (Table 1 in Appendix B) presents values of the correlation coefficients (r) of each item with the sum of the remaining items (all items less the questioned item). In general, a reliable scale is one whose items correlate with the total score. Thus, when some items contribute to the internal consistency of the instrument, their coefficients of correlation needed to be large. To be able to read entries in this column, the Taylor (1990) labelling system for the categorization and interpretation of the correlation coefficients (r and ρ_s) is adopted in this study. According to this labelling system, absolute correlation coefficients ≤ 0.35 represent low associations; 0.36 to 0.67 represent moderate associations and 0.68 to 1.0 represent strong associations (Taylor, 1990). Based on this labelling system and table AB1, the researcher concludes that all the instrument's items, except the fifth motivation item, have weak (low) correlations with the instrument. The fifth motivation item is the only instrument item that has a medium-strength relationship with the instrument ($r = .400$). Due to the weak correlations between the items, the researcher attempted to delete poor fitting Items and re-compute the alpha. According to Kopalle and Lehman's (1997) investigations of coefficient alpha, dropping poorly fitting items helps to enhance alpha.

Despite the weak associations of all items with the instrument, deletion of some items (as the negative items) did not result in a pronounced improvement in the instrument reliability. Likewise, no tangible reduction in the instrument reliability occurred when all the items were maintained as indicated in the last column in (Table AB1). This column reveals that the instrument reliability varies over a very narrow range (.560-.596; Table AB1). Accordingly,

the researcher kept all the instrument's items; although the instrument has moderate reliability but has a strong construct validity and low standard of error.

6.4 Instrument Validity:

In this study, the researcher assessed the instrument's construct validity¹⁵ by using factor analysis (FA) to group the items into a common and small number of factors as well as interpreting every factor based on the items having a high loading on it (Bryman and Cramer, 2002). The results in Table (6.3) reveal that the sample size ($N = 549$) meets the sample size requirement of FA since the value of KMO, a measure of sampling adequacy, is 0.808. The outcomes of the KMO test are interpreted following Kaiser's rules (Kaiser, 1974), which argue that a KMO value between the range of 0.80 to < 0.90 indicates a great sample (great sampling adequacy).

Furthermore, the Bartlett's test of sphericity is significant ($p = 0.000 < 0.05$) (see Table 6.3), which indicates that this dataset is suitable for FA. The Bartlett's test of sphericity is used to test the hypothesis that states that the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate (Field, 2005). Therefore, the desired result is to reject this hypothesis (McNeil et al., 2005) to ensure that the variables employed in the FA are actually correlated. Since the probability is zero (lower than $\alpha = .05$), the null hypothesis is rejected, it should be concluded that the variables used in the FA are correlated.

¹⁵ Construct validity refers to the degree to which the instrument's items relate to the related theoretical construct (DeVon et al., 2007)

Table 6.3 Construct validity analysis of the instrument: KMO and Bartlett's tests

Kaiser-Meyer-Olkin Measure of Sampling		.808
Bartlett's Test of Sphericity	Approx. Chi-Square	6110.931
	df	1653
	Sig.	.000

According to Table (6.4) and Table (AC-1) along with Kaiser's 'greater-than-one' rule (Kaiser, 1960), it is concluded that the data construct consists of 16 factors, which together explain nearly 63.21% of the variations in the data. This finding needs further analysis, however.

Table 6.4 Construct validity analysis of the instrument: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.467	14.598	14.598	8.467	14.598	14.598	3.833	6.609	6.609
2	3.664	6.317	20.915	3.664	6.317	20.915	3.122	5.382	11.991
3	3.475	5.991	26.906	3.475	5.991	26.906	3.092	5.331	17.322
4	2.628	4.531	31.436	2.628	4.531	31.436	2.861	4.933	22.255
5	2.370	4.086	35.523	2.370	4.086	35.523	2.678	4.617	26.872
6	2.083	3.591	39.114	2.083	3.591	39.114	2.504	4.317	31.189
7	1.921	3.311	42.425	1.921	3.311	42.425	2.501	4.313	35.502
8	1.789	3.084	45.509	1.789	3.084	45.509	2.341	4.037	39.539
9	1.674	2.887	48.395	1.674	2.887	48.395	2.305	3.974	43.513
10	1.578	2.721	51.116	1.578	2.721	51.116	2.165	3.732	47.245
11	1.349	2.326	53.442	1.349	2.326	53.442	1.855	3.197	50.442
12	1.229	2.119	55.561	1.229	2.119	55.561	1.591	2.742	53.185
13	1.200	2.070	57.631	1.200	2.070	57.631	1.570	2.708	55.892
14	1.125	1.939	59.570	1.125	1.939	59.570	1.493	2.575	58.467
15	1.082	1.865	61.435	1.082	1.865	61.435	1.471	2.536	61.002
16	1.032	1.780	63.215	1.032	1.780	63.215	1.283	2.213	63.215
17	.990	1.707	64.922						
41	.424	.731	91.318						

Extraction Method: Principal Component Analysis.

The analysis of the ‘Rotated Component Matrix’ output of FA (Table AC2; Table 2 in Appendix C) to determine the nature and composition of the extracted factors, indicated the following (refer also to Table AC2).

- The first factor consists of seven items: the five ‘Investment Confidence’ items (IC1, IC2, IC3, IC4, and IC5) and two ‘Barrier’ items (Barrier 6 and Barrier 8). Since the items are related to trust and confidence, the researcher labels this factor as the ‘Investment Confidence Factor’.
- The second factor includes five items: the three ‘Religion Effect’ items, Barrier 5 and Motive 5. Interestingly, both Barrier 5 and Motive 5 are related to religion. Thus, the researcher labels this factor as the ‘Religion Factor’.
- The third factor exclusively comprises six ‘Motive’ items: Motive 1, Motive 6, Motive 7, Motive 9, Motive 10 and Motive 11. Accordingly, the researcher labels this factor as a ‘Motive Investment Factor’.
- The fourth factor consists of all four ‘Social Influence’ items exclusively: HE 1, HE 2, HE 3 and HE 4, which relate to herding behaviour. Consequently, this factor is a ‘Herding Behaviour Factor’.
- The fifth factor includes three ‘Motive’ items: Motive 2, Motive 3, and Motive 8. Since the three items are related to investment educational and online investment motivation, the researcher labels this factor as the ‘Investment Education Factor’.

- The sixth factor contains five ‘Barrier’ items: Barrier 1, Barrier 2, Motive 3, Barrier 4 and Barrier 9. Since this factor receives loadings from only ‘Barrier’ items that are financial in nature, the researcher labels this factor as the ‘Financial Barrier Factor’.
- The seventh factor receives loadings from four of the five ‘Risk Tolerance’ items exclusively: RT 1, RT 3, RT 4, and RT 5. Thus, this factor is described as the ‘Risk Tolerance Factor’.
- The eighth factor includes three ‘Investment Preference’ items: investing in stock exchange market (SEM), investing in stocks, and period of investment. Despite the limited loading on this factor (three items only), the researcher describes this factor as the ‘Stocks’ Investment Factor’.
- The ninth factor comprises four ‘Investment Literacy’ items: IL 2, IL 3, IL 7, and IL 8. Consequently, the researcher labels this factor as the ‘Investment Literacy Factor’.
- The tenth factor includes three ‘Investment Preference’ items exclusively: investment in currencies, investment in commodities, investment in bonds, and the more preferred investment. Hence, the researcher describes this factor as a ‘Preferred Investment Factor’.

For the remaining factors (11-16), the quality criteria for factor extraction outputs specified by Reimann et al. (2002) and Costello and Osborne (2005) is adopted. Reimann et al. (2002) indicated two measures for factor extraction: first, the percentage of variance in data that the factor explains should be high ($> 5.0\%$). Further, the total percentage of variance that all the

factors explain should satisfy a distinct cut-off (> 70.0). Additionally, Costello and Osborne (2005) stressed that a factor with less than three items is weak, unstable, and can be overlooked. Based on these guiding rules, and with reference to the (Table AC2), the researcher argues that factors 11-16 can be dropped due to their weakness.

Overall, the study's instrument has solid construct validity. Its main five independent variables defining the investment behaviour (risk tolerance, herding behaviours, religion effect, investment confidence and investment literacy) have clear and distinct representation in the extracted factors. Interestingly, some variables have factors that only include their items (such as herding behaviour variable). Furthermore, the underlying structure of the study data is made up of ten factors that explain 47.24% of the variation in the data. Finally, the remainder of variation in the data is explained by factors that are not covered in this study. Subsequently, when testing the instrument's reliability and validity, the researcher presents the instrument's descriptive data along with the most important investment barriers and motives for the sample Arab women.

6.5 Description of Data:

6.5.1 Demographic characteristics of the study sample

The researcher performed a frequency distribution analysis for the study's sample demographic characteristics. The results in (Table 6.5) indicate that the majority of the respondents (66.1%) answered the Arabic version of the questionnaire compared to 33.9% who answered the English version. In addition, more than two thirds of the sample respondents (71.8%) are Arabs living in the Kingdom of Saudi Arabia, while slightly more than one quarter of the respondents (28.2%) are living in Jordan. Regarding gender, the

study's sample included more men (58.5%) than women (41.2%), as is common in the various existing studies examining gender differences in investment behaviour.

Furthermore, the analysis results reveal that the highest numbers of respondents belong to the age groups of 25-34 years (24.8%) and 35-44 years (20.6%), highlighting that the majority of the study's sample are young individuals. Interestingly, the 'Annual Income' groups in the study sample are highly homogeneous. The fewest respondents (21.5%) were in the $\geq 75,000$ US\$ annual income group, while the highest proportion (27.7%) were in the $< 20,000$ US\$ annual income group. In addition, the results show that more than half of the respondents (54.1%) hold Bachelor's degrees. On the other hand, the lowest numbers of respondents had high school qualification (4.6%) and diploma certificates (5.8%). As to specialization, (29.1%) of the respondents belong to specializations not listed in the research instrument, while (28.4%) of them belong to 'Finance/Banking'. Hence, table (AO-1) provides a descriptive analysis for the sample Arab men and Arab women separately.

Table 6.5 Description of the study sample.					
Characteristic	Categories	Frequency	Percent	Valid Percent	Cumulative Percent
Preferred Language	Arabic	363	66.1	66.1	66.1
	English	186	33.9	33.9	100.0
Country	Jordan	155	28.2	28.2	28.2
	KSA	394	71.8	71.8	100.0
	Total	549	100.0	100.0	
Gender	Male	321	58.5	58.7	58.7
	Female	226	41.2	41.3	100.0
Age Group	18-24 Years	40	7.3	11.7	11.7
	25-34 Years	136	24.8	39.7	51.3
	35-44 Years	113	20.6	32.9	84.3
	45-54 Years	30	5.5	8.7	93.0
	55-64 Years	14	2.6	4.1	97.1
	65-74 Years	9	1.6	2.6	99.7
	≥ 75 Years	1	.2	.3	100.0
Marital Status	Single	202	36.8	36.8	36.8
	Married	318	57.9	57.9	94.7
	Divorced	25	4.6	4.6	99.3
	Widow	4	.7	.7	100.0
Annual Income	< 20,000 US\$	152	27.7	27.7	27.7
	20,000-39,999 US\$	143	26.0	26.1	53.8
	40,000-74,999 US\$	135	24.6	24.6	78.5
	≥ 75,000 US\$	118	21.5	21.5	100.0
Source of Wealth	Inherited	23	4.2	4.2	4.2
	Self-Made	352	64.1	64.1	68.3
	Provided by Family Member	50	9.1	9.1	77.4

	Inherited and Self-Made	40	7.3	7.3	84.7
	Provided by Family Member and Self-Made	41	7.5	7.5	92.2
	Inherited and Provided by Family	43	7.8	7.8	100.0
Level of Education	High School	25	4.6	5.0	5.0
	Diploma	32	5.8	6.4	11.3
	Bachelor's	297	54.1	59.0	70.4
	Master's Degree	106	19.3	21.1	91.5
	Doctorate	43	7.8	8.5	100.0
Field of Study	Business	129	23.5	23.5	23.5
	Finance/ Banking	156	28.4	28.4	51.9
	Economics	26	4.7	4.7	56.6
	Medicine	19	3.5	3.5	60.1
	Law	18	3.3	3.3	63.4
	Engineering	41	7.5	7.5	70.9
	Other	160	29.1	29.1	100.0
Occupation	Private	224	40.8	40.8	40.8
	Public Sector	128	23.3	23.3	64.1
	Business	29	5.3	5.3	69.4
	Entrepreneur	29	5.3	5.3	74.7
	Retired	29	5.3	5.3	80.0
	Unemployed	34	6.2	6.2	86.2
	Student	46	8.4	8.4	94.5
	Other	30	5.5	5.5	100.0

6.5.2 Investment preferences of women respondents

Since this research attempts to assess the investment behaviour and investment preferences of Arab women, the six financial assets most commonly invested in are listed. According to (Table 6.6), the frequency distribution analysis (FDA) shows that (27.5%) of Arab women mostly invest in stocks, while (23.4%) do not invest in stocks. Furthermore, the results indicate that bonds are the investment type least invested in, with (84.7%) of the sample Arab women not investing in bonds.

Similarly, the results also disclose that the majority of the sample Arab women (65.6%) do not invest in mutual funds. In regards to real estate, the results reveal that (42.8%) of the sample do not invest in real estate. Interestingly, the proportions investing in this asset moderately or mostly are quite close; (22.6%) and (21.2%), respectively. Additionally, the analysis highlights that (76.8%) of the sample Arab women do not invest in commodities. In terms of currencies, the findings are quite similar to those related to bonds, in that (81.9%) of the sample do not invest in this asset; while only (1.4%) of them invest mostly in this asset.

Table 6.6 Arab women investment preferences				
Target Investment	Frequency (Valid Percentage)			
	1	2	3	4
Stocks	52 (23.4%)	55 (24.8%)	54 (24.3%)	61 (27.5%)
Bonds/Sukuks ¹⁶	171 (84.7%)	19 (9.4%)	9 (4.5%)	3 (1.5%)
Funds	137 (65.6%)	31 (14.8%)	28 (13.4%)	13 (6.2%)
Real Estate	89 (42.8%)	28 (13.5%)	47 (22.6%)	44 (21.2%)
Commodities	162 (76.8%)	21 (10.0%)	19 (9.0%)	9 (4.3%)
Currencies	172 (81.9%)	28 (13.3%)	7 (3.3%)	3 (1.4%)
1: Not invested in; 2: Least invested in; 3: Moderately invested in; 4: Mostly invested in.				

6.5.3 Descriptive statistics for the study's main variables

Ten descriptive statistics were calculated for the total scores of each of the five study variables based on the complete forms ($N=549$). According to the results in (Table 6.7), the values of the standard errors of the means (SEM) of the study's five variables are generally very low and much less than 1.0 (range: 0.087-0.175). The lower the SEM, the more representative the study's sample is of the whole actual population.¹⁷

Moreover, (Table 6.7) displays the values of the standard deviations and variances of the five variables of the investment behaviour. The standard deviations of the five variables vary from 2.02 to 4.8, which are actually high. This implies that the sample participants' responses to the instrument's items actually deviate from their corresponding means. Such a diversion may be due to the wide variations between the sample participants in regards to gender, education, experience, occupation, specialization and emotions. As a result, the range of variances

¹⁶ Sukuks are Sharia-compliant sovereign bonds.

¹⁷ Downloaded from: <http://www.investopedia.com/terms/s/standard-error.asp>

(12.61) is much higher than that of the standard deviations (2.067). After completing the descriptive statistics, the main investment barriers and motives from the point of view of the sample Arab women were analysed.

Table 6.7 Descriptive statistics of the main study variables. *						
		RTTotal	HETotal	RETotal	CLInvestment Total	ILLTotal
N	Valid	544	544	543	543	541
	Missing	5	5	6	6	8
Mean		12.72	9.69	7.23	14.41	4.18
Std. Error of Mean		.147	.175	.100	.143	.087
Median		13.00	9.00	8.00	14.00	4.00
Mode		14	5	10	13	5
Std. Deviation		3.430	4.084	2.341	3.337	2.018
Variance		11.767	16.680	5.478	11.132	4.071
Range		17	15	7	18	8
Minimum		4	4	3	5	0
Maximum		21	19	10	23	8
Sum		6920	5269	3928	7827	2262
* The column headings are explained as follows: RTTotal: Respondent's total score on the 'Risk Tolerance' sub-scale. HETotal: Respondent's total score on the 'Herding behaviour' sub-scale. RETotal: Respondent's total score on the 'Religion Effect' sub-scale. CLInvestmentTotal: Respondent's total score on the 'Investment Confidence' sub-scale. ILLTotal: Respondent's total score on the 'Investment Literacy' sub-scale.						

6.6. The investment barriers:

To address the study's first objective, the researcher identified the investment barriers that limit Arab women in the sample from investing often in stocks. To this end, ten common barriers are listed and one of three levels of importance is assigned to each. A frequency distribution statistical method is applied to analyse the respondent's ranking of the importance of the listed barriers (Table 6.8). The key findings are as follows:

- The three most important barriers from the point of view of sample Arab women are:

- Fear of taking higher risks when investing in stocks. This barrier is ranked as important by more than two thirds of the sample Arab women investors (68.3%).
- Fear of losing. This barrier is categorized as the second most important, being cited by slightly less than two thirds of the sample Arab women investors (63.6%).
- Have other financial priorities. This barrier is classified as third most important, being cited by (60.2%) of the sample Arab women. In addition, 'Planning to save more in future' is almost equally important according to the sample Arab women's views, with (59.5%) of them ranking this as an important barrier.

- The three least important barriers from the sample Arab women's views are:

- Lack of interest in financial matters. This barrier is rated as not important by (38.9%) of the sample Arab women.
- Cultural, religious and social factors. This barrier is categorized as not important by (30.3%) of sample Arab women.
- Lack of enough time to closely follow the stock market. This barrier is ranked as not important by (29.4%) of the sample Arab women.

Table 6.8 The investment barriers for the sample Arab women			
Barrier	Frequency (Valid Percentage)		
	1	2	3
Do not earn enough	28 (12.7%)	107 (48.6%)	85 (38.6%)
Have other financial priorities	19 (8.6%)	69 (31.2%)	133 (60.2%)
Plan to save more in future	21 (9.5%)	68 (30.9%)	131 (59.5%)
Lack of interest in financial matters	86 (38.9%)	94 (42.5%)	41 (18.6%)
Cultural, Religious, and social factors	66 (30.3%)	75 (34.4%)	77 (35.3%)
Fear of losing	15 (6.8%)	65 (29.5%)	140 (63.6%)
Fear of taking higher risk when investing in stocks	12 (5.4%)	58 (26.2%)	151 (68.3%)
Limited confidence and Investment literacy levels	29 (13.1%)	68 (30.8%)	124 (56.1%)
Limited financial independency	39 (17.6%)	115 (52.0%)	67 (30.3%)
Lack of enough time to closely follow the stock market	65 (29.4%)	92 (41.6%)	64 (29.0%)
1: Not Important; 2: Moderately important; 3: important			

6.7. The Investment Motives:

This part of the study is somewhat similar to the previous part. The researcher determined the main motive factors that encourage women to invest in stocks' from the perspectives of the sample Arab women investors', in order to address the study's fifth objective. Thus, eleven motives were listed and each was assigned one of three levels of importance. After analysing the motives, using frequency distribution analysis, the major findings are as follows (see also Table 6.9):

- The most important motive factors from the point of view of the sample Arab women:

- Facilitating more online trading, which implies that these women prefer online trading. This motive is ranked as important by (70.3%) of the sample Arab women.
- Two motives are ranked as equally important by the Arab women in the sample:
‘Availability of specific funds that are tailored to meet investor’s demands’ and
‘More financial and analytical reports from leading companies in stock market and financial instruments’ (Both motives are ranked by (64.9%) of the Arab women as being important).
- Likewise, a further two motives are categorized as equally important by the sample Arab women: ‘Reliance on financial advisors’ opinions’ (63.5%) and
‘The need for more information transparency from listed companies in the stock market’ (63.3%).

- The least important motives from the point of view of the of the sample Arab women:

- ‘Having a demo account before starting the actual trading in the stock market’ is rated as not important by approximately one third of the sample Arab women investors (32.4%).
- ‘Having well-equipped trading rooms that facilitate trading’ is categorized as not important by 63 Arab women investors (28.6%).

- "Live Investment and financial educational programs and workshop" this is ranked as not important by approximately one quarter of the sample Arab women (24.5%).

Table 6.9 The Investment motive factors for the sample Arab women.			
Motive	Frequency (Valid Percentage)		
	1	2	3
Rely on financial advisors' opinions	18 (8.15)	63 (28.4%)	141 (63.5%)
Live Investment/financial educational programmes/workshop (Face-to-fac	54 (24.5%)	79 (35.9%)	87 (39.5%)
Live online investment programmes	42 (19.0%)	77 (34.8%)	102 (46.2%)
Facilitate more online trading	17 (7.8%)	48 (21.9%)	154 (70.3%)
More available funds that include stocks that comply with Islamic law	39 (17.6%)	80 (36.0%)	103 (46.4%)
Availability of specific funds that are tailored to meet your demands	19 (8.6%)	59 (26.6%)	144 (64.9%)
More well-diversified portfolios	15 (6.8%)	75 (33.9%)	131 (59.3%)
Having a demo account before starting actual trading in the stock market	71 (32.4%)	80 (36.5%)	68 (31.1%)
Having well-equipped trading rooms that facilitate trading	63 (28.6%)	68 (30.9%)	89 (40.5%)
More financial and analytical reports from leading investment companies on stock market and financial instruments	15 (6.8%)	63 (28.4%)	144 (64.9%)
More information transparency from listed companies in the stock market	15 (6.8%)	66 (29.9%)	140 (63.3%)
1: Not Important; 2: Moderately Important; 3: Important			

These main investment barriers and motives for the sample Arab women were now analysed in order to achieve the first and fifth objectives of the study. Further, the study's primary and secondary data were analysed to test the hypotheses and to achieve the remaining objectives.

6.8. Testing the research hypotheses (using primary data):

This and the following section, test the study's main eleven hypotheses using primary and secondary data. This section tests the first six hypotheses, where H1 examines the association of age, wealth and education with the sample Arab women's investment behaviour (in regards to their herding behaviour, religion effect, risk tolerance, confidence and investment literacy levels). Further, hypotheses (H2, H5, H6) are related to the investment behaviours of Arab women compared to Arab men investors (in regards to their herding behaviour, investment confidence and investment literacy levels). Hypotheses (H3 and H4) meanwhile, examine Arab women's risk aversion behaviour and the effect of religion on their investment behaviours. After testing these six hypotheses, this section also investigates the investment behaviour of Arab women compared to Arab men investors (in regards to their risk tolerance levels and religion effect) in order to meet the study's second objective.

Regarding the primary data, since none of the study's five variables has a normal distribution (see Table 6.1) non-parametric statistical techniques are applied (mainly the Kruskal-Wallis *H* Test, the Mann-Whitney U Test, and the Wilcoxon Signed-Rank Test). The Kruskal-Wallis *H* , an equivalent test to ANOVA, is used to examine the study's first hypothesis (H1). It is specifically used to evaluate whether the population medians on certain dependent variables are comparable, or not, across levels of a test factor. In this test the independent variable splits individuals into two groups or more, and the dependent variable evaluates individuals on an interval or an ordinal scale. If the independent variable has two levels only, no further

significance tests needed to be conducted. If the factor has more than two levels and the test is significant, however, then *post hoc* tests are needed, which involve comparisons between pairs of group medians. In the case of the Kruskal-Wallis *H* test, the Mann-Whitney U test can be implemented to identify the unique sub-groups.

Three demographic factors (age, wealth and education) are chosen because they are important factors in the specific case of Arab women. As discussed in Chapter five, education and wealth¹⁸ are significant factors that impact Arab women's professions, wealth management, and probably investment behaviours; so selecting them is essential. In regards to age, the researcher wants to test how different age groups behave when it comes to investing. Since the majority of the sample is comprised of young individual investors, it is interesting to investigate their investment behaviours relative to those of the older aged groups. Hence, Arab women's investment behaviour in this study is represented by the study's five independent variables. The first main hypothesis is:

H1: The investment behaviour of Arab women is associated with demographic factors (Age, Annual Income, and Education).

This main hypothesis is split into three secondary hypotheses, where each secondary hypothesis tests the three demographic factors against the main five variables of the study.

1.1) There are statistically significant differences in the investment behaviour of Arab women from different age groups

¹⁸ Wealth in this study is represented as level of income.

The Kruskal-Wallis H test was used to examine for significant differences, if any, between the six 'Age' groups of the sample Arab women on the median change in their investment behaviours. The seventh age group (≥ 75 Years) is excluded from the testing due to its negligible representation (1 respondent; see table (6.5)). According to Table (6.10), the test implies significance only for the 'Risk Tolerance' variable ($p = .023 < .05 = \alpha$). This finding is reinforced by the results of the respondent's scores' ranking (Table AD1), which indicates that, except in the case of risk tolerance, the ranks of the different age groups for the remaining variables are comparable. Thus, the foregoing hypothesis is accepted in the case of risk tolerance, but rejected in the cases of the effect of religion, herding behaviour, investment confidence and investment literacy. This conclusion entails the need to perform a set of post-hoc tests using the Mann-Whitney U test in order to identify the age groups with similar risk tolerance characteristics.

Table 6.10 Differences in investment behaviours between the different age groups of Arab women: Test statistics^{a,b}					
	RTTotal*	HETotal*	RETotal*	CLInvestmentTo	ILLTotal*
Chi-Square	12.997	4.298	.445	8.603	3.189
df	5	5	5	5	5
Asymp. Sig.	.023	.507	.994	.126	.671
a. Kruskal Wallis Test b. Grouping Variable: Age Group * Column headings are as follows: RTTotal: Risk Tolerance Total Score HETotal: Herding Effect Total Score RETotal: Religion Effect Total Score CLInvestmentTotal: Investment Confidence Total Score ILLTotal: Investment Literacy Total Score					

H1.1.1) There are statistically significant differences in the risk tolerance levels of Arab women investors from different age groups.

The Mann-Whitney U test was used to test for significant differences between the different possible pairs of the age groups. Based on the Outcomes of Table (6.11), only four significant

differences exist in the data: between the first and the fifth age groups ($p = .041$); and between the second and each of the third ($p = .035$), fourth ($p = .013$) and fifth ($p = .033$) age groups. Hence, the mean ranks of the respondents' risk tolerance level total scores for the different pairs of age groups are presented in (Tables AE1-AE15 in Appendix E). According to the findings, the six examined age groups comprise two groups of different risk tolerance levels:

- Group One, which includes members from all age groups except the fifth one (55-64 Years), has high-risk tolerance levels.
- Group Two, which only includes members in the fifth age group (55-64 Years), has significantly lower risk tolerance levels than Group One.

Table 6.11 Pairwise comparisons of risk tolerance levels between the different age groups of Arab women investors.

Group 1	Group 2	Mann-Whitney	Wilcoxon	Z	Asymp. Sig. (2-
18-24 Years	25-34 Years	604.000	857.000	-.253	.800
	35-44 Years	486.500	1971.500	-1.237	.216
	45-54 Years	86.000	164.000	-1.673	.094
	55-64 Years	2.500	5.500	-2.047	.041 ***
	65-74 Years	7.000	260.000	-.606	.544
25-34 Years	35-44 Years	1184.000	2669.000	-2.105	.035 ***
	45-54 Years	186.000	264.000	-2.487	.013 ***
	55-64 Years	6.500	9.500	-2.129	.033 ***
	65-74 Years	16.500	1669.500	-.722	.470
35-44 Years	45-54 Years	261.500	339.500	-1.045	.296
	55-64 Years	10.000	13.000	-1.952	.051
	65-74 Years	9.500	1494.500	-1.108	.268
45-54 Years	55-64 Years	2.500	5.500	-1.778	.075
	65-74 Years	.000	78.000	-1.652	.099
55-64 Years	65-74 Years	.000	3.000	-1.225	.221

a. Grouping Variable: Age Group

*** Indicated difference is statistically-significant ($\alpha = 0.05$)

H1:2) There are statistically significant differences in the investment behaviour of Arab women from different ‘Annual Income’ groups.

The Kruskal-Wallis H test was run to examine for potential significant differences between the four ‘Annual Income’ groups of the sample Arab women in respect to the median change in their investment behaviours. The outputs (Table 6.12) illustrate that the test is significant for three out of the five investigated variables: effect of religion ($p = .045 < .05 = \alpha$), investment confidence ($p = .014 < .05 = \alpha$) and investment literacy ($p = .000 < .05 = \alpha$). In regards to the risk tolerance level and the herding behaviour, the test is non-significant because p , in both cases, is greater than 0.05 (Table 6.12).

Table 6.12 Differences in investment behaviours between the different ‘Annual Income’ groups of Arab women: Test statistics^{a,b}					
Test Statistics^{a,b}					
	RTTotal*	HETotal*	RETotal*	CLInvestmentTo	ILLTotal*
Chi-Square	7.130	3.604	8.048	10.564	19.522
df	3	3	3	3	3
Asymp. Sig.	.068	.308	.045	.014	.000
a. Kruskal Wallis Test b. Grouping Variable: Annual Income * Column headings are as follows: RTTotal: Risk Tolerance Total Score HETotal: Herding Effect Total Score RETotal: Religion Effect Total Score CLInvestmentTotal: Investment Confidence Total Score					

This finding is reinforced by the results of ranking of the respondent’s scores (Table AF1; Table 1 in Appendix F). Based on these results, the foregoing hypothesis is accepted in the case of the effect of religion, investment confidence and investment literacy levels, but rejected in the case of risk tolerance level and herding behaviour. Accordingly, the researcher applies post hoc tests (the Mann-Whitney U test) on the three variables (effect of religion, investment confidence and investment literacy levels).

H1.2.3) There are statistically-significant differences in the effect of religion on the investment behaviours of Arab women investors from different 'Annual Income' groups.

The Mann-Whitney U test is used to detect significant differences between the different potential pairs of income groups in regards to the effect of religion on their investment behaviours. Outcomes are summarized in Table (6.13) and the mean ranks of the total scores of the effects of religion on the respondents for the different pairs of income groups are presented in (Tables AG1-AG6 in Appendix G). The test results indicate that only two exhibit significant differences: the first and fourth age groups ($p = .006$), and the third and fourth 'Annual Income' groups ($p = .023$). Consequently, the four 'Annual Income' groups form two groups of religion effect:

- Group One, which only consists of members in the fourth income group ($\geq 75,000$), exhibit a significantly lower effect of religion on their investment behaviour than members of Group Two.
- Group Two, which includes all other income groups except the fourth one ($\geq 75,000$). Members of this group exhibit a significantly higher effect of religion on their investment behaviours than members of Group One.

Table 6.13 Pairwise comparisons of the effect of religion between the different ‘Annual Income’ groups of Arab women investors.					
Group 1	Group 2	Mann-Whitney	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
< 20,000 US\$	20,000-39,999 US\$	2421.000	4836.000	-.936	.349
	40,000-74,999 US\$	1722.500	2803.500	-.258	.797
	≥ 75,000	792.500	1288.500	-2.755	.006 ***
20,000-39,999 US\$	40,000-74,999 US\$	1486.000	3901.000	-.584	.559
	≥ 75,000 US\$	814.500	1310.500	-1.919	.055
40,000-74,999 US\$	≥ 75,000 US\$	496.500	992.500	-2.273	.023 ***
a. Grouping Variable: Annual Income Group *** Indicated difference is statistically-significant ($\alpha = 0.05$)					

H1.2.4) There are statistically significant differences in the investment confidence levels of Arab women from different ‘Annual Income’ groups.

The Mann-Whitney U test is used to classify the income groups with similar investment confidence levels. The outcomes are represented in Table (6.14), while the associated mean ranks of the total scores of the respondents’ levels of investment confidence for the different pairs of the income groups are presented in (Tables AH1-AH6 in Appendix H). The test outcomes underline that only two significant differences exist in the data: between the first and second income groups ($p = .003$); and the first and third income groups ($p = .010$).

Accordingly, the four income groups establish two groups with different investment confidence levels:

- Group One, which consists of members in the first income group only (<20,000 US\$), has significantly lower investment confidence levels than Group Two.

- Group Two, which includes all income groups excluding the first group (<20,000 US\$). Members of this group have significantly higher investment confidence levels

Table 6.14 Pairwise comparisons of investment confidence between the different ‘Annual Income’ groups of Arab women investors.					
Group 1	Group 2	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
< 20,000 US\$	20,000-39,999 US\$	1897.000	4900.000	-2.997	.003 ***
	40,000-74,999 US\$	1281.000	4284.000	-2.583	.010 ***
	≥ 75,000	1010.000	4013.000	-1.254	.210
20,000-39,999 US\$	40,000-74,999 US\$	1557.500	2638.500	-.170	.865
	≥ 75,000 US\$	952.000	1448.000	-.881	.378
40,000-74,999 US\$	≥ 75,000 US\$	633.500	1129.500	-.833	.405
a. Grouping Variable: Annual Income Group *** Indicated difference is statistically-significant ($\alpha = 0.05$)					

than the members of Group One.

H1.2.5) There are statistically significant differences in the investment literacy levels of Arab women from different ‘Annual income’ groups.

The Mann-Whitney U was used in order to categorize the income groups who have identical investment literacy levels. Outputs of this test are in Table (6.15), while the concomitant mean ranks of the total scores of respondents’ investment literacy levels for the different pairs of the income groups are listed in (Tables AI1-AI6 in Appendix I). The test results show that three significant differences exist in the data: between the first and second income groups ($p = .001$); the first and third income groups ($p = .000$); and the first and fourth income groups ($p =$

.004). Based on these results, the four income groups of interest form two groups of different investment literacy levels:

- Group One, which includes members in the first income group only (< 20,000 US\$), has significantly lower investment literacy levels than members of Group Two.
- Group Two, which includes all income groups excluding the first group (< 20,000 US\$). Members of this group have significantly higher investment literacy levels than members of Group One.

Table 6.15 Pairwise comparisons of investment literacy between the different ‘Annual Income’ groups of Arab women investors.

Group 1	Group 2	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
< 20,000 US\$	20,000-39,999 US\$	1771.000	4697.000	- 3.403	.001 ***
	40,000-74,999 US\$	1047.000	3973.000	- 3.747	.000 ***
	≥ 75,000	759.000	3685.000	-	.004 ***
20,000-39,999 US\$	40,000-74,999 US\$	1515.500	3930.500	-.413	.680
	≥ 75,000 US\$	1000.500	3415.500	-.519	.604
40,000-74,999 US\$	≥ 75,000 US\$	686.500	1767.500	-.279	.780

a. Grouping Variable: Annual Income Group

*** Indicated difference is statistically-significant ($\alpha = 0.05$)

H1:3) There are statistically significant differences in the investment behaviour of Arab women from different educational groups.

The Kruskal-Wallis H is applied to test for possible significant differences between the five ‘Level of Education’ groups of the sample Arab women in respect to median change in investment behaviours. The output in (Table 6.16) shows that the test is only significant for the ‘Investment Literacy’ variable ($p = .009$). This outcome is supported by the ranking of the respondents’ mean total scores (Table AJ1; Table 1 in Appendix J) where the ranks of the various ‘Level of Education’ groups for the variables are quite similar, except in the case of investment literacy. Accordingly, the aforementioned hypothesis is accepted in the case of investment literacy and rejected in the cases of risk tolerance, effect of religion, herding behaviour and investment confidence.

Table 6.16 Differences in investment behaviours between the different ‘Education’ groups of Arab women investors: Test statistics^{a,b}

	RTTotal*	HETotal*	RETotal*	CLInvestmentTotal*	ILLTotal*
Chi-Square	7.430	4.796	2.038	2.388	13.569
df	4	4	4	4	4
Asymp. Sig.	.115	.309	.729	.665	.009

a. Kruskal Wallis Test

b. Grouping Variable: Level of Education

* Column headings are as follows:

RTTotal: Risk Tolerance Total Score

HETotal: Herding Effect Total Score

RETotal: Religion Effect Total Score

CLInvestmentTotal: Investment Confidence Total Score

H1.3.5) There are statistically significant differences in the investment literacy levels of Arab women from different education groups.

The Mann-Whitney U test is used to specify the 'Level of Education' groups with similar investment literacy levels. The outcomes of the Mann-Whitney U test are introduced in (Table 6.17), while the mean ranks of the risk tolerance total scores of the respondents for the different pairs of the education groups are given in (Tables AJ2-AJ11 in Appendix J). The results show that there are four significant differences in the data: between the first and third education groups ($p = .032$); the first and fourth education groups ($p = .001$); the first and fifth education groups ($p = .024$); and the third and fourth education groups ($p = .011$). Accordingly, the five examined 'Level of Education' groups comprise two groups of varying investment literacy levels:

- Group One, which consists only of the first 'Level of Education' group (High School). Members of this group have significantly lower investment literacy levels than members of Group Two.
- Group Two, which includes all 'Level of Education' groups, except the first group. Members of this group have significantly higher investment literacy levels than members of the first group.

Table 6.17 Pairwise comparisons of investment literacy between the different ‘Level of Education’ groups of Arab women investors.

Group 1	Group 2	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
High school	Diploma Certificate	10.500	38.500	-1.557	.120
	Bachelor’s degree	206.500	234.500	-2.141	.032 ***
	Master’s degree	38.000	66.000	-3.218	.001 ***
	Doctorate Degree	42.000	70.000	-2.264	.024 ***
Diploma Certificate	Bachelor’s degree	304.500	325.500	-.424	.672
	Master’s degree	72.500	93.500	-1.807	.071
	Doctorate Degree	64.500	85.500	-.782	.434
Bachelor’s degree	Master’s degree	1844.500	8285.500	-2.532	.011 ***
	Doctorate Degree	1370.000	7811.000	-.830	.407
Master’s degree	Doctorate Degree	506.000	884.000	-1.053	.292

a. Grouping Variable: Level of Education Group

*** Indicated difference is statistically-significant ($\alpha = 0.05$)

H2: Herding behaviour is greater among Arab women investors than Arab men investors.

Significant differences between Arab women and men investors in regards to their herding behaviour were explored. Since there are only two groups under consideration, the Mann-Whitney U test was used, which is equivalent to the two-independent sample *t*-test.

The test results (Table 6.18) demonstrate that significant differences exist between the Arab women and men investors in the sample ($p = .000$) regarding their herding behaviour. Specifically, the test's mean ranks output reveals that Arab women investors have a higher mean ranked total score for herding behaviour than the Arab men investors (363.58 against 206.64). Accordingly, the foregoing hypothesis is accepted and it is concluded that herding behaviour is significantly greater among Arab women investors than Arab men investors.

Table 6.18 Pairwise comparisons of herding behaviour between men and women Arab women investors.		
Test statistics ^{a, b}		
Mann-Whitney U	14991.000	
Wilcoxon W	65712.000	
Z	-11.531	
Asymp. Sig. (2-tailed)	.000	
Ranks		
Descriptive	Men	Women
N	318	224
Mean Rank	206.64	363.58
Sum of Ranks	65712.00	81441.00
a. Grouping Variable: Gender		
b. N = 542		

H3: Religion has a statistically significant effect on the investment behaviour of Arab women.

H3.1) Religion has a statistically significant ($\alpha = 0.05$) effect on the risk tolerance level of Arab women investors.

This hypothesis was tested using regression analysis, specifically the five regression model assumptions; linearity of the regression function in its parameters, multicollinearity, homoscedasticity, and normality of error distribution and independence of errors. Since all hypotheses correspond to 1:1 regression modelling, there is only one explanatory variable. Thus, the assumption of multicollinearity does not hold and there is no need to test the data for multicollinearity.

1- Linearity.

The assumption of linearity was tested using correlation analysis (Table 6.19) and a scatter plot (Figure 1) where 'Religion Effect' is on the x-axis and 'Risk Tolerance' on the y-axis. According to (Table 6.19), and with reference to Taylor's (1990) rules, the results show a low strength association between risk tolerance and religion effect. Furthermore, this association is statistically insignificant (Table 6.21). This finding is reinforced by (Figure 6.1), which suggests that the linearity assumption is violated. Additionally, this figure shows similar scores among Arab women investors of different levels of religiosity.

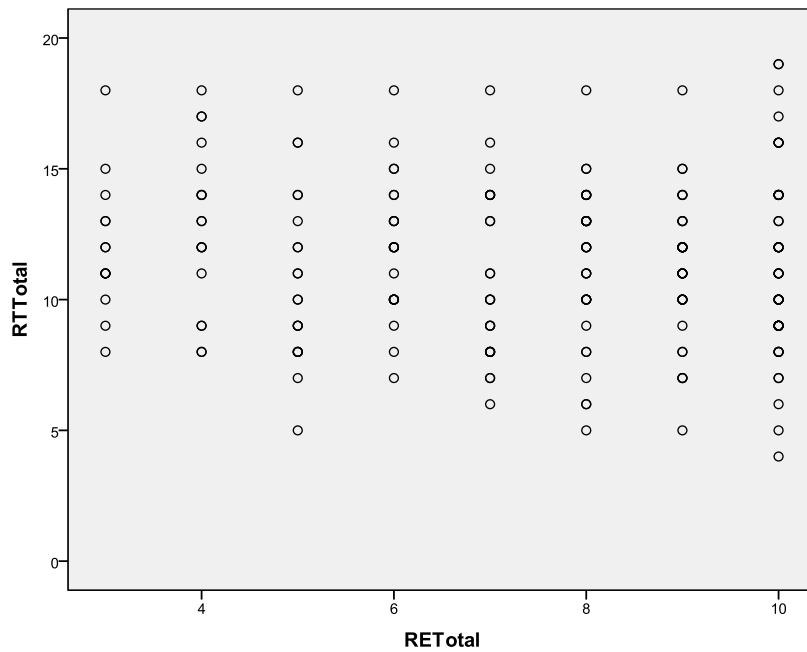


Figure 6.1 Scatterplot of 'Religion Effect' and 'Risk Tolerance'

2- Multicollinearity.

Multicollinearity is indicated by tolerance, which is equal to $(1 - R^2)$ for the regression of an independent variable on all other independent variables. The higher the correlation between the independents, the closer the tolerance is to zero. In this study, all concerned hypotheses correspond to 1:1 regression modelling, where there is only one explanatory variable; therefore, there is no need to test the data for multicollinearity.

3- Homoscedasticity.

Plotting the regression standardized residual error (*ZRESID) on the y-axis against the regression standardized predicted error (*ZPRED) helps determine whether assumptions of homoscedasticity and random errors (i.e., linearity of the regression function) are, or are not, met. Typically, the residuals are scattered randomly around zero and manifest a comparatively uniform distribution. As Figure (6.2) illustrates, the data points appear to be fairly distributed

randomly with a broadly equal spread of the residuals at almost all the predicted values. It can therefore be concluded that both the homoscedasticity and the random errors (i.e., linearity of the regression function) assumptions are satisfied.

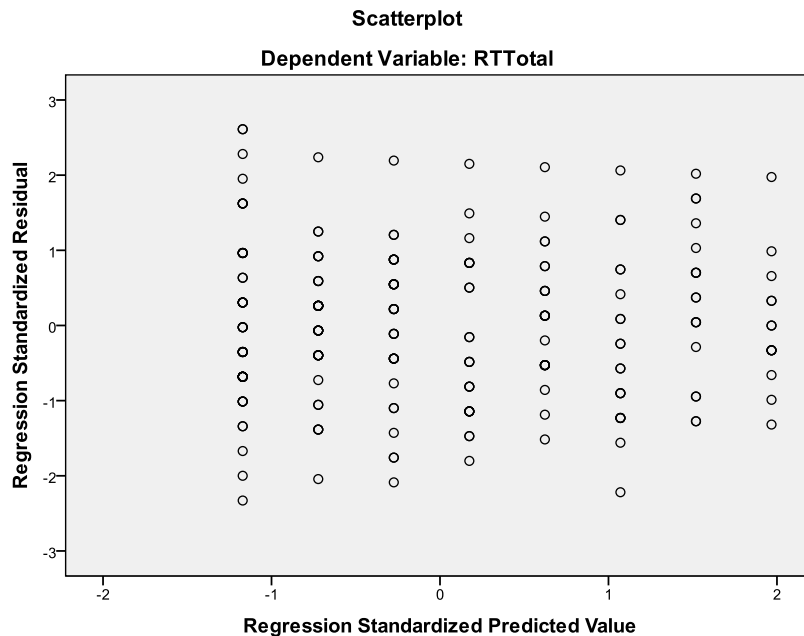


Figure 6.2. A plot of the regression standardized residual error (*ZRESID) against the regression standardized predicted error (*ZPRED)

4- Normality of error distribution.

In regression modelling, the residual error should be normally distributed for each set of independent variable values. This requirement is typically tested by means of a histogram plot of the regression standardized residual error versus frequency, which should show a normal, or nearly normal, curve. The regression, however, should remain robust to slight deviations from this assumption. According to Figure (6.3), the normal plot is almost linear, which confirms that the unexplained variation is roughly normal. In other words, the residual error is normally distributed.

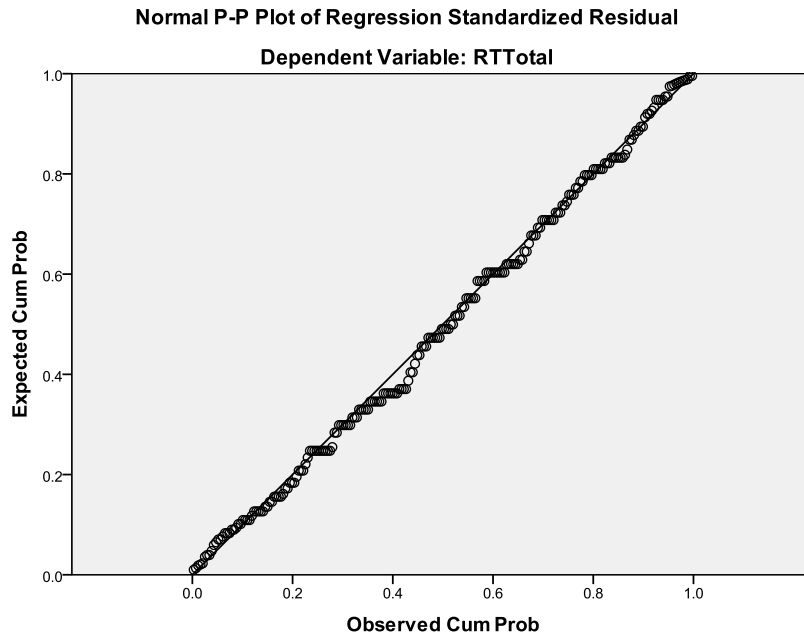


Figure 6.3 Plot of the regression standardized residual error versus frequency.

5- Independence of errors.

Independence of errors implies that the errors related to the different observations are not correlated with each other. Although this assumption applies only to data where repeated measures are taken at various points in time, it may still be examined by means of the Durbin–Watson test statistic (Table 6.19), which can assume any value between 0 and 4. In general, a value <2 states a positive association between adjacent residuals, while a value >2 expresses a negative interrelation between adjacent residuals, and a value of 2 means that the residuals are uncorrelated. That said, a range of 1.5 to 2.5 is widely accepted to be indicative of uncorrelated residuals (Durbin and Watson, 1951; Zakerian and Subramaniam, 2009)

With reference to Table (6.19), the data satisfies the independence of errors assumption since the associated Durbin–Watson test statistic is 1.94, which falls within the range of 1.5-2.5 and thus indicates uncorrelated residuals.

Table 6.19 The effect of religion on the risk tolerance of Arab women investors: Model summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.097 ^a	.009	.005	3.037	1.939

Along with the violations of the linearity regression model assumption, table (6.20) and table (6.21) show that the results of the regression model in respect to the relationship between ‘Religion Effect’ and ‘Risk Tolerance’ for the sample Arab women investors are statistically non-significant ($p = 0.146$).

Table 6.20 The effect of religion on the risk tolerance of Arab women investors: coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1							
(Constant)	12.402	.704		17.629	.000		
Religion Effect	-.133	.091	-.097	-1.459	.146	1.000	1.000

a. Dependent Variable: Herding Effect

Table 6. 21. The effect of religion on the risk tolerance of Arab women investors: ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	19.617	1	19.617	2.128	.146 ^a
Residual	2046.937	222	9.220		
Total	2066.554	223			

a. Predictors: (Constant), Religion Effect. b. Dependent Variable: Risk Tolerance

These findings hint at the possibility of a non-linear relationship between ‘Religion Effect’ and ‘Risk Tolerance’ for the sample Arab women investors. Non-linear regression modelling (curve-estimation techniques) was therefore performed, where the ten known curve estimation (non-linear) regression models (Table 6.22) were explored. Hence, equations of the listed model types are presented in Appendix K. According to the sixth column in (Table 6.22), none of the ten tested models are statistically significant. Thus, the hypothesis was rejected and it was concluded that religion does not have a statistically significant effect on the risk tolerance level of the sample Arab women investors.

Table 6.22. The effect of religion on the risk tolerance of Arab women investors: Model summary and parameter estimates

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.009	2.128	1	222	.146	12.402	-.133		
Logarithmic	.011	2.469	1	222	.118	13.166	-.898		
Inverse	.012	2.621	1	222	.107	10.632	5.134		
Quadratic	.013	1.430	2	221	.242	14.064	-.677	.040	
Cubic	.013	.950	3	220	.417	13.814	-.545	.019	.001
Compound	.011	2.496	1	222	.116	12.139	.987		
Power	.013	2.843	1	222	.093	13.087	-.090		
S	.013	3.007	1	222	.084	2.319	.511		
Growth	.011	2.496	1	222	.116	2.496	-.013		
Exponential	.011	2.496	1	222	.116	12.139	-.013		
Logistic	.011	2.496	1	222	.116	.082	1.013		

The independent variable is ‘Religion Effect’

The dependent variable is ‘Risk Tolerance’

H3.2) Religion has a statistically significant effect on the herding behaviour of Arab women investors.

This hypothesis was examined using regression analysis, by testing the four regression model assumptions.

1- Linearity.

The assumption of linearity was examined using correlation analysis (Table 6.23) and a scatter plot (Figure AL1 in Appendix L) of the relationship between ‘Religion Effect’ and ‘Herding behaviour’. According to Table (6.23), the association between herding behaviour and religion has low strength, and this association is statistically insignificant. This finding is supported by (Figure AL1), which indicates that the linearity assumption is violated.

2- Homoscedasticity.

The scatterplot (Figure AL 2) demonstrates that the residuals are not distributed in any clear pattern with the predicted values. This suggests that the model does not violate the assumptions of the homoscedasticity and random errors (i.e., linearity of the regression function).

3- Normality of error distribution.

The normal plot in (Figure AL3) is nearly linear, although there seems to be some deviation from normality between some of the observed cumulative probabilities. Thus, the unexplained variation is nearly normal, that is, the residual error is normally distributed.

4- Independence of errors.

With reference to (Table 6.23), the data meets the independence of errors assumption. The Durbin–Watson test statistic is 1.80, which falls within the range of 1.5-2.5 and indicates uncorrelated residuals, i.e., the errors are independent.

Table 6.23 The effect of religion on the herding behaviour of Arab women investors: Model summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.113 ^a	.013	.008	3.901	1.801

a. Predictors: (Constant), Religion Effect. b. Dependent Variable: Herding behaviour

In addition, Tables (6.24 and 6.25) show that the results of the regression model measuring the relationship between religion effects and ‘Herding behaviour’ of the sample Arab women investors are statistically non-significant ($p = .092 > .05 = \alpha$). These outcomes meant that it was necessary to test for the possibility of a non-linear relationship between ‘Religion Effect’ and ‘Herding behaviour’ among the sample Arab women investors. Thus, non-linear regression modelling using curve-estimation techniques was conducted, where the ten known curve estimation (non-linear) regression models (Tables 6.26) were investigated. The sixth column in (Table 6.26) reveals that none of the ten tested models were statistically significant. The hypothesis was therefore rejected and it was concluded that religion does not have a statistically significant effect on the herding behaviour of the sample Arab women investors.

Table 6.24 The effect of religion on the herding behaviour of Arab women investors: Coefficients^a										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	10.600	.904		11.729	.000	8.819	12.382		
	Religion Effect	.198	.117	.113	1.695	.092	-.032	.429	1.000	1.000

a. dependent Variable: Herding Effect

Table 6.25 The effect of religion on the herding behaviour of Arab women investors: ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	43.704	1	43.704	2.872	.092 ^a
Residual	3378.292	222	15.218		
Total	3421.996	223			

a. Predictors: (Constant), Religion Effect

b. Dependent Variable: Herding Effect

Table 6.26 The effect of religion on the herding behaviour of Arab women investors: Model summary and parameter estimates.

Equation	Model Summary					Parameter Estimates			
	R	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.013	2.872	1	222	.092	10.600	.198		
Logarithmic	.013	2.854	1	222	.093	9.653	1.242		
Inverse	.011	2.453	1	222	.119	13.048	-6.394		
Quadratic	.014	1.512	2	221	.223	9.593	.528	-.024	
Cubic	.018	1.316	3	220	.270	16.851	-3.287	.586	-.030
Compound	.012	2.675	1	222	.103	9.988	1.018		
Power	.011	2.575	1	222	.110	9.216	.108		
S	.009	2.093	1	222	.149	2.514	-.541		
Growth	.012	2.675	1	222	.103	2.301	.018		
Exponential	.012	2.675	1	222	.103	9.988	.018		
Logistic	.012	2.675	1	222	.103	.100	.983		

The independent variable is Religion Effect.

3.3) Religion has a statistically significant effect on the investment confidence level of Arab women investors.

This hypothesis was also investigated by applying regression analysis using the four regression assumptions.

1- Linearity.

The assumption of linearity was examined using correlation analysis (Table 6.27) and a scatterplot (AM1) of the relationship between ‘Religion Effect’ and ‘Investment Confidence’. The outcomes of (Table 6.27) argue that the association of investment confidence with religion is of low strength, and is statistically non-significant. This finding is reinforced by (Figure AM1), which also underlines that the linearity assumption is violated.

2- Homoscedasticity.

Figure (AM2) indicates that the residuals are not distributed in an obvious pattern with the predicted values. This implies that the model does not violate the homoscedasticity and the random errors assumptions.

3- Normality of error distribution.

The normal plot in Figure (AM3) is approximately linear, despite some deviation from perfect normality between some of the cumulative probabilities observed. This indicates that the unexplained variation is somewhat normal, that is, the residual error is nearly normally distributed.

4- Independence of errors.

Table (6.27) shows that the data meets the independence of errors assumption because the associated Durbin–Watson test statistic is 1.74, which lies in the range of 1.5-2.5 that indicates uncorrelated residuals.

Table 6.27 The effect of religion on the investment confidence of Arab women investors: Model summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.056 ^a	.003	-.001	3.000	1.744

a. Predictors: (Constant), Religion Effect. b. Dependent Variable: Investment Confidence

Further, tables (6.28 and 6.29) show that the results of the regression model quantifying the relationship between religion effect and ‘Investment Confidence’ of the sample Arab women investors are statistically non-significant ($p = .401$). Accordingly, the possibility of a non-linear relationship between ‘Religion Effect’ and the ‘Investment Confidence’ of the sample Arab women investors was considered through non-linear regression modelling by using curve-estimation techniques. The last column in (Table 6.30) indicates that none of the ten examined non-linear regression models is statistically significant. Thus, the hypothesis was rejected and it was concluded that religion does not have any statistically significant effect on the investment confidence of the sample Arab women investors.

Table 6.28 The effect of religion on the investment confidence of Arab women investors: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficient	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	13.435	.695		19.329	.000	12.066	14.805		
	Religion Effect	-.076	.090	-.056	-.842	.401	-.253	.102	1.000	1.000

a. Dependent Variable: Investment Confidence

Table 6.29 The effect of religion on the investment confidence of Arab women investors: ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	6.380	1	6.380	.709	.401 ^a
Residual	1998.120	222	9.001		
Total	2004.500	223			

a. Predictors: (Constant), Religion Effect

b. Dependent Variable: Investment Confidence

Table 6.30 The effect of religion on the investment confidence of Arab women investors: Model summary and parameter estimates

Equation	Model Summary					Parameter Estimates			
	R Squar	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.003	.709	1	222	.401	13.435	-.076		
Logarithmic	.003	.633	1	222	.427	13.749	-.450		
Inverse	.003	.580	1	222	.447	12.508	2.390		
Quadratic	.004	.443	2	221	.643	12.624	.190	-.019	
Cubic	.008	.594	3	220	.619	18.124	-2.702	.443	-.023
Compound	.001	.267	1	222	.606	12.876	.996		
Power	.001	.245	1	222	.621	13.076	-.022		
S	.001	.259	1	222	.611	2.510	.124		
Growth	.001	.267	1	222	.606	2.555	-.004		
Exponential	.001	.267	1	222	.606	12.876	-.004		
Logistic	.001	.267	1	222	.606	.078	1.004		

The independent variable is Religion Effect

Dependent Variable: Investment Confidence

H3.4) Religion has a statistically significant effect on the investment literacy of Arab women investors.

This hypothesis is investigated using regression analysis by testing the four assumptions of regression modelling).

1- Linearity.

The assumption of linearity is tested using correlation analysis (Table 6.31) and a scatterplot (Figure AN1) of the relation between religion and ‘Investment Literacy’. Table (6.31) shows that the association of investment literacy with religion is low in strength, and that this association is non-significant statistically. This result is supported by Figure (AN1), which shows that the linearity assumption is violated.

2- Homoscedasticity.

Figure (AN2) provides evidence that the assumptions of homoscedasticity and random errors are both fulfilled. The scatterplot demonstrates that the residuals are not distributed in a clear pattern with the predicted values. This suggests that the model does not violate the assumptions of the homoscedasticity and random errors.

3- Normality of error distribution.

The normal plot in Figure (AN3) is almost linear, with a slight deviation from the straight line, which indicates that the unexplained variation is nearly normal, i.e., the residual error is normally distributed.

4- Independence of errors.

Table (6.31) shows that the data fulfils the assumption of independent errors since the Durbin–Watson test statistic is 1.74, which falls in the range of 1.5-2.5, indicating uncorrelated residuals.

Table 6.31 The effect of religion on the investment literacy of Arab women investors: Model summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.127 ^a	.016	.012	2.174	1.742

a. Predictors: (Constant), Religion Effect. b. Dependent Variable: Investment Literacy

Additionally, the outputs in Tables (6.32 and 6.33) show that the results of the regression model measuring the relationship between religion and ‘Investment Literacy’ of the sample Arab women investors are statistically non-significant ($p = .059$). Thus, non-linear regression modelling was applied, using curve-estimation to test the associations between religion and the ‘Investment Literacy’ of the sample Arab women investors. Then, the ten established non-linear regression model types (Tables 6.34) were tested, where the sixth column indicates that none of the examined model is statistically significant. The hypothesis was therefore rejected and it was concluded that religion does not have any statistically significant effect on the investment literacy of the sample Arab women investors.

Table 6.32 The Effect of religion on the investment literacy of Arab women investors: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficient	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	4.589	.504		9.109	.000	3.596	5.582		
Religion Effect	-.124	.065	-.127	-1.900	.059	-.253	.005	1.000	1.000

a. Dependent Variable: Investment Literacy

Table 6.33 The effect of religion on the investment literacy of Arab women investors: ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	17.052	1	17.052	3.610	.059 ^a
Residual	1044.051	221	4.724		
Total	1061.103	222			

a. Predictors: (Constant), Religion Effect

b. Dependent Variable: Investment Literacy

Table 6.34 The effect of religion on the investment literacy of Arab women Investors: model summary and parameter estimates

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.016	3.610	1	221	.059	4.589	-.124		
Logarithmic	.013	2.922	1	221	.089	5.035	-.701		
Inverse	.009	1.954	1	221	.164	3.183	3.189		
Quadratic	.018	2.063	2	220	.130	3.581	.206	-.024	
Cubic	.021	1.567	3	219	.198	.374	1.892	-.294	.013
Compound ^a	.	.	.	.	.	.	.
Power ^a	.	.	.	.	.	.	.
S ^a	.	.	.	.	.	.	.
Growth ^a	.	.	.	.	.	.	.
Exponential ^a	.	.	.	.	.	.	.
Logistic ^a	.	.	.	.	.	.	.

The independent variable is Religion Effect.

The dependent variable is Investment Literacy

a. The dependent variable (Investment Literacy) contains non-positive values. The minimum value is 0. Log transform, Compound, Power, S, Growth, Exponential, and Logistic models cannot be applied.

app app calculated for this variable.

Based on the above regression analyses, it was concluded that religion does not affect the investment behaviour of the Arab women in this study.

H4: Arab women are risk averse investors.

The risk tolerance level section in the research instrument contains five items: one with three choices, two with four each, and two with five each. The weighting of the item scores follows a normal scale, where the highest level of risk tolerance is assigned the highest weight and vice versa. Thus, the lowest potential weight, indicating a risk-averse investor, is five and, the highest potential weight, indicating a risk-taker investor, is 21. A statistical test is needed to determine if the mean value of the target variable is different from a hypothesized value.

Since the distribution of the risk tolerance variable differs from the normal distribution, then the mean is replaced by the median in the test. Thus, this hypothesis is tested using the Wilcoxon Signed-Rank (One-Sample) test.

According to (Table 6.35), the sample Arab women investors have a median risk tolerance of 11.0, while the sample Arab men investors have a median risk tolerance of 13.0. The median risk tolerance for the overall sample (both men and women) is also 13.00. This hypothesis was therefore tested by taking the median risk tolerance of the overall study sample as the hypothesized value. If the median score of risk tolerance of the Arab women investors is significantly less than 13, then the sample Arab women are risk averse investors, and vice versa. Consequently, the null (H_0) and alternative hypotheses (H_1) are:

H_0 : Median of the total 'Risk Tolerance' score of the Arab women investors is equal to 13.

H_1 : Median of the total 'Risk Tolerance' score of the Arab women investors is less than 13.

Table 6.35 Mean and median scores of the risk tolerance of the sample Arab investors.		
a. Gender = Female		
N	Valid	224
	Missing	2
Mean	11.38	
Median	11.00	
a. Gender = Males and Females		
N	Valid	544
	Missing	5
Mean	12.72	
Median	13.00	

According to Table (6.36), the outcomes of the Wilcoxon Signed-Rank (One-Sample) reveal that the estimated median risk tolerance score of the sample Arab women investors is 11.50. This is significantly lower than 13.00, which is the median risk tolerance score of the overall sample ($p = .000$). The null hypothesis is therefore rejected and the alternative hypothesis accepted, meaning that Arab women are risk averse investors.

Table 6.36 : Wilcoxon Signed-Rank Test of the risk tolerance of the sample Arab women investors	
N	224
N*	2
N for test	204
Wilcoxon Statistic	4522.0
p	0.000
Estimated Median	11.50

H5: Arab women significantly have lower confidence levels relative to Arab men investors.

The Mann-Whitney U test was applied to examine the significant differences, if any, between the sample Arab women and men investors in respect to their levels of investment confidence. The test results (Table 6.37) show there are statistically significant differences between the sample Arab women and men in their investment confidence levels ($p = .000$).

Furthermore, it was found that Arab men investors have a higher mean rank of the total score of the investment confidence than Arab women investors (323.81 versus 195.69 respectively). Consequently, the hypothesis was accepted and it was concluded that Arab women investors have lower investment confidence levels relative to Arab men investors.

Table 6.37 Pairwise comparisons of differences in the investment confidence of Arab men and women investors.		
Test Statistics ^{a, b}		
Mann-Whitney U	18663.000	
Wilcoxon W	43639.000	
Z	-9.426	
Asymp. Sig. (2-tailed)	.000	
Ranks		
Descriptive	Men	Women
N	318	223
Mean Rank	323.81	195.69
Sum of Ranks	102972.00	43639.00
a. Grouping Variable: Gender		
b. N = 541		

H6: Arab women have significantly lower investment literacy levels relative to Arab men investors

The research next investigated whether there were significant differences in the levels of investment literacy of the Arab women and men investors. Since the number of groups is two, the Mann-Whitney U test was used. The test results (Table 6.38) indicate that there are statistically significant differences between the sample Arab women and men investors in terms of their investment literacy levels ($p = .000$). According to the test's mean ranks outcome, it was found that Arab men investors have a higher mean rank of the total score of the investment literacy compared to Arab women investors (317 against 222). Thus, the aforementioned hypothesis was accepted and it was concluded that the investment literacy level of Arab women is significantly lower than that of Arab men investors.

Table 6.38 Pairwise comparisons of differences in investment literacy level between Arab men and Arab women investors		
Test statistics ^{a, b}		
Mann-Whitney U	26164.500	
Wilcoxon W	50917.500	
Z	-5.123	
Asymp. Sig. (2-tailed)	.000	
Ranks		
Descriptive	Men	Women
N	317	222
Mean Rank	298.46	229.36
Sum of Ranks	94612.50	50917.50
a. Grouping Variable: Gender		
b. N = 539		

In this section, the investment behaviour of Arab women relative to Arab men (in regards to their herding behaviour, investment confidence, and investment literacy levels) is investigated. Additionally, the investment behaviour of Arab women compared to Arab men is explored (in regards to their risk tolerance level and religion effect) in order to meet the study's second objective, which examines the gender differences in investment behaviours in the Arab region.

The presence of significant differences between the Arab women and men investors in the sample in respect to their risk tolerance levels, were investigated using the Mann-Whitney *U* tests. The test results (Table 6.39) demonstrate that there are statistically significant differences between the sample Arab women and men investors in their risk tolerance levels

($p = .000$). The mean ranks outcome of this test (Table 6.39) indicates that Arab men investors have a higher mean rank of risk tolerance than the Arab women investors (318 against 224). Thus, it was concluded that Arab women investors have a significantly lower risk tolerance level relative to Arab men investors.

Table 6.39 Pairwise comparisons of differences in the risk tolerance of Arab men and women investors.		
Test statistics ^{a, b}		
Mann-Whitney U	22077.500	
Wilcoxon W	47277.500	
Z	-7.571	
Asymp. Sig. (2-tailed)	.000	
Ranks		
Descriptive	Men	Women
N	318	224
Mean Rank	314.07	211.06
Sum of Ranks	99875.50	47277.50
a. Grouping Variable: Gender		

In regards to the influence of religion on Arab women's investment behaviour, the possibility of significant differences between the sample Arab men and women investors was investigated using the Mann-Whitney U test. The outcomes (Table 6.40) show that there are no statistically significant differences between the sample Arab women and men in regards to the influence of religion on their investment behaviours ($p = .329 > \alpha = .05$). The mean ranks output of this test (Table 6.40) support this finding and illustrate that Arab men and women investors have very close mean ranks of religion influence (265.57 and 278.74, respectively). Thus, this hypothesis was rejected and it was concluded that there are no significant differences between Arab men and women in regards to the influence of religion on their investment behaviours. This means that religion does not affect the investment behaviour of the study's sample.

Table 6.40 Pairwise comparisons of differences in the influence of religion between the Arab men and women investors.		
Test statistics ^{a, b}		
Mann-Whitney U	33731.000	
Wilcoxon W	84452.000	
Z	-.977	
Asymp. Sig. (2-tailed)	.329	
Ranks		
Descriptive	Men	Women
N	318	223
Mean Rank	265.57	278.74
Sum of Ranks	84452.00	62159.00
a. Grouping Variable: Gender		

In this section, the researcher has analysed the investment behaviour of Arab women relative to Arab men using the study's primary data (online questionnaire). In the following section, this analysis is extended to examine the effect of women investors (in regards to their total numbers) on stock market performance, compared to men, using secondary data from the Saudi and Jordanian stock exchanges from 2008 until 2015.

6.9 Research hypotheses testing (using Secondary Data):

In this section, the analysis of Arab women investors is expanded to test the study's last two hypotheses (H7 and H8). In particular, the association between Arab women investors and stock market performance relative to Arab men is examined and the direction of this association is verified in order to meet the study's fourth objective and test (H8).

Due to data availability and the desirability of consistency with the selected primary data, only Jordanian and Saudi individual investors (males and females) were included in the analysis, so as to examine their participations and their association, separately, with the

performance of the Saudi and Jordanian stock exchanges from 2008 until 2015. Prior to investigating women's participations and their associations with their local stock markets' performance, a descriptive analysis was presented separately on the Jordanian and the Saudi stock market over the study period (2008-2015). The descriptive analysis for each stock market includes four variables related to the number of local investors (males and females), the number of traded securities, the total traded amount in local currency, and the return on index (ROI) from 2008 till 2015.

In regards to Jordan, table (6.41) represents the four variables for both Jordanian men and women investors over the study period, with no missing data. The statistics in the upper section is related to Jordanian men investors, while the lower section is related to Jordanian women investors.

The mean number of the Jordanian men investors over the study period was 151,819 while the mean number of the Jordanian women investors was 116,934, which indicates that the number of men investors was almost 1.3 times the number of women investors (Table 6.41). Furthermore, the mean numbers of traded securities by Jordanian men and women investors over the eight study years were 2.1×10^9 and 4.23×10^8 , respectively. This implies that Jordanian men investors, who participate more in stock trading, contributed about five times more in securities' trading in the Jordanian stock market compared to Jordanian women investors (Table 6.41). In addition, the mean of the traded amount in Jordanian Dinar (JOD) by the Jordanian men investors was nearly 3.49×10^9 Jordanian Dinars (JODs) compared to about 9.13×10^8 JDs traded amount by Jordanian women investors during the same period. By dividing the two numbers by one another, the total amount of money traded by men during the study period was nearly 3.8 the amount of money traded by the women (Table 6.41).

These descriptive statistics indicate that Jordanian men investors trade more with higher traded amounts in the Jordanian stock market relative to Jordanian women over the study period.

Table 6.41: Descriptive statistics of the Jordanian stock market over the study period 2008-2015						
Gender			Number of Investors	Number of Traded Securities	Total Amount of Traded Money in (JODs)	Return on Index
Men	N	Valid	8	8	8	8
		Missing	0	0	0	0
		Mean	151819.25	2.14E9	3.490347150E9	2248.191
		Std. Error of Mean	1457.309	61284558.705	1.6841218537E8	99.8752
		Median	151449.00	2.20E9	3.444978011E9	2150.750
		Mode	145047a	1797752177a	3.0362015E9	1957.6a
		Std. Deviation	4121.892	1.733E8	4.7634159324E8	282.4897
		Variance	16989996.786	3.005E16	2.269E17	79800.441
		Range	14280	490683606	1.3682583E9	800.8
		Minimum	145047	1797752177	3.0362015E9	1957.6
		Maximum	159327	2288435783	4.4044598E9	2758.4
Women	N	Valid	8	8	8	8
		Missing	0	0	0	0
		Mean	116934.75	4.23E8	9.131140029E8	2248.191
		Std. Error of Mean	625.123	13847183.244	37203628.1625649500	99.8752
		Median	116774.00	4.34E8	8.980626493E8	2150.750
		Mode	113978a	347605508a	7.7844248E8	1957.6a
		Std. Deviation	1768.115	39165748.688	1.0522775103E8	282.4897
		Variance	3126229.071	1.534E15	1.107E16	79800.441
		Range	6496	115950975	2.9297340E8	800.8
		Minimum	113978	347605508	7.7844248E8	1957.6
		Maximum	120474	463556483	1.0714159E9	2758.4

a. Multiple modes exist. The smallest value is shown

In regards to Saudi Arabia, table (6.42) represents the four variables for both Saudi men and women investors over the study period, with no missing data. The statistics in the upper

section is related to Saudi men investors, while the lower section is related to Saudi women investors.

The mean number of Saudi men investors, over the study's eight years period, was 2,586,424 while the mean number of Saudi women investors was 458,191. These figures show that the mean number of Saudi men investors was almost 5.6 times that of their female counterparts (Table 6.42). In comparison with Jordan, it is concluded that the participation of women is higher in the Jordanian market than in the Saudi market as the number of Jordanian men investors was only 1.3 the number of Jordanian women investors. However, bearing in mind that the Saudi stock market is much larger than the Jordanian stock market with more participants, the mean number of Saudi women investors was much larger than that of Jordanian women investors (458,191 vs. 116,934) during the same period (2008-2015).

The mean numbers of traded securities by Saudi men and women investors averaged over the eight study years were 4.82×10^{11} and 2.11×10^{10} respectively. This reveals that Saudi men investors, who participate more in stocks trading, trade securities much larger than the Saudi women investors. These figures suggest that the number of securities traded by Saudi men investors was approximately 22.8 times the number of securities traded by Saudi women investors (Table 6.42). Further, the mean of traded amount in Saudi Riyal (SAR) was nearly 2.12×10^{13} (SARs). Meanwhile, the mean of traded amount by Saudi women investors during the same period was about 9.05×10^{11} SARs. By dividing the two numbers by one another, the researcher found that the total amount of money traded by men during the study period was almost 23.4 times the amount of money traded by the women (Table 6.42). These descriptive statistics disclose that Saudi men investors trade much higher with larger amounts in the Saudi stock market compare to Saudi women over the study period (2008-2015).

Table 6.42: Descriptive statistics of the Saudi stock market over the study period 2008-2015

Gender			Number of Investors	Number of Traded Securities	Total Amount of Traded Money in (SARs)	Return on Index
Men	N	Valid	8	8	8	8
		Missing	0	0	0	0
		Mean	2586424.31	4.82E11	2.12384E13	6741.9363
		Std. Error of Mean	268399.583	7.615E10	3.050909E12	389.07702
		Median	2900378.50	4.67E11	2.26532E13	6710.9850
		Mode	911726a	1.E11	3.011E12	4802.99a
		Std. Deviation	759148.662	2.154E11	8.629273E12	1100.47600
		Variance	5.763E11	4.639E22	7.446E25	1211047.436
		Range	2202703	7.E11	2.791E13	3732.61
		Minimum	911726	1.E11	3.011E12	4802.99
		Maximum	3114429	8.E11	3.092E13	8535.60
Women	N	Valid	8	8	8	8
		Missing	0	0	0	0
		Mean	458191.75	2.11E10	9.05392E11	6741.9363
		Std. Error of Mean	52966.305	3.374E9	1.282453E11	389.07702
		Median	492000.50	2.06E10	9.38956E11	6710.9850
		Mode	135870a	5958759115a	1.630E11	4802.99a
		Std. Deviation	149811.335	9.544E9	3.627324E11	1100.47600
		Variance	2.244E10	9.109E19	1.316E23	1211047.436
		Range	484562	29390082455	1.184E12	3732.61
		Minimum	135870	5958759115	1.630E11	4802.99
		Maximum	620432	35348841570	1.347E12	8535.60

a. Multiple modes exist. The smallest value is shown

After conducting a descriptive statistic for the Jordanian and Saudi stock markets, the researcher tested H7 and H8 using specifically the number of male and female investors along with the return on index (ROI) for both stock markets over the study period (2008-2015).

H7: Arab women investors have significantly lower participation in the local stock markets than Arab men investors.

H7.1: Jordanian women investors have significantly lower participation in the Jordanian stock market than Jordanian men investors.

The presence of significant differences between the participation of Jordanian women and men investors in the Jordanian stock market (ASE) was investigated first. Since the number of groups under consideration is two, the Mann-Whitney U test was applied. The test results (Table 6.43) show that there are statistically significant differences between the sample Jordanian women and men investors in their participation in the Jordanian stock market ($p = .001$) from 2008 through to 2015. The mean ranks outcome of this test (Table 6.43) reveals Jordanian men investors have a much higher mean rank of participation in the Jordanian stock market than the Jordanian women investors (12.50 versus 4.50 respectively). Accordingly, the research hypothesis was accepted: that Jordanian women investors have a significantly lower participation in the Jordanian stock market than their male counterparts.

Table 6.43 Pairwise comparisons of differences between Arab men and women investors in respect to participation in the Jordanian Stock Exchange Market.		
Test statistics ^{a, b}		
Mann-Whitney U	.000	
Wilcoxon W	36.000	
Z	-3.361	
Asymp. Sig. (2-tailed)	.001	
Ranks		
Descriptive	Men	Women
N	8	8
Mean Rank	12.50	4.50
Sum of Ranks	100.00	36.00
a. Grouping Variable: Gender		
b. Country: Jordan		

Figure (6.4) illustrates visually the numbers of Jordanian women investors compared to the numbers of Jordanian men investors participating in the Jordanian stock market along with

the return on index (ROI) for each year of the study period. It represents the Jordanian stock market as a function of the numbers of Jordanian men and women investors during the period 2008-2015. This figure indicates the followings:

- The return on Index (ROI) of the Jordanian stock market was the highest in year 2008, followed by a continuous drop from the year 2009 to 2012. The lowest value of the ROI was recorded in 2012. Then, it started to increase gradually in 2013 and 2014 respectively but dropped again slightly in 2015 (below its value in 2014).
- In every study year, the number of Jordanian men investors was higher than that of the Jordanian women investors. Figure (6.4) confirms that Jordanian women investors participate less in the Jordanian stock market relative to their male counterparts

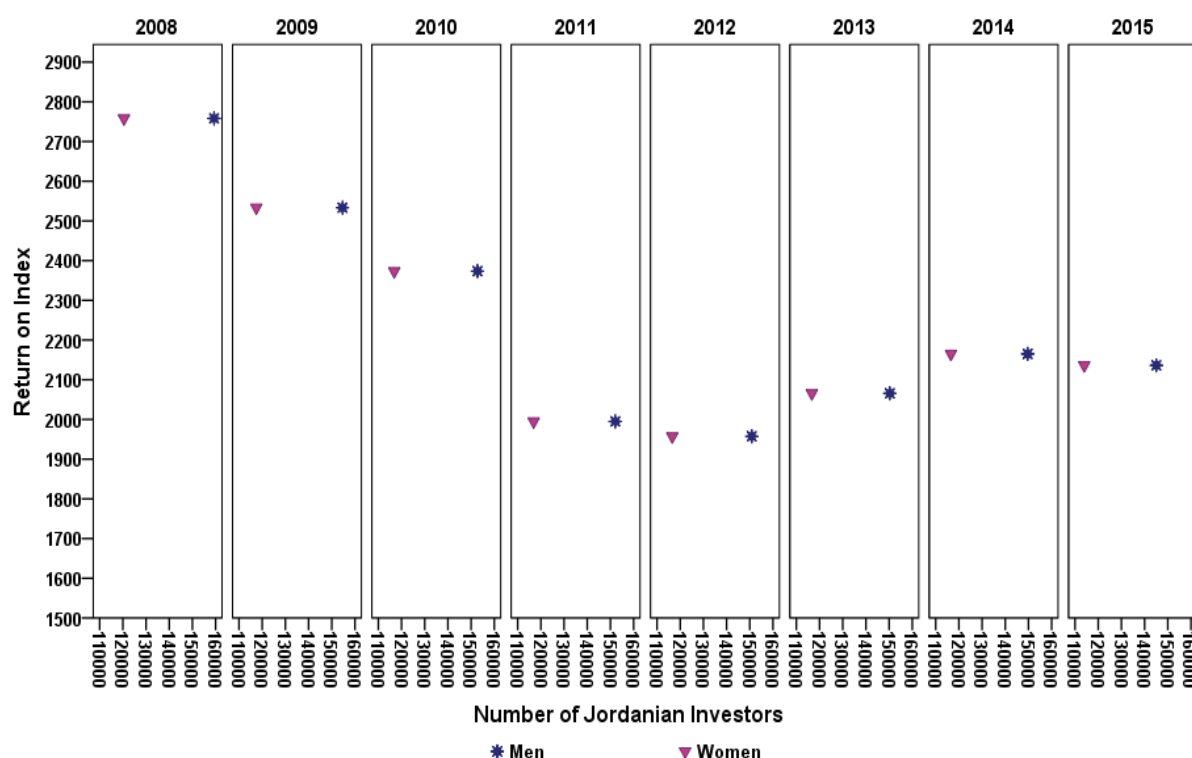


Figure 6.4 Return on Index of the Jordanian Stock Market as a Function of the numbers of Male and Female Jordanian Investors.

H 7.2: Saudi women investors have significantly lower participation in the Saudi stock market than Saudi men investors.

The presence of significant differences in the participation in the Saudi stock market (TADAWUL) of Saudi women and men investors was tested for by implementing the Mann-Whitney U test.

The test outcomes (Table 6.44) indicate that significant differences exist between Saudi women and men investors in terms of their participation in the Saudi stock market (Mann-Whitney U = .000, $p = .001$) from 2008 till 2015. The mean ranks outputs of this test (Table 6.44) indicate that Saudi men investors have a higher mean rank of participation in the Saudi stock market than Saudi women investors (12.50 versus 4.50). Thus, the research hypothesis was accepted and it was concluded that Saudi women investors have significantly lower participation in the Saudi stock market than Saudi men investors. Overall, based on these two results, it is concluded that Arab women investors have lower levels of participation in local stock markets than Arab men investors.

Table 6.44 Pairwise comparisons of differences between Arab men and women investors in respect to participation in the Saudi Stock Exchange Market.		
Test Statistics ^{a, b}		
Mann-Whitney U	.000	
Wilcoxon W	36.000	
Z	-3.361	
Asymp. Sig. (2-tailed)	.001	
Ranks		
Descriptive	Men	Women
N	8	8
Mean Rank	12.50	4.50
Sum of Ranks	100.00	36.00
a. Grouping Variable: Gender		
b. Country: The Kingdom of Saudi Arabia		

Figure (6.5) shows visually the numbers of Saudi women investors relative to the numbers of Saudi men investors participating in the Saudi stock market for each year of the study period along with the Return on Index (ROI). It represents the ROI of the Saudi stock market as a function of the numbers of Saudi men and women investors during the study period (2008-2015). This figure specifies the followings:

- The return on Index (ROI) of the Saudi stock market was the lowest in year 2008. It improved in the two successive years (2009 and 2010), but slightly dropped in value in 2011. The highest value of the ROI of the Saudi stock market was observed in 2013.
- In every study year, the number of Saudi men investors was much higher than the number of Saudi women investors. Hence, figure (6.5) indicates visually that Saudi women investors participate less in the Saudi stock market relative to their male counterparts during the study period (2008-2015).

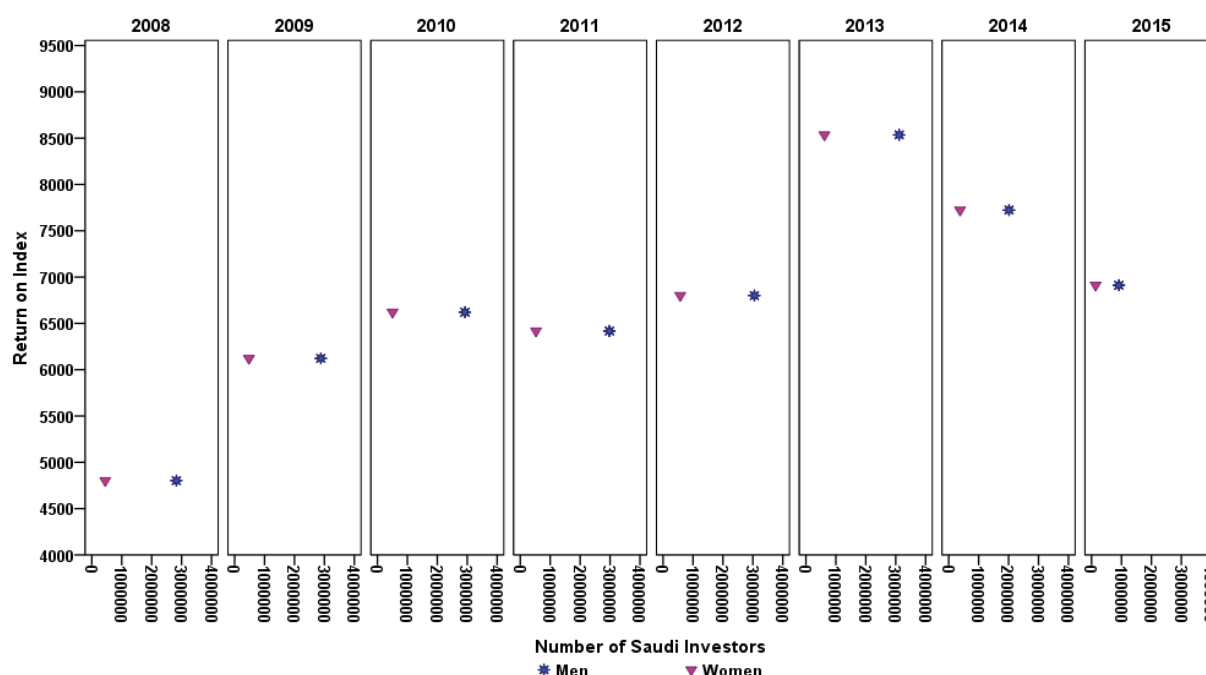


Figure 6.5 Return on Index of the Saudi Stock Market as a Function of the numbers of Male and Female Saudi Investors.

After testing H7, the researcher tested H8 to determine the correlation between Arab women investors (represented by Jordanian and Saudi women investors) and stock market performance (represented by the ROI of the Jordanian and Saudi stock markets) compared to Arab men investors (represented by Jordanian and Saudi men investors).

H8: Arab women investors have a statistically significant positive correlation with the stock market aggregate performance relative to Arab men investors.

To test this hypothesis in case of Jordan and Saudi Arabia, the researcher examined the association between the numbers of men and women investors and the stock market performance (represented by its ROI) using Pearson's Product-Moment Correlation Analysis. Further, the researcher adopted the labelling system for categorization and interpretation of the values of the correlation coefficients (r and pS) of Taylor (1990). Correlation coefficients (in absolute values) that are ≤ 0.35 considered weak (or low) correlations, 0.36 to 0.67 indicate moderate (or modest) correlations, and 0.68 to 1.0 represent high (or strong) correlations, with correlation coefficients ≥ 0.90 representing very high correlations (Taylor, 1990).

In case of Jordan, the correlation analysis results in table (6.44) along with Taylor (1990) interpretation guidelines of the correlation coefficient reveal the followings:

- The ROI of the Jordanian stock market has a statistically significant, negative, high correlation ($r = -.759$, $p = .029 < .05$) with the number of Jordanian men investors during the period 2008-2015. This suggests that the ROI used to increase during the period (2008-2015) as the number of Jordanian men investors decreased.

- There is no statistically significant relationship ($r = .706$, $p = .050 = \alpha$) between ROI and the number of Jordanian women investors during the period 2008-2015. Although the number of women investors has positive and high correlation with the Jordanian stock market performance, but this relationship is not statistically significant.

Table 6.45 The Relationship between the Number of Jordanian men and women Investors and ROI of the Jordanian stock market.			
Correlation Type	Variable	Descriptive	Return on Index (ROI)
Pearson Correlation	Number of Male Investors	Correlation Coefficient	-.759*
		Sig. (2-tailed)	.029
		N	8
	Number of Female Investors	Correlation Coefficient	.706
		Sig. (2-tailed)	.050
		N	8

In case of Saudi Arabia, the correlation analysis results in table (6.445) along with Taylor (1990) interpretation guidelines of the correlation coefficient indicate the followings:

- The ROI of the Saudi stock market has negative, but statistically non-significant, correlation ($r = - .117$, $p = .783 > .05$) with the number of Saudi men investors during the study period 2008-2015.
- The ROI of the Saudi stock market has positive, but statistically insignificant, correlation ($r = .124$, $p = .770 > .05$) with the number of Saudi women investors during the study period 2008-2015. Saudi women have higher association with the stock market performance relative to Saudi men investors.

Table 6.46 The Relationship between the Number of Saudi men and women Investors and ROI of the Saudi stock market.

Correlation Type	Variable	Descriptive	Return on Index (ROI)
Pearson Correlation	Number of Male Investors	Correlation Coefficient	-.117
		Sig. (2-tailed)	.783
		N	8
	Number of Female Investors	Correlation Coefficient	.124
		Sig. (2-tailed)	.770
		N	8

Overall, Jordanian and Saudi women investors have positive associations with their local stock market performances (ROI), but both associations are statistically non significant and that might be due to several reasons (which are discussed in Chapter 7). Accordingly, we reject H8 in case of Jordan and Saudi Arabia.

In summary, the eight main hypotheses proposed in Chapter 4 are tested. The findings of the eight hypotheses are again represented in the following table (6.47):

**Table 6.47 Summary of
the contents of study's
hypotheses and findings**

Hypotheses	Contents of Hypotheses	Findings	Contents of Findings
H1	The investment behaviour of Arab women is associated with Age, Annual Income and Education.	The findings support H1	<p>1) Age is associated with Arab women investment behaviour in regards to their:</p> <ul style="list-style-type: none"> - Risk tolerance levels <p>2) Annual income is associated with Arab women's investment behaviour in regards to their:</p> <ul style="list-style-type: none"> - Religion effect - Investment confidence levels - Investment literacy levels <p>3) Education is associated with Arab women investment behaviour in regards to their:</p> <ul style="list-style-type: none"> - Investment literacy levels.
H2	H2: Herding behaviour is greater among Arab women investors than Arab men investors.	The findings support H2	Herding behaviour is greater among Arab women than among Arab men investors.

H3	Religion has a statistically significant effect on the investment behaviour of Arab women	The findings do not support H3	Religion does not affect Arab women investment behaviour in regards to their: <ul style="list-style-type: none"> - Risk tolerance levels - Herding behaviours - Investment confidence levels - Investment literacy levels Further, religion does not affect the investment behaviour of the sample Arab women and men investors
H4:	Arab women are risk averse investors.	The findings support H4	Arab women are risk averse investors. Furthermore, Arab women investors have lower financial risk tolerance levels than Arab men investors.
H5:	Arab women have significantly lower confidence levels relative to Arab men investors.	The findings support H5	Arab women have lower confidence levels relative to Arab men investors
H6:	Arab women have significantly lower investment literacy levels relative to Arab men investors	The findings support H6	Arab women have lower investment literacy levels relative to Arab men investors

<p>H7, H7.1, H7.2</p>	<p>Arab women investors have significantly lower participation in the local stock markets than Arab men investors.</p> <p>H7.1: Jordanian women investors have significantly lower participation in the Jordanian stock market than Jordanian men investors.</p> <p>H7.2: Saudi women investors have significantly lower participation in the Saudi stock market than Saudi men investors.</p>	<p>The findings support H7</p>	<p>In respect to Saudi and Jordanian men and women investors and their participations in their local stock markets respectively from 2008-2015:</p> <p>- Jordanian women investors have lower participation in the Jordanian stock market compared to Jordanian men investors.</p> <p>- Saudi women investors have lower participation in the Saudi stock market compared to Saudi men investors.</p>
<p>H8</p>	<p>H8: Arab women investors have a statistically significant positive correlation with the stock market aggregate performance relative to Arab men investors.</p>	<p>The findings do not support H8</p>	<p>In respect to Jordanian and Saudi women investors and their associations with their local stock markets performance respectively from 2008-2015:</p> <p>- Jordanian women investors have a positive and high relationship with the Jordanian stock market performance, but this relationship is not statistically significant.</p>

H8			<p>- Saudi women investors have a positive relationship with the Saudi stock market performance, but this relationship is not statistically significant.</p>
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6.10 Summary and Conclusion:

This chapter has analysed the primary and secondary data to test the study's main hypotheses and meet its objectives. First, the investment behaviour of the sample Arab women was investigated compared to that of Arab men. Since the study's primary data was not normally distributed, non-parametric statistical tools were used (the Kruskal-Wallis H Test, the Mann-Whitney U Test, and the Wilcoxon Signed-Rank Test).

According to the analysis of the study's questionnaire (primary data), the results indicate that age; annual income and education are associated with Arab women's investment behaviours. Furthermore, the results reveal that Arab women investors are less risk tolerant, less confident and less investment literate than Arab men investors. Arab women also exhibit more herding behaviour than men when investing. Regarding the influence of religion, the results show that religion does not have an influence on Arab women's investment behaviour. Moreover, religion does not have an influence on the Arab men investors in the sample.

The analysis of the questionnaire also shows the three most important investment barriers from the perspective of the sample Arab women investors: fear of taking higher risk, fear of loss, and having other financial priorities, respectively. Additionally, the most important motives are: facilitating more online trading, availability of specific tailored investment funds, more financial reports, and reliance on financial advisors' opinions.

Regarding the secondary data, the analyses indicate interesting findings. Arab women investors (represented by Saudi and Jordanian women investors) have a positive association with the stock market performance (represented by the return index of the Saudi and Jordanian stock markets) from 2008 till 2015, but this relationship is not statistically

significant. Additionally, Jordanian men investors have a statistically significant negative relationship with the Jordanian stock market performance relative to Jordanian investors. In contrast, neither Saudi women investors nor Saudi men investors have a statistically significant relationship with the Saudi stock market performance during the study period, although Saudi women investors have a positive relationship while Saudi men investors have a negative relationship. The next chapter presents a detailed discussion of the study's primary and secondary results.

Chapter Seven: Discussion Of Research Findings

7.1 Introduction:

The main aim of this chapter is to discuss and justify, in depth, the study's findings (as presented in chapter six) in association with study's objectives and main hypotheses. In addition, these findings are explained in relation to the cultural and political factors in the Arab region. Finally, the findings are compared with the existing findings in the behavioural finance field; particularly in respect to gender differences in investment behaviour. This chapter starts by discussing the demographic characteristics of the study's sample followed by the main investment barriers and motives. Afterwards, it discusses the study's main hypotheses using primary and secondary data. The chapter then focuses on discussing the final framework that has emerged from the study's hypotheses, objectives and findings, along with the study's proposed outcome. Finally, it presents a summary and conclusion.

7.2 Discussion of the study's empirical findings:

In this section, the researcher focuses on discussing the study's empirical findings, which are discussed in the same order as they are presented in chapter six. The section starts with a discussion of the demographic characteristics of the study's sample. Followed by a detailed discussion on findings associated to the study's main objectives and hypothesis.

7.2.1. Discussion of the demographic characteristics of the study's sample:

According to the frequency distribution analysis of the study's sample (N = 549), the majority of the respondents (66.1%) answered the online questionnaire in Arabic rather than English. This result is to be expected since the sample is selected from Arab individuals living in Arab countries (Saudi Arabia and Jordan), where the native language is Arabic. Further, the

findings show that 71.8% of participants are Arab individuals living in Saudi Arabia. Since Saudi Arabia and its stock exchange (TADAWUL) are the largest in the Arab region (Ulussever et al., 2011), it is logical that the selected sample from Saudi Arabia would be bigger and more diverse (in terms of nationality and origin) than the one from Jordan.

Regarding gender and age respectively, the results indicate that the majority of the study's respondents are Arab men (58.5% versus 41.2% women), which is expected since men are the dominant investors in stock markets worldwide (Coates, 2012; Jefferies, 2014). Furthermore, large numbers of existing studies that examine gender differences in investment behaviour in various markets have shown that the majority of the participants are men (see Agnew et al., 2003; Al-Tamimi and Bin Kalli, 2009; Kourtidis et al., 2011; Bashir et al., 2013). In regards to age, approximately 25% of the sample participants are young individuals, with ages ranging from 25 to 34 years old. Again, this result is expected since the average age of the population in both countries is young. To illustrate, young people amount to two-thirds of the Saudi population (Murphy, 2012). Furthermore, various young Saudi individuals are investors or interested in investing in stocks (Heshmat, 2012). Similarly, Jordan's population is also relatively young (El Kharouf et al., 2007). Furthermore, the young population in the whole Arab region is growing rapidly (Hoffman and Jamal, 2012), so the majority of any sample taken from this region would be expected to be young.

Additionally, the majority of the respondents are private sector employees, with low to medium annual incomes. Since the majority of the respondents are young individuals at the beginning or middle of their careers, it stands to reason that their annual incomes would be average, rather than high. Regarding education, more than half of the respondents are educated and hold a Bachelor degree with different majors. This result is expected since university attendance is popular among Arab young individuals especially among Arab women (United Nations statistics, cited in Davies, 2012). Overall, the sample is therefore

considered to be a good sample for this study, specifically due to its diversity in regards to country selection, gender, income, education and professional level.

7.2.2. Discussion of the investment preferences of women respondents:

The study investigates (using frequency distribution analysis) the investment preferences of the Arab women from the sample in regards to stocks, bonds, mutual funds and real estate. The results indicate that the women in the sample invest in more than one asset; mainly stocks followed by real estates. Approximately 28% invest mostly in stocks, while 23.4% do not invest in stocks. Although Arab women in the sample invest mostly in stocks, therefore, the percentage is relatively low compared to Arab men in the sample (61 women invest mostly in stocks versus 136 men). This result illustrates that, on average, Arab women invest less in stocks than Arab men, and this may be related to their investment behaviour. This result is consistent with various existing results that have documented that men invest in stocks more than women do (see Barber and Odean, 2001; Almenberg and Dreber, 2011; Manjula, 2013). In their study, Dreber et al. (2011) found that 80% of men invest in equities compared to 48% of women.

Overall, women are naturally savers and risk averse, especially when making financial decisions (Fehr-Duda et al., 2006). They like to invest their wealth in safe rather than risky assets (Bhushan and Medury, 2013), especially in the Arab region. Women in this region hold their wealth mainly in in safe securities (such as cash deposits) rather than stocks (Williams, 2011). Thus, the sample Arab women are not major investors in stocks even though the sample is taken from Arab women investing, or interested in investing, in stocks. This tends to confirm that Arab women are risk averse investors and prefer safe securities rather than stocks. This result is consistent with Bayyurt et al.'s (2013) findings that show Turkish men prefer investing mainly in common stocks and real estate, while Turkish women prefer

investing in time deposits and gold. Since Turkey and the Arab countries share similar cultures and religion, so the investment behaviour of Turkish individual investors may be similar to those of Arab individual investors.

Additionally, the limited investment in stocks of the sample Arab women is due to major barriers, which cause them to fear investing. Thus, it is important to know these barriers and try to eliminate them. Further, it is essential to highlight the main motives that encourage Arab women to invest more in stocks. Identifying these barriers and motives may increase the participation of Arab women in stock investments.

7.2.3. Discussion of the Investment barriers and motives:

Investment Barriers:

To identify the major barriers that limit Arab women from investing often in stocks, ten important obstacles were selected for investigation. From the frequency distribution analysis results, fear of taking higher risk, fear of losing, along with having other financial priorities are, respectively, the three most significant investment barriers that limit the sample Arab women from investing more in stocks. These three major stock investment barriers are strongly associated with the idea that women are risk averse individuals, especially when making investment decisions. Since investing in stocks is considered risky, the sample Arab women hesitate to invest mostly in stocks due to the high probability of taking risks and losing. The idea of taking risks and having a high chance of losing money are major investment barriers for these women.

Additionally, having other financial priorities is another important barrier for the sample women. Arab Women, like other women around the world, need to plan more for securing their long-term financial well-being than men because women (on average) live longer

(Jackson, 2014), earn less (Duflo, 2012), and are more risk averse than men (Fehr-Duda et al., 2006). Therefore, Arab women (who earn less compared to Arab men) tend probably to invest their own wealth in safe securities that cover their current commitments, support their future retirement, and provide financial security; rather than investing in stocks. Overall, the low participation of Arab women in stocks investments confirms the picture of their reluctance to take a high risk of losing a proportion of their wealth, when that may be saved to cover other financial priorities. This result confirms the findings of various studies that have shown women to be risk averse investors and to invest conservatively (Embrey and Fox, 1997; Al-Ajmi 2008; Dohmen et al., 2011).

In contrast, the sample Arab women select a lack of interest in financial matters, cultural and religious factors, and a lack of enough time to follow the stock market as, respectively, the least important barriers to them investing in stocks. This indicates that Arab women are interested in investment matters and willing to create time from their busy lives to follow the stock market and their own investments. Additionally, cultural and religious factors are not considered a major barrier limiting Arab women from investing, although cultural and religion play major roles in the day-to-day lives of Arab women. This important result highlights that when it comes to investments in stocks, culture and religion are not important barriers that limit Arab women from investing. Arab women may still invest in stocks either by investing directly via online trading or investing indirectly via financial brokers or family members.

Arab women are like other women, in that their risk averse behaviours, along with their commitments to other financial priorities, limits their participation in the stock market. Furthermore, although culture and religion are considered important issues in the lives of

Arab women they are not when it comes to investment in stocks. Thus, religion does not directly affect their investment decisions and behaviours. In order to reduce investment barriers and increase their participation in the stock market, investment motives were also investigated, along with the investment behaviour of Arab women. These factors are discussed in the following sections, respectively.

Investment Motives:

Economically, stock market participation is important. Limited participation in the stock market can cause a significant welfare loss (Cocco et al., 2005). Various women, including Arab women, save modestly for retirement, accumulate debt, and rarely take advantage of financial innovation (Campbell, 2006), meaning that their participation in stocks trading is limited.

In order to increase the participation of Arab women in the stock market and reduce the major barriers to investment, eleven important investment motive factors that might encourage women to invest in stocks more were listed. The results of the frequency distribution analysis revealed that 70.3% of the sample Arab women selected "Facilitating more online trading" as the most important motive for investing in stocks. The selection of this motive may be partially explained by the cultural factors (grounded mainly by Islam) governing Arab women, their careers and their decisions. Due to the local traditions in the Arab countries, women still suffer from gender-based obstacles (with men still being the dominant participants in most sectors, including the investment sector), and this prevents them from fully recognizing their rights as equal participants in society and the whole economy (Nazir, 2005). For instance, the traditional idea about women being at home and taking care of the children is considered a priority in the Arabic culture, and such an idea may limit women's physical participation in stock market. Facilitating more online trading may, therefore, be an

important opportunity for Arab women to invest in the stock markets, while still complying with local tradition. Additionally, the current busy lives of Arab women that include various responsibilities toward their education, careers and families may be a major limiting their investment in stocks. Thus, facilitating more online trading can make it easier for women to trade stocks any time and any place. Finally, since the study's participants are mainly younger individuals who use the net extensively the desire for more online trading is expected. Hence, more than 75% of the study's participants, including women, trade online (Figure 7.1). This high percentage indicates the importance of online trading for the majority of the study's sample.



Figure 7.1. The percentage of Arab individual investors trading stocks online.

Overall, online stock trading leads to faster trading, more access to information, and lower operating costs (Lee, 2009) as well as the ability to trade from anywhere using the net (such as trading at home). These advantages of online trading may explain why the sample Arab women choose it as their most important investment motive. Barber and Odean (2002) documented that online investors trade often and that trading volumes rise after investors go online. Both findings indicate that online trading increases individual investors' trading

activities, this is true especially for non-overconfident investors (Abreu and Mendes, 2012), such as the sample Arab women.

This result is consistent with the results of Fares and Khamis (2011), which indicate that accessibility to the net (including online trading) has a significant positive effect on the stock trading of individual investors in the Amman stock exchange (ASE). The results probably hint that the higher the accessibility to the net and online trading, the higher the stock trading activities of individual investors in the ASE.

The selection of the second and the third major motives (which are related to the availability of funds tailored to the investors' needs, financial reports, and financial advisors' opinions) indicate that the sample Arab women do not participate often in the stock market due to their risk averse behaviour, limited confidence and limited investment knowledge. They therefore prefer to rely on financial advisors and financial reports from leading investment companies when investing rather than taking the risk and invest alone. Furthermore, the sample women probably trust financial advisors' knowledge and experience (through their opinions, prepared financial reports or prepared funds) more than they trust their own and that again is probably due to their risk averse behaviours and limited levels of confidence in their own investment knowledge.

Since women are less confident about their financial knowledge than men so the chances of seeking financial advisors' opinions increase (Guiso and Japelli, 2006). Thus, women give high priority and importance to financial advisors' opinions, views and guidance (Deb and Chavali, 2009) so as to help them have more diversified portfolios that meet their demands. Moreover, Fischer and Gerhardt (2007) argued that relaying on financial advice can increase investors' confidence in their own skills and, thus, lead them to more rational investment decisions that have a positive effect on trading.

Furthermore, Arab women (as other women) are detail oriented; they want to read more and ask more to understand financial/investment matters better (Worley, 1998) and to become more confident about their investment knowledge before taking high risks and investing in stocks. Hence, non-overconfident investors trade more often in the stock market when they use specialized sources of information (Abreu and Mendes, 2012) such as financial reports prepared from professional financial advisors. Therefore, having more detailed financial analytical reports on the stock market, may explain why women choose this specific motive as the second most important motive for them.

Moreover, Arab women investors have different aims and needs compared to Arab men investors in terms of investment preferences and goals. Thus, women may need tailored advice and funds from trustworthy financial advisors who understand their needs along with the cultural sensitivities of the Arab region. Accordingly, 65% of the sample Arab women selected "more available funds tailored to investors need" as an important motive to invest in stocks. The selection of this motive by the majority of the sample women shows that these women may not have the courage, the confidence, and the investment knowledge, to be major participants in the region's stock markets. Having tailored funds (constructed by financial advisors) to meet their demands and preferences may help Arab women access the capital markets more easily and invest more often in stocks with confidence. Since Arab women are risk averse investors and have limited investment literacy levels, they may prefer funds that are specifically tailored to best suit them in terms of risk and return characteristics. This result confirms other existing results that have indicated that due to women's risk averse behaviours when investing, specially tailored funds should be offered to them (see Bhushan and Medury, 2013).

Finally, 63.3% of the Arab sample women chose "the need for more information transparency from the listed companies in stock market" as an important motive. The selection of this motive may be directly associated with trust. Choosing this motive highlights the low trust of the sample Arab women in the current listed companies in the stock market and the transparency of the financial information they publish. This lack of trust causes them to shy away from investing in the stock market. Thus, Arab women need more information transparency from the listed companies. The limited trust in the listed companies in the stock market and their information transparency to investors may explain the limited levels of investment in stocks by the women in the sample since, in general, less trusting investors are less likely to invest in stocks (Guiso et al., 2008).

In contrast, the results show that having demo accounts, well-equipped trading rooms and live investment programmes are not considered to be important motives for the sample Arab women. These results may be explained by the investment behaviours of these women. Arab women's risk averse and herding behaviours, along with their limited investment confidence and knowledge, cause them to prefer to rely on financial advisors rather than learning to trade alone using demo accounts or attending live investment programmes before trading stocks. Furthermore, since Arab women are becoming more active players in the region's economy, so their responsibilities have increased. These responsibilities may limit them from attending live investment programmes, trading in well-equipped rooms, or even having time to learn trading through demo accounts. Finally, cultural factors may also be another explanation for the selection of these motives as not important. Local Arab traditions may limit these women from attending live investment programmes or from trading in well-equipped rooms that might be far from their current locations, so trading online and taking online investment courses are more convenient and preferable to Arab women.

Overall, the investment barriers and motives identified by the sample Arab women are directly associated with their investment behaviours in regards to their risk tolerance levels, herding behaviours, confidence levels, and investment literacy levels. Furthermore, the selection can also be related to cultural factors. A comparison of these investment behaviours with those of Arab men is presented in the following section.

7.3. Discussion of the study's main hypothesis:

This section discusses the findings of the study's main nine hypothesis, which were analysed in chapter six using primary and secondary data. First, the findings of the hypotheses (using the primary data) that are mainly related to the investment behaviour of the sample Arab women compared to Arab men are discussed. This is followed by a discussion of the findings related to the other hypotheses (using the secondary data), which are mainly link with the participation of Arab women and men in the stock market and their respective impact on stock market performance.

7.3.1 Discussion of the study's main hypothesis (using primary data):

The researcher discusses the findings related to the first six main hypotheses, which are analysed using a diverse sample of Arab males and females investing, or interested in investing, in stocks and also living in Saudi Arabia or Jordan.

The analysis of the study's sample using several quantitative (non-parametric tests) revealed the investment behaviour of Arab women compared to Arab men in regards to their risk tolerance levels, herding behaviours, religious beliefs, confidence levels and investment literacy levels. Prior to that, the analysis showed that the investment behaviour of Arab women is associated with demographic factors (age, annual income and education).

Age. According to the discriminant analysis of the Kurskal-Wallis test, age is only associated with the sample Arab women's risk tolerance levels. This means that Arab women investors of different age groups have dissimilar levels of risk tolerance. Furthermore, the extended analysis of the Mann-Whitney U test reveals that Arab women who belong to the fifth age group (55-64 years old) have the lowest risk tolerance levels compared to the other six age groups (18-24 years; 25-34 years; 35-44 years; 45-54 years; 65-74 years).

These results have three implications: first, Arab women in the first fourth groups are willing to accept higher risk in their stock investments than the older women in the fifth group. Intuitively, this result can be explained by the fact that younger investors have longer time-horizon to buy and hold stocks. Younger investors are also expected to have more time to recover financial losses that may incur with risky stocks investments than do older investors. Additionally, younger investors who probably do not have dependents (such as children) are more risk takers because they want to get richer. This result can also be explained in regards to the nature and status of young Arab women in the region. Currently, young Arab women investors are well-educated, career-oriented, and more financially independent individuals. Thus, these women may be willing to take higher risks when investing in stocks to increase their financial independence and to become wealthier individuals.

The older Arab women in the fifth age group (55-64) have lower risk tolerance levels than the first fourth groups (which include younger investors). This result may be based on the logic that older investors have less years to recover their losses and a shorter investment time¹⁹ horizon, especially once the individual retired. Since the fifth age group (55-64) includes women that have recently retired or are almost at the point of retiring, so their investment goals shift to more conservative saving goals. The emotions these retired women go through

¹⁹ Time horizon is the length of time an individual keeps his/her money invested before is liquidated

(as they stop earning a regular income and do not have permanent job as they used to have) can probably make them feel financially insecure and cause them to be conservative investors with lower risk tolerance levels. Further, these women may feel stressed because their chances to get another job are low. In general, older people have very low chance to get into the labour market or even get a chance for interview, particularly women (Drydakis et al., 2017). Accordingly, individual investors who are almost or already retired may shift interest from asset accumulation to asset saving (Hallahan et al., 2004).

The above results indicate that increasing age is associated with decreasing risk tolerance levels. This result is consistent with various existing results, which reveal that risk tolerance declines as people age (see Morin and Suarez, 1983; Finke and Huston, 2003; Yao et al., 2005; Jianakoplos and Bernasek, 2006; Hira et al., 2007; Ricciardi, 2008; Gilliam et al., 2010; Jain and Mandot, 2012; Kannadhasan, 2015). On the contrary, other existing findings argue that age is positively associated to risk tolerance or not meaningful (Sung and Hanna, 1996; Grable and Joo, 1997; Grable, 2000; Ardehali et al., 2005).

Regarding the Arab women in-group six (65-74), the results unexpectedly show that the oldest women in the sample have a higher risk tolerance level. These because, as these women age, they are likely to gain more experience in stocks investments, which can encourage them to accept higher risks. This result is consistent with Jianakoplos and Bernasek's (1998) results, which indicate that people aged greater than 65 are less risk averse individuals when it comes to portfolio selections. Since this age group represents only 1.6% of study sample, however, it is not very influential in this study. Thus, we can conclude that age is related negatively with risk tolerance level.

Annual Income. This is the second demographic factor the used to examine the association between income/wealth²⁰ and the investment behaviour of the sample Arab women. Income and wealth are two related factors (Hallahan et al., 2004) with various existing studies using them as a proxy to examine the investment behaviour of individual investors, mainly their risk tolerance, confidence and investment knowledge levels (Grable, 2000; Hallahan et al., 2004; Lusardi and Mitchell, 2006)

Regarding income/wealth and risk tolerance levels, several existing studies indicate a positive association with the preferred level of risk (as Grable and Joo, 1999; Bernheim et al., 2001). This study's results, in contrast, reveal that, income is not associated with the risk tolerance levels of the sample Arab women. However, income (earned wealth) is associated with the women's investment confidence and investment literacy levels along with the effect of their religious beliefs on their investment behaviours. The results show that the investment behaviours of the women with the highest earned annual income ($\geq 75,000$ US\$) in the study's sample are affected the least by religion.²¹

The obtained result may be due to the different level of religiosity of the sample Arab women; with women in the highest annual group concerned mainly to maximize their wealth more than adhering Islamic investment principles. Thus, their level of religiosity is lower than women in the other income groups. These women probably prioritize their profit motive over their religious motive when making investment decisions This result is similar to those of Haron and Nursufiza (2008), who argued that the majority of Malaysian Islamic banking clients and investors are profit driven more than religious driven when making economic/financial decisions.

²⁰ Wealth collected through individual's own personal income is refer as earned wealth (Rowlingson, 2012)

²¹ Since the sample is selected from Muslim countries Islam is the main religion focused on in this study

The study's results reveal a negative association between earned wealth and the influence of religion on women's investment behaviour (the higher the wealth, the lower the impact of religion when it comes to stocks investments). Hence, this result contributes to the existing literature by linking earned wealth with the influence religion on women's investment behaviour, especially in a region where religion has a high effect on its people.

Regarding the level of income of the sample Arab women and their investment confidence levels, the analysis confirmed that Arab women in the lowest income group (< 20,000US\$) have lower investment confidence levels than women from other income groups. This result is expected because women in this group, mainly students or the recently employed, do not have enough investment experience and knowledge. Therefore, their confidence levels about their own investment abilities are low. They probably do not have the confidence and the wealth to invest often in stocks. On the contrary, wealthier investors have stronger financial abilities so they can easily incur the losses resulting from stocks investments. As a result, these wealthy investors are more confident about their investment abilities. Accordingly, investors' accumulated wealth may be a reflection of their levels of investment confidence and risk tolerance (Hallahan et al., 2004).

Furthermore, Arab women with the lowest income levels may not be able financially to afford to get information via financial advisors or specialized sources before investing, which may negatively influence their confidence levels and cause them to trade less in stocks. The more individuals invest in information, the more they are confident to trade frequently in financial products (Abreu and Mendes, 2012) as stocks. Hence, investing in information is linked to wealthier, more confident, and experienced investors who are more likely to experience good portfolio performance (Bailey et al., 2008). Consequently, this explains why Arab women with the lowest income levels have a lower confidence level compared to the rest of the women in the sample. This result is in contrast with Zoghلامي and Matoussi (2009) results,

which showed that age and level of income do not influence the confidence level of Tunisian individual investors.

Furthermore, the sample Arab women in the lowest income group have lower investment literacy levels. Logically, these women in the lowest income group may not have enough money to invest in financial information, advisors, or financial educational programmes that increase their investment knowledge; mainly due to their limited income. Thus, these Arab women become less confident about their investment abilities and that causes them to be risk averse investors and trade less in stocks. Hence, women (especially with low income) do not participate often in the stock market due to their lower investment knowledge (Van Rooji et al., 2011). This result indicates that level of income (earned wealth) is associated positively with the investment confidence and literacy levels of Arab women in the sample.

Educational Level. Along with the level of income, the level of education is another factor that affects the investment literacy levels of the sample Arab women. Those with only high school education have lower investment literacy levels compared to those with higher education levels. This result also indicates a positive association between level of education and level of investment literacy, where Arab women with more education have greater investment knowledge than those with less education (mainly high school education). To illustrate, the Arab women with the lowest income and lowest educational levels (in the sample) have lower investment literacy levels, which may cause them to take less financial risk due to their limited investment knowledge. Hence, low financial/investment literacy level may cause individuals to invest less for retirement and thus weaken their well-being in old age (Lusardi and Mitchell, 2007)

Both results confirm the findings of (Volpe et al., 2002; Beal and Delpachitra, 2003; Lusardi and Mitchell, 2007; Al-Tamimi and Bin Kalli, 2009), which reveal that financial/investment

literacy levels of individual investors (males and females) are associated with level of income and level of education. Beal and Delpachitra (2003) found that the higher the level of education obtained and the level of income earned, the higher the expected level of financial/investment literacy.

Based on the study's results, demographic factors (mainly age, income and education) are associated with the investment behaviours of the sample Arab women in regards to their risk tolerance, investment confidence and investment literacy levels. Generally, there are no previous studies that directly examine the association of demographic factors with the investment behaviour of only women in regards to their risk tolerance, investment confidence, and investment literacy levels (combined), especially Arab women investors. This study examines the association between three demographic factors (age, income, education) and the investment behaviour of Arab women. Further, the study investigates the investment behaviour of Arab women compared to Arab men in regards to the study's five variables, after controlling for factors as age, education and income.

In regards to the gender factor, the researcher finds that there are gender differences in investment behaviours among the study's participants. The Mann-Whitney test finds that herding behaviour is significantly greater among Arab women than Arab men investors. This suggests that women investors are usually influenced by others' recommendations (as financial analysts, family members, and friends) more than men (Carli, 2001; Nofsinger, 2005), and this explains women's greater herding behaviour relative to men when making investment decisions (Feingold, 1994; Lin, 2011).

The reason behind women's higher herding behaviour may be due to gender inequality (Carli, 1999), which cause women investors to be more influenced by others' recommendations than men investors. Gender inequality, which is mainly due to local traditions and religious

views²² (where men are still considered as the breadwinners, while women are still viewed as wives and mothers), is still highly recognized in the Arab region (Nazir, 2005; Moghadam, 2015). Accordingly, the influence of others on Arab women decisions is very noticeable, and thus their herding behaviour is greater compared to Arab men when making investment decisions. These women may prefer to follow the actions and recommendations of their male family members or financial advisors than making investment decisions alone. To illustrate, the sample Arab women select "relying on financial advisors" as one of the major motives for stocks investments and that signifies the presence of herding behaviour among these women. Moreover, and due to the traditions, Arab women may rely on family members' advice, which causing them to be less confident in their investment abilities and to trade stocks less frequently. In general, less confident investors who mainly follow the advice of family and friends trade less frequently in stocks (Abreu and Mendes, 2012).

Additionally, since women (including Arab women) are less confident about their financial knowledge than men investors (Barber and Odean, 2001), they may exhibit higher herding behaviour (Jamshidinavid et al., 2012) and thus lower risk taking. Hence, lower risk taking due to lower degree of overconfidence, higher herding behaviour (Menkhoff and Brozynski, 2006), and lower financial literacy may lead to lower trading activities (Almenberg and Dreber, 2011). Finally, the current high uncertainty in the Arab region has probably triggered fear and instability among individual investors causing them to herd more when trading (Balcilar et al. 2013), particularly women. This study's finding is consistent with existing findings, where herding behaviour is present among individual investors (see Barber et al., 2009; Lin, 2011; Balcilar et al., 2013; Rahman, 2015). Particularly, the finding also confirms

²² Islam Judaism and Christianity view woman as wife and mother (Moghadam, 2003, pp.6)

the existing results that reveal herding behaviour is more present among women investors compared to men investors (Eagle and Carli 1981; Lin, 2011; Choi, 2013) due to women's limited confidence and investment literacy levels.

One of the most interesting finding in this study is the impact of religion, mainly Islam, on the investment behaviour of the sample Arab women. The regression analyses reveals that religion, which is considered an important factor in Arab women lives, does not directly affect their investment behaviour in regards to their herding behaviour, risk tolerance, confidence, and investment literacy levels. This may be partly explained by the findings of Haron and Wan Azmi (2008), who claimed that Malaysian Islamic banking clients (males and females) place profit motive above their religious motive when making economic and investment decisions. Similarly, Tahir and Brimble (2011) provided evidence of a wealth maximizing component to Islamic investment decisions taken by Muslim investors. Although their results indicate the influence of Islam on investors' decision-makings, the extent to which Islamic principles are followed in practice is based on investors' level of religiosity. Accordingly, the sample Arab women are probably profit driven investors more than religion driven investors. These women probably prioritize the wealth-maximizing element over the religious element when making investment decisions to get rich quickly, and that may be due to their level of religiosity. Although the findings statistically indicate that religion does not directly influence Arab women investment behaviour, realistically it plays a vital role in Arab women lives and may have indirect effect on their investment behaviours.

Regarding the impact of religion and gender, the extended analysis reveals there are no significant differences between Arab women and men participants in regards to the effect of religion on their investment behaviour. This unexpected finding signals that the aim of the sample Arab individuals is to maximize their wealth when investing in stocks, regardless of

whether these stocks comply with Islamic investment principles or not. In other words, this sample includes Arab male and female investors who are profit driven more than religion driven. This finding is consistent with Al-Tamimi's (2006) findings that the most important factors affecting the investment behaviour of UAE²³ investors are related to wealth maximizing criteria (as corporate earnings and get rich quickly). Despite the fact that the UAE is a conservative Muslim society, religious beliefs are unexpectedly the least important factor affecting the behaviours of UAE investors. UAE society is very similar to other Arab societies particularly the Saudi society, where most of this study's sample was collected from.

Additionally, this result complies with the findings of Jamaludi (2013) and Shahzad et al. (2014) that religion does not significantly affect the investment behaviour of individuals in, respectively, Malaysia and Pakistan. In contrast, however, the work of Muhamad et al. (2006), Tamimi and Bin Kalli (2009) and Tahir and Brimble (2011) indicate that religion has a significant influence on the investment behaviours of Muslim individuals. Tahir and Brimble (2011) also indicate that Muslims are generally risk averse investors regardless of their level of religiosity. Overall, investors who are more risk averse, mainly women, have lower financial risk tolerance (Anbar and Eker, 2010).

In respect to the financial risk tolerance level, the findings demonstrate that Arab women are risk averse investors and have lower risk tolerance levels compared to Arab men. Arab men, as other men investors, probably select riskier investments to achieve higher gains in order to satisfy their egos. In contrast, Arab women choose safer investments, which help them achieve their set goals and needs while avoiding the worst possible losses caused by risky investments. Due to their risk averse behaviours, the majority of Arab women participants selected the "fear of taking high risks along with the fear of losing" as the barriers inhibiting

²³ UAE refers to United Arab Emirates

them from investing in stocks more. This finding signals that, although Arab women have a more conservative culture than women in other regions, they still have similar attitudes towards financial risk taking in that they take fewer financial risks than men do (Statman, 2008). This finding is consistent with those of Finucane et al. (2000) and Thomas and Mueller (2000), which show no changes in the gender differences in risk-taking between cultures. This study's findings confirm that gender differences in risk tolerance levels are caused mainly by nature (biological sex) than culture (Croson and Gneezy, 2009). Due to their masculinity,²⁴ men generally differ in their mentality and behaviour when it comes to investment and risk taking compared to women.

Arab women's risk averse behaviours may be associated with several other economic and social factors (such as income, confidence and investment knowledge). Income/wealth is related positively with risk taking (Bernheim et al., 2001). Higher income investors have surplus money that allows them to have greater capacity to incur losses from risky investments than lower income investors (O'Neill, 1996; Watson and McNaughton, 2007). Women (on average) earn less and hold less wealth than men (Fisher et al. 2015), so income inequality may partially explain women's lower risk tolerance levels compared to men (Jianakoplos and Bernasek, 1998).

Regarding income inequality in the Arab region, women still have low levels of participation in the region's labour force (lower than in other world regions (Moghadam, 2015)), which cause them to earn income less than Arab men. Thus, Arab women are probably not willing to take high risks investing their wealth in risky assets (as stocks) because they may not afford handling huge losses like Arab men. Their lower income causes Arab women to be more risk

²⁴ Masculinity refers to the distribution of roles between the genders (Anderson et al. 2011).

averse investors than men. This is further illustrated by the fact that the women in the sample selected the barrier “fear of losing” as among the main investment barriers. Since women in the sample have a lower income compared to Arab men (see figure 7.2) and have other financial priorities, they may not risk investing their wealth in stocks. This may be an explanation for their risk averse behaviours

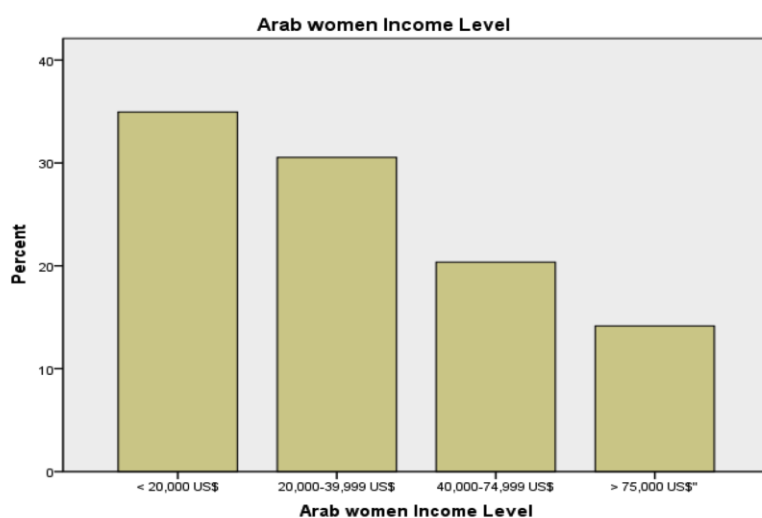


Figure 7.2 The income level of Arab women participants (in percent).

This explanation is in line with the findings of Grable et al. (2004), Al-Ajmi (2008) and Kannadhasan (2015), all of which indicate that individuals with high incomes (earned wealth) have a higher risk tolerance and can meet their financial commitments more easily than individuals with lower incomes. Since women investors have lower income (on average) than men, they have lower risk tolerance levels when making investment decisions (Jianakoplos and Bernasek, 1998).

Additionally, Arab women’s lower risk tolerance levels compared to men may be related to social factors. Several existing studies (such as Prince, 1993; Powell and Ansic, 1997; Barber and Odean; 2001) reveal that women’s lower risk tolerance levels are due to their lower

confidence levels, which is mainly related to the masculine nature of the investment field. Due to social factors related to gender inequality, men feel more involved and more capable of handling money and this causes them to be more confident and take higher risks to accumulate wealth (Prince, 1993). In contrast, women are more conservative and more risk averse individuals (Anbar and Eker, 2010) and thus less confident (Barber and Odean, 2001) especially when investing. Gender differences in risk taking are based on gender inequality in a society (Badunenko et al., 2010) and, since this is highly present in the Arab region, it leads Arab women to being less confident about their abilities to handle “masculine” tasks, such as investments, and this in turn may lead them to be more risk averse investors.

According to the study’s analysis, Arab women participants have lower confidence levels than men, which lead them to invest more conservatively. This may be explained by Arab women’s lower levels of investment knowledge. In general, investment and financial knowledge appear to be linked to increased financial risk tolerance levels among women (Anbar and Eker, 2010; Dwyer et al., 2002). Women’s limited investment knowledge causes them to be less confident and less risk tolerant investors (Lusardi and Mitchell, 2007), and thus limits their participation in the stock market (Almenberg and Dreber, 2015). Accordingly, the sample Arab women’s lower risk tolerance levels compared to Arab men participants may be explained by their lower income levels, lower confidence levels, and lower investment knowledge levels. Moreover, women’s herding behaviours may also explain their greater risk aversion compared to men. This finding is similar to the findings of Grable (2000), which reveal that a high financial risk tolerance level is linked to being male, employed with higher income, and with more financial knowledge.

As a result of Arab Women’s lower risk tolerance levels, their stock investments are limited. To illustrate, only 27% of women in the study’s sample invest mainly in stocks versus 69% of men. Consequently, Arab women’s limited stocks investments are mainly due to their lower

risk tolerance levels compared to Arab men, where less risk tolerant investors trade less frequently (Dorn and Huberman, 2005) due to their lower confidence (Barber and Odean, 2001) and lower investment knowledge levels (Van Rooij et al., 2011).

The study's finding on the gender differences in risk tolerance levels is consistent with various existing studies conducted in different markets (such as Yao and Hanna, 2005; Fellner and Maciejovsky, 2007; Al-Ajmi, 2008; Borghans et al., 2009; Neelakantan, 2010; Dohmen et al., 2011; Charness and Gneezy, 2012). Although this literature confirms that women are more risk averse and have lower risk tolerance levels than men, but does not directly indicate that women's limited investment knowledge and confidence levels are considered main reasons for their risk aversion behaviours, as this study highlights. A number of studies, however, argue that gender is not a significant determinant of financial risk tolerance (Sunden and Surette, 1998; Grable and Lytton, 1999; Kruse and Thompson, 2003; Demaree et al., 2006; Carr and Steele, 2010).

Overall, the sample Arab women's limited investment knowledge and limited confidence levels are probably the main reasons that cause them to be more risk averse and participate less in the stock market compared to Arab men. Hence, this result is new and important for the area of gender differences in risk tolerance. According to the study's findings, Arab women are less confident and less investment literate compared to Arab men. Such findings are expected and are consistent with the study's finding in regards to herding behaviour and risk tolerance level. Logically, the findings indicate that Arab women exhibit herding behaviour, where they prefer to follow the recommendations of others, mainly family members (Naffee, 2014) and financial advisors (due probably to experience factors) more than following their own beliefs. This behaviour indicates that Arab women are probably less confident in areas related to perceived masculine tasks such as investment, and their limited confidence is explained by their limited investment knowledge.

Although Arab women are considered educated, this is less so when it comes to investment education, and this can be related to social and cultural factors. Since the idea of investment in stocks is mainly related to being male, Arab women may be less interested and less involved in this sector. This may explain why Arab women have lower investment literacy levels relative to Arab men. Additionally, Arab men are considered more socially active and thus they may have more financial exposure than women (Main, 2014).

To illustrate more, the main investment motives selected by the sample Arab women reveal their low investment literacy levels. For instance, almost 43% of women participants want online investment programmes as a way to encourage them to invest more. This signals their low investment literacy levels. Furthermore, selecting motives related to financial advisors' as the main investment motives indicates that due to their low investment literacy levels, Arab women are less confident about their abilities and thus willing to follow the advice of others, particularly financial advisors.

Arab women's limited confidence in their investment knowledge explains why they herd more, take less financial risk, and invest less in stocks compared to Arab men. This finding is consistent with (Barber and Odean, 2001; Christiansen, et al. 2009; Charness and Gneezy, 2012) findings, which show only that due to women's lower confidence level in their financial/investment knowledge compared to men, they are less risk taker investors and thus trade stocks less. Further, women follow the recommendations of financial advisors more than men due to their limited investment literacy confidence levels (Guiso and Japelli, 2006).

Overall, the two study's findings which are related to women's confidence and investment literacy levels compared to men are supported by various findings from developed and emerging markets. In regards to gender differences in investment literacy levels, various findings reveal that men are more financial/investment literate than women (see Goldsmith et

al., 1997; Volpe et al., 2002; Delavende et al., 2008; Lusardi and Mitchell, 2007, 2008; Zissimopoulos et al., 2008; Lusardi et al., 2010; Fornero and Monticone, 2011; Fonseca et al., 2012; Bucher-Koenen et al., 2014). The finding is also consistent with findings from the Arab region. To illustrate, Al-Tamimi and Bin Kalli (2009) and Main (2014) also indicate that women are less financial literate than men in the United Arab Emirates and Saudi Arabia respectively. Furthermore, the finding is in line with Heshmat (2012), who noted that Saudi female non-professional investors do not invest frequently in stocks due to their limited investment knowledge.

Regarding gender differences in confidence levels, many scholars agree with this study's finding. These scholars mainly indicate that men are more confident about their investment abilities than women when trading stocks, which cause them to take more risks and trade more, but this ultimately has a negative effect on their portfolios compared to women (see Powell and Ansic, 1997; Barber and Odean, 2001; Jacobsen et al., 2008; Grinblatt and Keloharju, 2009; Zoghلامي and Matoussi, 2009; Al-Najjar, 2013)

The results of the primary data analysis, therefore, confirm that the sample Arab women invest less in stocks compared to Arab men due to their risk averse, herding behaviours, and limited confidence and limited investment knowledge. Overall, four of the study's main five variables have a combined effect on the investment behaviour of Arab women and their limited participations in the stock market. Hence, this study is one of the first studies that indicate the combined effect of the four main variables (which studied separately in the existing literature) on the investment behaviour of women, particularly Arab women. Further, the study's findings highlight that women's risk aversion is more nature than culture, however, women can take risk with confidence and invest more in stocks, when they improve their investment knowledge. Hence, the analysis of the study's secondary data also confirms that Arab women participate less in the stock market than Arab men due probably to their limited

investment knowledge.

The secondary data is now used to test the remaining main hypotheses (hypotheses 7, 8, and 9) and to complete and confirm the primary data results. In general, the results obtained from both primary and secondary data explain the investment behaviour of the sample Arab women and their impact on the stock market performance compared to Arab men.

7.3.2 Discussion of the study's main hypothesis (using Secondary data):

In order to compare the relationship between Arab women and men investors and stock market performance, the existing statistical data on Saudi and Jordanian women/men investors was analysed along with data on the annual index returns (for ASE and TADAWUL) from 2008-2015 using correlation analysis.

Prior to investigating the relationship between Arab women and men investors and the stock market performance, their respective participation in the stock market was examined (using Saudi and Jordanian individuals, investing in their local stock markets as a sample). The results indicated that both Jordanian and Saudi women investors have lower levels of participation in their local stock markets compared to their male counterparts. These results are consistent with the results from the study's primary data, which also reveal that Arab women invest less in stocks compared to Arab men. Accordingly, it was concluded from both sets of data that Arab women, generally, have lower participation in the stock market than Arab men.

This lower participation can be associated with Arab women's investment behaviours. To illustrate, the results from the primary data, indicate that Arab women investors are less financial risk tolerant, less confident, and less investment literate individuals than Arab men. Arab women's limited confidence in their investment abilities causes them to avoid taking high risks and investing often in stocks. Their fear of losing, arising from their risk averse

behaviour, limits Arab women's participation in the stock market compared to Arab men. Furthermore, Arab women's limited investment knowledge causes them to participate less in the stock market than Arab men. Hence, investors with low financial literacy depend more on families and friends and accordingly invest less in stocks (Van Rooij et al., 2011; Li, 2014).

Other explanations of the lower participation of Arab women in the stock market can be associated with economic and political factors. For instance, the global financial crisis may be an important reason that limits Arab women investment in stocks. Since Arab women are risk averse investors and fear losing, they do not invest often in stocks especially during or after a financial crisis where volatility in the stock market is high. Furthermore, the high uncertainty caused by the economic instability and political turmoil in the Arab region may be another explanation for Arab women's limited participations in the stock market. The economic and political events that occurred during the study period (such as the global financial crises along with the evolution of the Arab spring²⁵ in various Arab countries and the visible decrease in the global oil prices) have negatively affected the Arab countries, including Saudi Arabia and Jordan, and caused great uncertainty and volatility for their stock markets. To illustrate, the volatility of oil markets, despite their current resilience, presents risks to Arab economies (Malik and Awadallah, 2013) and thus their stock markets. In addition, during the period 2008-2011, the Saudi stock exchange and the Amman stock exchange declined by 42.58% and 45.7% respectively, due to the global financial crisis and the uprising of Arab spring (Amman Stock Exchange 2011 annual report, 2011). In 2015, the continuous political instability in the Arab region combined with the sharp drop in oil prices caused all the Arab stock markets to decline, specifically the Gulf stock markets (Amman Stock Exchange 2015 annual report, 2015). Particularly, Saudi stock exchange decreases 17.5%, the highest decline after Egypt, while Jordan decreases almost 3.5% (Amman Stock Exchange 2015 annual

²⁵ Arab spring (which started 2010 in Tunisia) caused by dictatorship, high unemployment rate, poverty, and lack of economic opportunity in various countries in the Arab region (Abumustafa, 2010).

report, 2015).

The current political and economic events in the region probably affect Arab women's emotions negatively and thus increase their fear of risk and loss. Accordingly, their participations in the stock market may have been especially limited during the study period. Furthermore, the low participation of Arab women investors in the stock market may be explained by the cultural factors in the Arab region, especially Saudi Arabia. Cultural values and stereotypical views towards the role of women (mainly as housewives) in the Arab countries affect their employment levels (Kauser and Tlaiss, 2011) and also their participation in the stock market. Since the investment sector in the Arab countries is mainly a male dominated sector, the participation of Arab women is limited. This is especially the case in Saudi Arabia (Al-Najjar, 2013).

The results obtained from the secondary data are consistent with the existing literature that also indicates that women invest less in stocks due to their lower risk tolerance, confidence, and investment/financial literacy levels relative to men (see Barber and Odean 2001; Dorn and Huberman, 2005; Feng and Seasholes, 2008; Van Rooij et al., 2011; Charness and Gneezy, 2012; Al-Najjar, 2013; Zaiane, 2013; Almenberg and Dreber, 2015; Willows and West, 2015). None of the existing literature combines the effect of risk tolerance, herding behaviour, confidence and investment literacy and test this combined effect on women's participations in the stock market. This study, however, examines these combined effects along with their impact on stock market performance.

The aim was to test whether Arab women investors (measured by their number of participations in the stock market) have a positive relationship with the current volatile and male-dominant stock markets' performance in the Arab region. In order to investigate the relationship between Arab women investors and the performance of the local stock markets,

the relationship between Saudi and Jordanian women investors and their local stock markets' performance compared to their male counterparts examined (H8). According to the results, Jordanian and Saudi women investors have a positive relationship with ASE and TADAWUL respectively but this relationship is not statistically significant. The interesting part of these results is the positive relationship between these women investors and the performance of both stock markets. This finding can be explained by women's rational behaviour when investing.

Women investors (including Arab women) generally act more rational when trading stocks than men investors do, and thus hold more diversified portfolios (Muller, 2007). Due to their risk averse behaviours, women are cautious when buying, holding, and selling stocks in order to avoid big investment losses. Further, women follow a long-term strategy when investing and this strategy decreases investment risk (by removing lost opportunities). Following a long-term investment strategy helps investors earn better returns over the longer term, and thus has positive impact on stocks performance (Kay, 2012). Moreover, women's conservative investment behaviour causes them to choose less risky but higher return financial investments than men do (McDonald, 1997; Kahn, 1996) and such a behaviour make women hold less volatile portfolios (Barber and Odean, 2001). Accordingly, women's more rational behaviours positively affect their trading behaviours and provide more stability in the stock market, and thus have positive relationship with its performance. In contrast, the irrational behaviour of men investors increases stock market volatility; with extreme volatility produces instability in the stock market (Bhowmik, 2013).

Moreover, the results from the primary data show that the majority of the Arab women participants follow long-term investment strategies when they invest in stocks by themselves (see Figure 7.3). This more rational behaviour may be an important factor explaining the positive association between Jordanian and Saudi women investors and the performance of

ASE and TADAWUL, respectively.

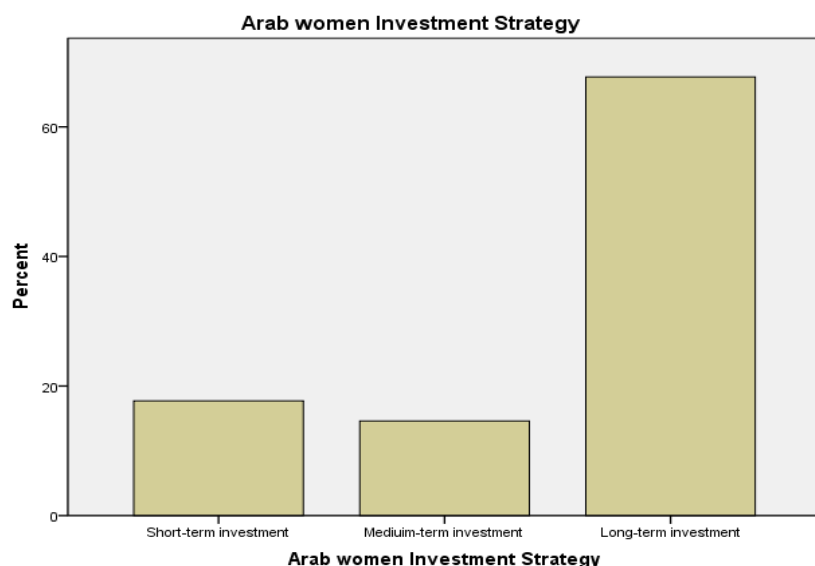


Figure 7.3. Investment strategies of Arab women investors.

Although the results reveal that women investors have a positive relationship with the performances of ASE and TADAWUL, these relationships are statistically insignificant. This can be explained by the limited participation of women in the stock market that has already been extensively discussed above. It can be also explained by the study's limited number of years (8 years), which could not provide enough evidence on the association between women investors and stock market performance in both Jordan and Saudi Arabia. Hence, this may consider a limitation for this study.

The findings also reveal that Jordanian women investors (measured by their numbers) have a positive and strong relationship with the Amman stock exchange (ASE), but this relationship is statistically insignificant, which may be explained by their low participation in the stock market. The low participation of the Jordanian women investors is mainly due to the high uncertainty and volatility in the stock market caused by the political instability in the neighbouring Arab countries. To illustrate, the high political instability and conflict caused by

the Arab spring negatively affect the national economy and the financial activity of many Arab countries, including Jordan (Abumustafa, 2016). Thus, many Jordanian individual, mainly women, invest less in the local stock market during bearish period with high uncertainty. To illustrate, the numbers of Jordanian women investors participating in ASE declined from 120,474²⁶ investors in 2008 to 113,978 investors in 2015 and this mainly due to the highly political instability in the region that negatively affect Jordan's economy and its financial market. In general, during bearish stock markets the trading activities of individual investors are lower (Kim and Nofsinger, 2007).

Further, the lower financial risk tolerance, lower investment confidence, and lower investment literacy levels of Jordanian women investors may also explain their lower participations in ASE compared to their male counterparts. These women investors, however, have a lower but a positive strong relationship with the ASE performance compared to Jordanian men, but this relationship is insignificant. This relationship may become statistically significant by increasing the participations of Jordanian women investors. To increase their participation, Jordanian women investors can be encouraged to invest more either by relying more on financial advisors and reports or by investing in specific funds tailored to their objectives. In addition, designing specific investment educational programs targeted for women in universities and financial institutions may encourage these women to invest more in stocks. Accordingly, policy makers in the Arab region are recommended to focus on designing such educational programs. These motivating factors can help them improve their investment knowledge, increase their confidence levels, and thus lead them to invest more in the stock market with their rational behaviours. More participation of women investors may decrease the volatility caused by the irrational behaviour of men and the political instability in the region. Accordingly, Jordanian women may have significant positive relationship with ASE's

²⁶ The numbers on Jordanian investors in 2008 and 2015 are from the research department in ASE.

performance even during uncertainty.

In contrast, Jordanian men investors have a higher but negative relationship with ASE's performance (but this relationship is also not statistically significant). This finding may be explained by the irrational behaviours of men (such as overconfidence) that make them trade more aggressively and conduct more trading mistakes. Such behaviour bias probably has a negative effect on the portfolios of men investors, as they take higher unnecessary risks, trade aggressively (Grinblatt and Keloharju, 2009) and thus negatively affect the stock market performance.

In regards to Saudi women investors, the findings reveal that both Saudi male and female investors (measured by their numbers) have a non-statistically significant relationship with the performance of Saudi stock exchange (TADAWUL). This non-statistically significant relationship can be related to the study's period. The limited number of the study years along with the high uncertainty during the study years could have affected the relationship between Saudi men and women investors with TADAWUL's performance. The study period was during a period of high uncertainty caused by the on-going political and economic instability in the region along with the recent decline in the global oil prices. To illustrate, TADAWUL's all-share index (TASI) has dropped radically since mid-2015, due mainly to the decline in oil prices (The Saudi Stock Exchange (TADAWUL) in 2016, 2016).

More specifically, the findings also show that Saudi women have a positive and higher relationship during the study period and that hints to the conclusion that due to their more rational behaviour, Saudi women have a positive relationship with TADAWUL's performance. Although Saudi women participate less than Saudi men in TADAWUL, they still have positive and higher relationship with TADAWUL performance relative to Saudi men.

This finding can be explained by the fact Saudi women do not take as many unnecessary risks as men do when investing, where taking high unnecessary risk can probably increase stock market volatility and affect its performance negatively. Further, Saudi women generally follow a long-term investment strategy (buy and hold), which is probably due to their lower risk tolerance levels relative to Saudi men. Accordingly, they do not trade as aggressively and excessively as men do; where excessive trading affects performance negatively (Odean, 1998). Saudi women's more rational trading behaviours have a positive relationship with the performance of TADAWUL even during a bear market, with its increased volatility (Maheu and McCurdy, 2000). Generally, women outperform men, especially during a bearish stock market because they incur lower trading costs (Bauer et al., 2007), and thus have a positive relationship with the performance of the stock market. Overall, Saudi women investors can have a positive statistically significant relationship with TADAWUL's performance when they participate more in the stock market. Motivating factors as developing more tailored investment funds and investment educational programs may help in improving women's investment knowledge and confidence and thus increase their participations.

On the contrary, the results reveal that Saudi men investors have a negative and lower relationship with the Saudi stock exchange compared to their female counterparts. These findings can be explained by the fact that Saudi men behave more irrationally when trading stocks. In his study, Alnajjar, (2013) documented that Saudi individual investors trading in TADAWUL behave irrationally. Since men investors dominate TADAWUL, so the irrational behaviour when trading stocks is mainly linked to men. As a result of their irrational behaviour; Saudi men investors have negative relationship with the performance of the Saudi stock market.

Additionally, the study's findings reveal that Saudi men are more confident and more risk taking investors than Saudi women. Thus, they trade more aggressively and excessively. Such

biased behaviours hurt men's portfolios, increase stock volatility, and consequently impact stock market performance negatively. Overall, higher confidence leads to excessive risk-taking; and both behaviours cause higher unnecessary trading volume, high volatility in asset prices, low returns, and poorer trading performance (Statman et al., 2006; Cheng, 2007; Glaser and Weber, 2007) that negatively affect stocks trading performance (Fenton-O'Creevy et al., 2003). Thus, the participation of women investors in stock market is important.

In general, women are more successful investors and more persistent winners than men investors. Women's more rational trading behaviours (shaped by their cautious and conservative characteristics) lead them to trade less often but still hold less volatile portfolios, invest in less risky assets, and earn higher returns than men (Barber and Odean, 2001; Bauer et al., 2007; Willows and West, 2014). Moreover, women (with their more rational behaviour) beat men especially during bearish stock markets because they suffer lower trading costs, hold less risky volatile portfolios, and hold larger accounts with lower turnover than men (Bauer et al., 2007). Therefore, women investors probably have a positive relationship with the stock market performance.

In regards to the study's objective and hypothesis findings, along with the study's suggested outcome, Arab women can be major players in the region's stock markets and probably have a statistically significant positive relationship with its performance during both bullish and bearish times. According to the study's findings, the investment behaviour of Arab women is associated with age, education and annual income, where age is only associated negatively with their financial risk tolerance levels. Furthermore, earned income is positively associated with Arab women's confidence and investment literacy levels, while educational level is associated positively only with their investment confidence levels.

In regards to gender differences in investment behaviour, the hypothesis findings show that

Arab women have lower financial risk tolerance levels relative to Arab men; mainly due to their higher herding behaviour, lower investment confidence levels, and lower investment literacy levels. Arab women's limited investment knowledge causes them to be less confident investors and thus be more risk averse investors. Thus, Arab women investment behaviours (high herding behaviour, lower investment literacy, confidence, financial risk levels), along with the main investment barriers, limit their participation in the stock market. In regards to the study's objective, the main investment barriers (mainly fear of taking high risk and losing, along with having other financial priorities) also explain Arab women's limited participations in the stock market. Encouraging Arab women by encouraging their motives for investing in stocks may encourage their greater participation.

According to the study's proposed outcome, Arab women can participate more in the stock market by relying more on financial advisors / financial reports or by creating more tailored funds that suit their objectives. These actions may improve women's investment knowledge and thus help them invest more with confidence, but not with overconfidence as men. Thus, investing with more confidence may eliminate the major investment barriers and lead women to take more appropriate risk and invest more. Further, facilitating more online trading encourages Arab women to trade stocks more regularly without dealing with local traditions and norms.

Motivating Arab women and eliminating investment barriers can increase their investment literacy levels, improve their confidence levels, and thus take more risk but with rationality. Consequently, the participations of Arab women investors in the stock market will increase, either by investing more (if they are current investors) or by starting investing (if new investors). The increased numbers of Arab women investors in the stock market will help reduce its volatility and thus improve its aggregate performance. Women's more rational behaviour can stabilize the high volatility caused mainly by the irrational behaviour of men,

improve stock market liquidity by injecting more funds, and thus have a positive relationship with its performance.

Accordingly, the study's final framework (7.4) combines and integrates the study's objectives and hypothesis findings, along with proposed outcome (in one complete and unique framework) to demonstrate an understanding of women's investment behaviours along with investment barriers and motives in relation to their participation in the stock market. Additionally, it seeks to propose ways to increase the participation of women investors in the stock market and to also indicate the relationship of women's increased participation and stock market performance. This framework may be extended and easily adjusted for researchers to use in other markets due to its dynamic, and flexibility.

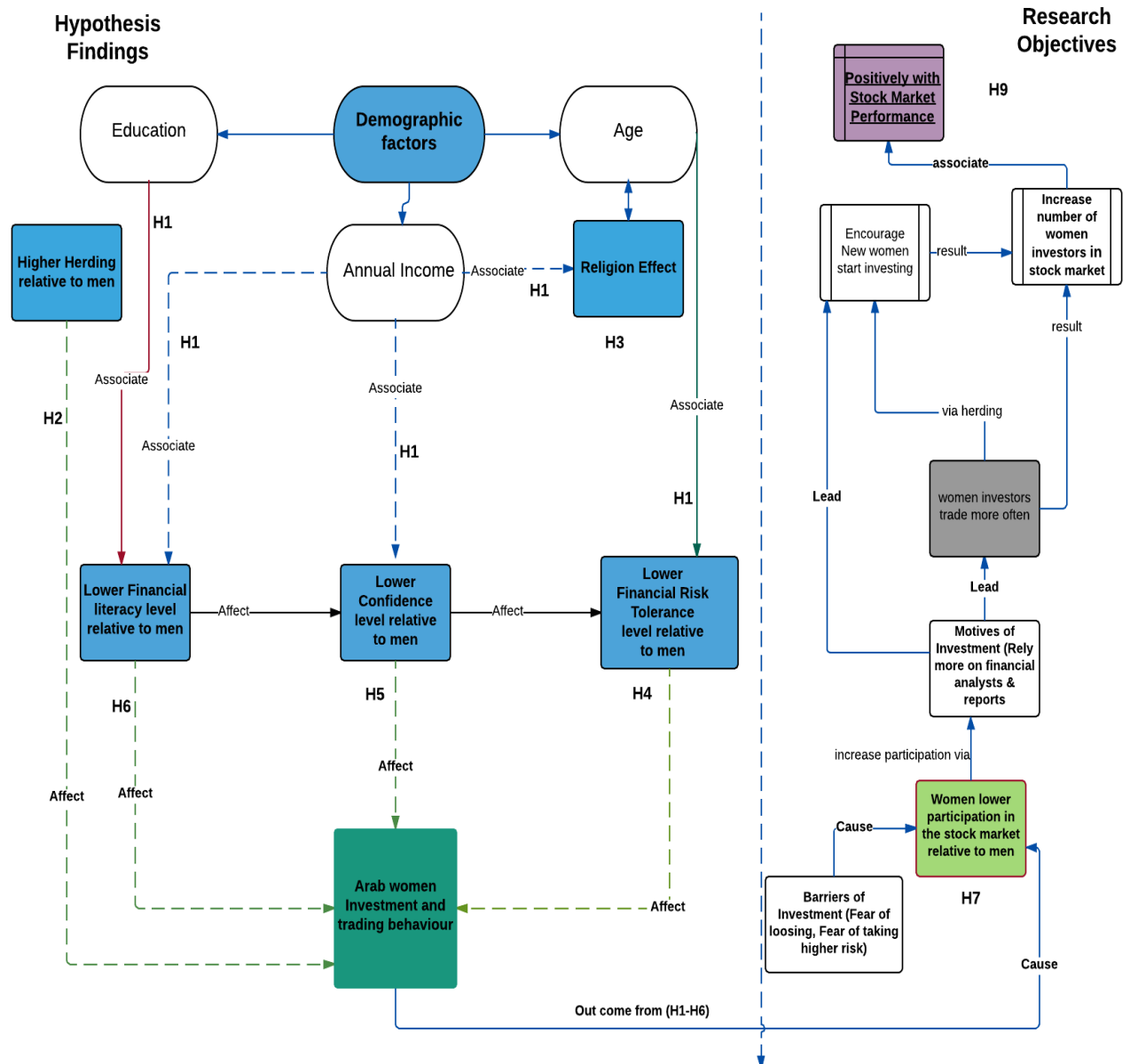


Figure 7.4. The study’s final suggested framework

7.4. Summary and Conclusion:

This chapter discusses in great detail the findings of the study's main hypotheses in respect to the overall objectives, while taking into consideration Arab women's nature and culture. A number of important conclusions have emerged from the study's findings and the resulting detailed discussion. First, the main investment barriers (fear of taking high risk and of loss, along with having other financial priorities) suggest that the sample Arab women are risk averse individuals, and thus they do not invest often in stocks. Second, the main investment motives (facilitating more online trading and relying more on financial advisors and reports) are associated with cultural factors along with Arab women's investment behaviour. Their risk averse behaviour, along with their limited investment knowledge and confidence, causes Arab women to prefer to rely on financial advisors and reports.

Furthermore, demographic factors (mainly age, education and annual income) are associated with one, or more than one, of the study's independent variables. In regards to age, younger Arab women are more risk takers than older women, probably because they are expected to have more time to recover financial losses from risky trading. According to annual income, women with higher incomes are concerned with maximizing their wealth so the impact of their religiosity is lower than for other Arab women in the study's sample. In addition, Arab women with lower incomes have lower confidence and investment literacy levels. The low income limits these women's ability to invest in the financial information and advisors that may help in improving their investment confidence and literacy levels. Moreover, Arab women with lower educational levels have lower investment literacy levels and thus this may limit their investments in stocks.

In regards to the gender factor, Arab women exhibit herding behaviour more than men and that may be due to gender inequality in that women investors tend to be more influenced by

recommendations of others than men are. Their limited confidence and limited investment knowledge may also cause Arab women to herd more but take less risks than Arab men, and thus cause them to participate less in the stock market.

Although Arab women participate less in the stock market relative to Arab men, they may still have a positive relationship with the stock market performance due to their more rational behaviour. According to the study's findings, Saudi and Jordanian women investors have a higher and positive relationship with the performance of their local stock exchanges during high uncertainty, but the relationship is statistically non-significant. The lower participations of Saudi and Jordanian women investors may partially explain the insignificance of the relationship.

A final theoretical framework is proposed that emerges from the all the study's findings. This framework highlights the relationship between women's investment behaviours and their participation in the stock market. Additionally, and importantly, it indicates how women's increased participation is associated with stock market performance.

Chapter Eight: Conclusions, contributions, limitations and recommendations

8.1 Introduction:

This final chapter presents the conclusions of this study in relation to its main objectives. It discusses the study's findings in terms of their implications for researchers in the field of behavioural finance, gender differences in investment behaviour, and women investors. The chapter also highlights the main theoretical and practical contributions to the field of behavioural finance, identifies possible limitations, and presents recommendations for future research within this area.

8.2 Conclusion:

The role of gender difference is recognized in various sectors, including the investment sector. Men and women possess different attitudes and behaviours when investing in financial assets (such as stocks). Their investment behaviours vary depending mainly on their financial risk tolerance, investment confidence and investment literacy levels, along with their personal financial aims.

Over many years, gender differences in investment behaviour have captured the interest of academic researchers and financial practitioners in the area of behavioural finance. Recent findings from developed and emerging markets suggest that the investment behaviours of men and women differ significantly, with women being less risk tolerant, less confident and less financially literate compared to their male counterparts. Accordingly, men investors hold riskier and more volatile portfolios due to their overconfidence, take more financial risks due to their higher confidence in their investment abilities, and thus trade more aggressively than women investors do (Lyons and Yilmazer, 2006; Lusardi and Mitchell, 2007; Feng and Seasholes, 2008; Charness and Gneezy, 2012; Zaiane, 2013). Although women investors

trade stocks less, they still hold less volatile portfolios and even earn higher returns relative to men (Barber and Odean, 2001; Bauer et al., 2007; Willows and West, 2014).

Overall, the existing literature on gender differences in investment behaviour studies women investors, mainly Western women, for the purpose of gender comparison only. This literature does not focus directly on examining women's investment behaviours and the main factors affecting their behaviours, especially in emerging countries such as the Arab countries. Furthermore, the existing studies do not investigate the relationship between women investors and the aggregate performance of the stock market. Women investors may have positive relationship with the stock market performance due their more rational investment behaviours relative to men. Thus, it is important to focus especially on the relationship between women investors and the stock market performance in developed and emerging countries. In the Arab region there are very few studies investigating the investment behaviour of Arab women relative to Arab men, and there are no existing studies investigating their relationship with the performance of the region's stock markets.

Accordingly, Arab women investors were selected for this study because they are under-researched, probably due to cultural and religious sensitivities along with data collection difficulties. Furthermore, the participation of Arab women is important for the region's stock markets and its whole economy, especially during a period of high uncertainty. Arab women, recently, are considered to be wealthier and more powerful players in the region's economy, and are gaining more control over their finances and wealth management. Thus, studying Arab women is important theoretically and practically. In order to study Arab women investors, the researcher depends primarily on the existing findings on gender differences in investment behaviours along with the main identified gaps in the literature, seeking to build upon that to develop the study's main aim and objectives.

The study's main aims are to examine the investment behaviour of Arab women and their relationship with aggregate performance of the stock market from 2008-2015. To realize these aims, the main objectives of the research (as discussed in section 1.5) are as follows:

- Indicate the reasons behind Arab women's fear of investing in stocks.
- Examine the investment behaviour of Arab men and women individuals and identify the gender differences in investment behaviour (in regards to their herding behaviour, risk tolerance, investment confidence, and investment literacy levels, along with the effect of religion).
- Explore the effect of religion on the investment behaviour of Arab women.
- Determine the correlation between Arab women investors and stock market performance; then verify the type and size of the relationship.
- Specify the motives that urge current women investors to trade more in stocks and encourage other Arab women to start trading stocks.

The work conducted in each chapter of this study allows each of these objectives to be met. For instance, prior to analysing the primary and secondary data, basic and extended frameworks were developed based upon the findings of the existing literature, the gap in the literature and the study's main eight hypothesis (presented in chapter 4). The study's basic framework indicates the relationship between the main variables (herding behaviour, religion effect, risk tolerance, confidence and investment literacy levels) and their combined effect on Arab women's investment behaviour. The extended framework presents how Arab women's investment behaviours, along with the investment barriers facing them, affect their participation in the stock market. Additionally, it highlights how the increased participation of women investors, may be associated with the aggregate performance of the stock market.

Additionally, the methodology adopted (as presented in chapter 5) helps the development of the study's hypotheses and thus addresses its objectives. Since the investment behaviour of Arab women and their impact on stock market performance is researched independently, an objectivist/positivist philosophical approach, along with a deductive approach and quantitative strategy was followed. Statistical quantitative methods were used to analyse the primary and secondary data.

In order to examine Arab women's investment behaviours along with their investment barriers and motives (the first three objectives along with the fifth one) primary data, mainly collected from an online questionnaire, was used (as presented in chapter 5). The questionnaire was distributed to a selected random sample of Arab men and women investors living in Saudi Arabia and/or Jordan (N= 549), using different quantitative non-parametric tests (as Kruskal-Wallis H and Mann-Whitney U test) to analyse the non-normally distributed data (as presented in Chapter 6).

The findings of the primary data analysis reveal that demographic factors (mainly age, annual income and educational level) are associated with Arab women's investment behaviours. In regards to age, the analysis shows that age is only associated with Arab women's financial risk tolerance levels, where increasing age is associated with decreasing risk tolerance levels. Furthermore, annual income (earned wealth) is associated with Arab women's investment confidence and investment literacy. Arab women with the lowest earned income have lower investment confidence and investment literacy levels relative to other women in the sample. Low income limits these women to invest on the basis of financial information and advisors, which may help in improving their investment confidence and literacy levels. The results also show that earned income is associated with the religiosity levels of Arab women investors, where women with the highest earned annual income in the study's sample exhibit the lowest influence of religion on their investments behaviours. Regarding education, the results reveal

an association between Arab women's educational levels and their investment literacy levels. Arab women with the lowest educational levels have the lowest investment literacy levels, which cause them to fear taking high risks and investing often in stocks.

Regarding religion influence (objective three), the unexpected results reveal that religion does not have an influence on Arab women's investment behaviour. Furthermore, it does not have an impact on the sample Arab women and men investors. These remarkable results can be explained by the level of religiosity of the sample participants, in that the Arab men and women in this sample are probably more profit driven rather than religion driven when trading stocks.

Additionally, the results reveal that Arab women are less financial risk tolerant investors compared to Arab men and that this is mainly due to Arab women's higher herding behaviour and lower confidence and investment literacy levels (objective two). Their limited investment knowledge probably causes Arab women to be less confident investors and to take less financial risks compared to men. As a consequence of this risk averse behaviour and limited investment knowledge, along with the investment barriers they face, they participate less in the stock market relative to Arab men investors. In order to increase their participation, the main investment motives that encourage Arab women to invest more in stocks were also investigated. To this end, primary data was used to indicate the main investment barriers (objective one) along with the investment motives (objective five). The main three investment barriers for Arab women are fear of taking risk, fear of losing, and having other financial priorities, which also limit Arab women from participating in the stock market.. On the other hand, the main investment motives, according to Arab women, are facilitating more online trading, having available tailored funds, having more financial reports, and relying more on financial advisors.

In order to examine Arab women's impact on stock market performance (objective four), secondary statistical data was used. This was selected from both the Saudi and Amman stock exchanges relating to the number of Saudi and Jordanian individual investors (males and females) and the return on both stock markets' major indices (TASI and ASE) from 2008 till 2015. Regression analysis was applied to analyse the study's secondary data.

According to the secondary data results, Arab women (represented by Saudi and Jordanian women investors) participate less in their local stock markets compared to their male counterparts. These results can be explained by women's investment behaviour, as discussed in relation to the primary data. In addition, the high levels of uncertainty caused by the political and economic instability in the region, along with cultural norms, may also explain the sample Arab women's limited investment in stocks.

In regards to the relationship between Arab women investors and the performance of the stock market, the results reveal that both Jordanian and Saudi women investors have a positive relationship, but not a statistically significant one, on the performance of ASE and TADAWUL respectively. This may be due to their limited participation in the stock market relative to their male counterparts. Therefore, to increase the participation of these women investors in the stock market, motivating factors (as tailoring investment funds, designing investment educational programs, and relying more on financial advisors/reports) should be supported. To illustrate, these motivating factors may highly improve women's investment literacy levels and lead them to invest more in stocks with more confidence. Accordingly, the increased participation of Arab women in stock trading may have a statistically significant positive and high correlation with the stock market aggregate performance.

Furthermore, the extended results show that Jordanian and Saudi women still have a positive relationship with the stock market performance while Jordanian and Saudi men investors have

a negative relationship probably due to their more irrational trading behaviour (as overconfidence). Hence, the relationship between stock market performance and Jordanian men investors is statistically significant. In the contrary, the relationship between stock market performance and Saudi men investors is not statistically significant probably due to the political instability in the region along with the decline in the global oil prices, which may have caused Saudi individual investors to invest less in the volatile TADAWUL during the study period.

In regards to the study's main findings, Arab women can be important players in the region's stock markets. Their more rational behaviour may reduce the high volatility in the markets, caused by men's irrational behaviour and the region's political instability, and consequently have a positive and high relationship with the performance of the region's stock markets in bullish and bearish times. Accordingly, Arab women should be motivated to increase their participations in the stock market, through the three main investment motives. Working to encourage these investment motivation factors may expand women's investment knowledge and thus lead them invest more in stocks with more confidence. Hence, investment knowledge increases stock investments and allow women to benefit from the equity premium (Van Rooij et al., 2011). Accordingly, increased participation of Arab women in the stock market may have a positive and high correlation with its performance. Hence, the study's final framework (figure 7.1) combines the study's objectives and hypotheses findings along with the proposed outcome to give a complete framework on Arab women investment behaviours and their effect on stock market performance. The framework can be used, with adjustment, to explore women investment behaviours and their effect on stock market performance in other markets.

Overall, Arab women can be long-term investors who have a positive correlation with the performance of the stock market due to their more rational behaviour, , which can translate to

better performance and higher return. Arab women recently have more control over their wealth and have more financial independency, so they probably want to manage wealth according to their future objectives and financial priorities. Thus, investment in stocks is, for them, not probably about winning and losing, but about meeting their future demands and goals using a long-term investment strategy. Accordingly, Arab women can invest more in stocks, particularly, when improving their investment knowledge . Their increased participation may help to stabilize stock market volatility and thus have a positive and high relationship with the stock market performance. Therefore, limiting the investment barriers and increasing the investment motives (which mainly related to women's investment and confidence levels) may encourage Arab women to take more appropriate risk, with cautious, and participate more in the stock market.

Ultimately, the accomplishment of this study is to provide a detailed analysis of behavioural finance in the context of women's investment behaviours and their relationship with stock market performance in the Arab region. The empirical findings propose that women, generally, have similar investment behaviours, although they come from different cultures and markets. Furthermore, women investors may be able to participate more in the stock market by eliminating investment barriers and increasing investment motives. For instance, improving women's investment knowledge can increase their confidence levels and lead them to invest more in stocks with appropriate financial risk. However, women would not take higher risk as men and hurt their returns due to their more rational behaviours. Additionally, women investors who behave more rationally than men can probably have a positive and higher relationship with stock market performance. Thus, this study opens the door to investigate the role of women investors in the stock market in developed and emerging markets, during both bull and bear markets. This study contributes to the behavioural finance literature by acting as a platform for future research in the area of gender differences in

investment behaviour, focusing on women investors, in the context of other markets.

8.3 The Study's Theoretical and Practical Contributions:

The study contributes to the behavioural finance literature and fills important gaps theoretically and practically.

8.3.1. Theoretically:

This study contributes to the field of behavioural finance, since it provides supporting evidence on women's investment behaviours relative to men's in regards to their herding behaviour, risk tolerance, investment confidence, and investment literacy levels; and identifies their combined effect on women's investment behaviour. After reviewing extensive literature on behavioural finance, mainly on gender differences in investment behaviour in various markets, this study fills the gap with the following contributions, precisely in the area of gender differences in investment behaviour.

The first contribution of this study lies in the fact of examining the main investment barriers that limit the participation of Arab women in the stock market along with the major investment motives that encourage them to increase their participation. The key findings indicate the major investment barriers (such as fear of taking high risk and losing) causing Arab women to invest less in stocks relative to Arab men. Accordingly, it is important to identify these barriers to understand the reasons behind women's limited participations in the stock market and find investment motives, to eliminate such barriers. Identifying the main motives, such as facilitating more online trading and constructing tailored investment funds, may provide ways to eliminate investment barriers and thus encourage Arab women to participate more in the stock market. This is the first study to focus directly on investigating

the main investment barriers and motives according to women investors' views, especially in the Arab region.

The second contribution of this study is to investigate the investment behaviour of Arab women relative to Arab men in regards to their herding behaviour, financial risk tolerance level, investment confidence level, and investment literacy level; along with the influence of religion on their investment behaviours. The study also contributes by identifying the combined effect of the study's main five variables on Arab women's investment behaviour. Women's risk averse behaviour, which is probably due to their higher herding behaviour, along with their limited investment confidence and literacy levels, influences their investment behaviours and thus their limited participations in the stock market compared to men investors. Hence, the existing literature studies the effect of certain variables (mainly risk tolerance, confidence and investment literacy levels) on the investment behaviour of women and men separately, rather than examining their combined effect, particularly on women's investment behaviours.

The third contribution of this study is to examine the effect of religion on the investment behaviour of Arab women. This contribution is important, since religion governs the lives of Arab women and influences their decision making. Accordingly, religion is important variable when examining gender differences in investment behaviour in the Arab region. Religion is essential in many cultures and may have a direct or indirect impact on the investment behaviours of individuals, particularly women.

The fourth contribution of this study is to investigate empirically the relationship (in regards to its direction and strength) between Arab women investors and stock market performance, which is mainly dominated by men investors. Furthermore, it contributes by investigating

whether Arab women investors (measured by their numbers) have a positive and higher correlation with the aggregate performance of the stock market relative to men, where a higher participation of women investors in the stock market is associated with a higher stock market performance. Overall, investigating this association is important because it provides a better understanding of how the participation of women, more rational investors, may stabilize the stock market's volatility and have positive association with its performance. Accordingly, this investigation may expand and develop knowledge in the behavioural finance field to include the role of women investors in the stock market and their relationship with its performance in various markets, and during bull or bear markets.

The fifth contribution of the study is to apply both primary and secondary data to collect the information needed to fully explore the investment behaviour of Arab women and their influence on stock market performance relative to Arab men. The secondary data backs up and confirms the information provided by the primary data, and also adds new relevant information to explore the study's topic fully. The combination of these two data sets helps to test the study's main hypothesis along with addressing its major objectives. Thus, both data sets are very useful in that they complement one another to support the study's findings. The existing literature examining gender differences in investment behaviour has mainly used either primary or secondary data.

The sixth contribution of this study is the development of the two important frameworks (basic and extended) based primarily on the findings of the existing literature and mostly on the study's main objectives and hypothesis. The basic framework highlights the combined effect of the study's five main variables on the investment behaviour of Arab women in a single framework. Overall, the existing studies examine each variable of the investment

behaviour of men and women separately for comparison reasons only. Here, the study's basic framework extends the existing literature by examining the combined effect of previously investigated variables (such as risk tolerance, confidence, and investment literacy levels) along with two new variables (herding behaviour and effect of religion) from the perspective of Arab women investors.

The study's extended framework emphasizes how the investment behaviours of women, along with the main investment barriers facing them, limit their participation in the stock market. In addition, it proposes how the major motivation factors for stock market investment can probably increase the participation of women investors and encourages other women to start investing. The extended framework also focuses on signifying how the increased participation of Arab women investors might associate with the performance of the stock market. Hence, the study's extended framework can be expanded, with adjustments, to other markets due to its dynamism to incorporate country and region specific variables. Overall, studying Arab women investors contributes to the existing literature as follows:

- It studies the investment behaviour of women from a culture that is completely distinct from Western culture, to investigate whether the behaviours identified for Western women investors are similar to those of Arab women investors.
- Examines the investment behaviour of women where cultural and religious factors play vital roles in shaping their lives and decision making.
- Examines how Arab women investors (who now have more control over their wealth) can

correlate with the performance of the stock market, especially during periods of high uncertainty in the region.

- Offers an analysis of the investment behaviour of Saudi women that is important because they are under-researched due to cultural factors and limited available data. Examining their investment behaviours and their impact on the Saudi stock market contributes to the literature by including women from a country that is different from other countries.

8.3.2. Practically:

Practically, the study contributes to the financial wellbeing of Arab women, to the region's stock markets, and the region's entire economy. Arab women who are currently controlling more wealth, owning more companies, and becoming more powerful players in the region's economy are still facing challenges with financial decision making. Accordingly, they prefer to invest most of their wealth in low-risk securities (such as cash and saving deposits) rather than high-risk securities as stocks. The un-invested wealth might negatively affect the future financial positions of these women by not generating more current income or long-term capital. Moreover, the un-invested wealth in stocks may negatively affect the performance of the region's stock markets as well as the recovery of its fragile economy.

Examining the investment behaviour of Arab women, the investment barriers, and the motivations for investment may, therefore, serve to encourage them to participate more in stock market investments. Motivating Arab women, by facilitating more online trading along with constructing specific tailored funds managed by professional financial advisors, may encourage them to participate more in the stock market. Accordingly, the increased participation of women investors in the stock market will help them to generate income or capital gain that improves their financial positions and independence.

Moreover, increased numbers of women investors may encourage other women to start investing. As a result, the increased participation of Arab women investors (as more rational Investors) will provide more inflows into the region's stock market and thus improve its liquidity and performance. Due to women's more rational investment behaviours compared to men, they may have a positive and higher relationship with the performance of the region's stock market, which eventually will have a positive influence on the region's entire economy. Investing in these women, therefore, may be linked to improved economic growth in the Arab region, especially during the current period of high uncertainty caused by the political instability in many Arab countries.

Studying the investment behaviour of women and their relationships with stock market performance is important both theoretically and practically in any country. This study is important for academic researchers in the field of behavioural finance along with individual investors, especially women investors, investment managers/advisors and policy makers. To illustrate, this study opens new doors for scholars to examine women's roles in the stock market. This study is also useful for women investors because it highlights the importance of their participation in the stock market for their financial independency and well-beings. In addition, this study is important for investment managers and advisors because it provides a detailed analysis on women investment behaviours along with the investment barriers and investment motives that encourage them to invest more in stocks, specifically, in the Arab region. Understanding Arab women investment behaviours along with investment motives and barriers can probably assist investment managers and advisors to tailor specific investment funds targeted for Arab women that meet their demands and goals. Furthermore, this study is beneficial for policy makers in the Arab region because it highlights the main

investments barriers and motives, which encourage Arab women to invest more in stocks. To illustrate, that main investment barriers and motives are mainly related to women's low investment knowledge. Arab women's low investment knowledge causes them to participate less in the stock market. To improve Arab women's investment knowledge, policy makers can probably offer more investment educational programmes in colleges and universities. Policy makers can provide investment educational course as a required course for all majors in universities to introduce all students to the basic investment concepts and techniques. Doing so can probably help in improving Arab women investment knowledge and thus encourage them to participate more in the stock market. Figure (8.1) presents the study's practical contribution.

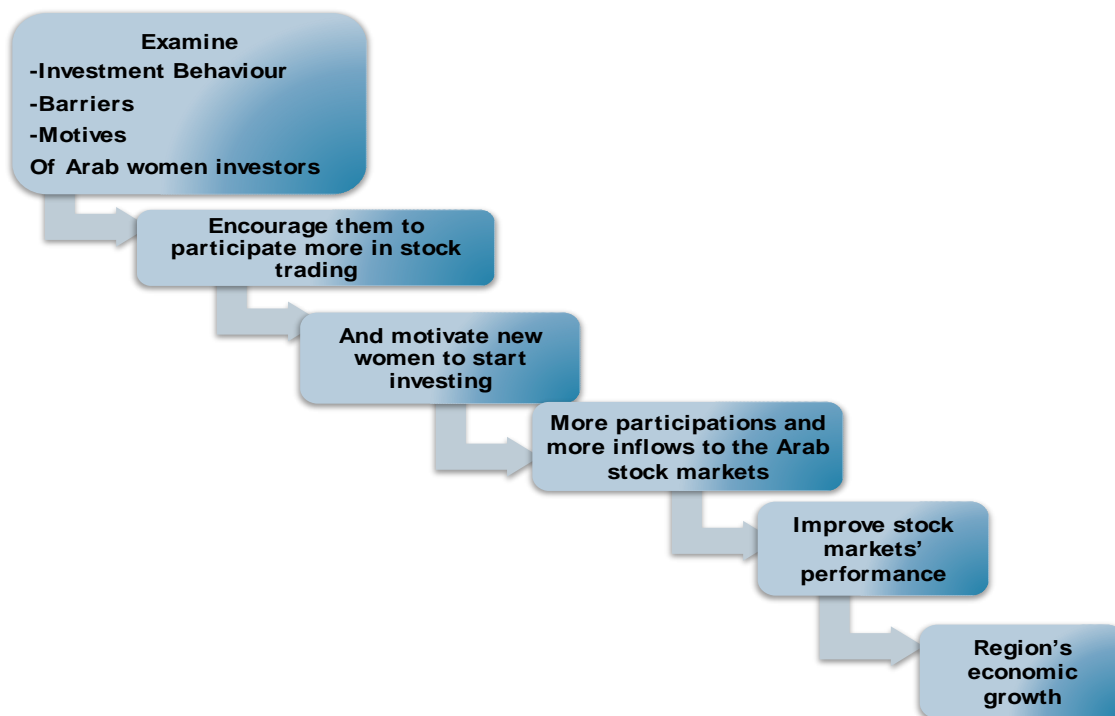


Figure 8.1. The study's practical contribution

8.4 Limitations and Suggestions for Further Research

This thesis provides numerous insights into women's investment behaviours and their relationship with the performance of the stock market in the Arab region. Nonetheless, this thesis has some limitations.

In regards to the study's primary data, the sample is selected from two Arab countries, Saudi Arabia and Jordan. This selection can be explained by the fact that various Arab countries, during the sample selection period, face great political instability, which affects their economies, their people and their stock markets. In this context Saudi Arabia and Jordan were chosen for the sample on account of a numbers of factors, including their relative political and economic stability during the sample selection period. Overall, the study's sample (in regards to its size and diversity) is good enough to meet its objectives.

Regarding the study's secondary data, the selected period is from 2008 through to 2015, which includes the ending of the global financial crises, the decrease in oil prices along with the Arab Spring. Accordingly, the study's period encompasses a particularly volatile period for both selected stock markets. Although it had been intended to include the prior bull market period from 2003 through to 2006, this had to be excluded due to lack of data from both stock markets. Although the study period represents mainly a bear market period, it still meets the study's main objectives and implies important new findings. In addition, the selected study period (2008-2015) limited the researcher to investigate only the relationship between Arab women investors and stock market performance, rather than investigating their impact on the stock market performance. However, studying the relationship between women investors and stock market performance is important and it opens the door to study the impact in future research.

Finally, in this study, the main variables included are those that directly relate to women's

investment behaviours (according to the prior literature) along with the issues of social influence and religion that are considered essential in the Arab region. Political factors are not included as one of the main variables in the study because it would be impractical in the context of the resource and time limitations of a PhD to include all potential variables affecting the investment behaviour of Arab women. The effect of the region's political instability is taken account of, however, when discussing the study's findings. Although this thesis has some limitations, it does provide an important foundation for future research in relation to women's investment behaviours and their relationship with stock market performance in developed and emerging markets.

Further research may use the study's findings on Arab women investment behaviour to confirm or to compare the findings in respect to women investors from other regions. Additionally, further research may expand the study's findings on Arab women's relationship with stock market performance to examine the relationship between market performance and other women investors, from different developed and emerging markets. Finally, further research can expand the scope of this research by examining the study's final framework (figure 7.3) in other countries such as in Asia, Europe, and in the U.S. to compare or to verify these results.

Summary of the thesis

- **Aims of the thesis:** 1) Examine the investment behaviour of Arab women (mainly in Saudi Arabia and Jordan) in regards to their herding behaviour, financial risk, confidence, and investment literacy levels along with religion effect. 2) Evaluate the relationship between Arab women investors (represented by Saudi and Jordanian women investors) and the performance of stock market.
- **Reasons for conducting thesis:** 1) To investigate, particularly, the investment behaviours of Arab women (who are neglected from academic researchers and financial practitioners in the field of behavioural finance; probably due cultural and sensitivity and data collection difficulty). 2) To examine the relationship between women, more rational investors, and the stock market performance (first study that examine such relationship).
- **Findings of the thesis:** 1) Arab women are risk averse investors due to their higher herding behaviour along with their lower confidence and investment literacy levels relative to Arab men. 2) Arab women's investment behaviours along with the investment barriers limit their participations in the stock market. Thus, their participations can increase via investment motives (related to investment knowledge). 3) Arab women (presented by Saudi and Jordanian women investors) have positive relationship, but not statistically significant, with stock market performance.
- **Contributions of this thesis:** 1) Extends and diversifies the literature to include Arab women inventors, who have different culture than Western culture. 2) Opens a new research area in the behavioural finance literature to investigate the relationship between women investors and s stock market performance in developed and emerging markets.

List of Attended and Presented Conferences

- In the course of completing this thesis, I have attended and presented papers in academic conferences locally and internationally.

- **The list of conferences as follows:**
 - **Presented a paper (Are all women risk averse investors?) at the Joint Conference of the Academy of Entrepreneurial Finance and the Academy of Behavioural Finance, Germany (April, 2017)**
 - **Presented a paper (Home bias and young individual investors) at the 8th Academy of Behavioural Finance, Nevada University, Las Vegas (September, 2016)**
 - **Presented a paper (Gender differences in financial risk preferences) at Anglia Ruskin Doctoral research conference (June, 2016)**
 - **Attended the Lord Ashcroft International Business School conference and discussed my PHD abstract with five faculty expert staff in the field of business (June, 2016)**
 - **Attended and discussed my PhD research in the Behavioural Finance Conference, Miami University (December, 2015)**
 - **Presented a poster at Anglia Ruskin Doctoral research conference (June, 2015).**
 - **Attended and presented (Gender differences in investment behaviour) in the British Accounting Finance Association (BAFA) conference in Manchester (March 2015).**

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List of Appendices:

Appendix (Chapter Five)

Appendix 5.1: Determination of Sample Size

(I) Based on population's mean:

$$n_0 = \frac{Z^2 \sigma^2}{e^2} \dots\dots\dots(1)$$

n_0 : the sample size,

z : the abscissa of the normal curve that cuts off an area α at the tails,

e : the desired level of precision (in the same unit of measure as the variance), and

s^2 : the variance of an attribute in the population.

To determine appropriate sample size, first declare acceptable margin of error, d . The margin of error is equal to half the confidence interval width. 's' stands for standard deviation. When estimating μ with 95% confidence use:

$$n_0 = \frac{4s^2}{d^2} \dots\dots\dots(2)$$

$$n_0 = \frac{t^2 * s^2}{d^2} \dots\dots\dots(3)$$

(II) Based on desired levels of confidence (Cochran (1963, p.75)):

$$n_0 = \frac{p * q * Z^2}{e^2} = \frac{p * (1-p) * Z^2}{e^2} \dots\dots\dots(4)$$

n_0 : the sample size,

Z^2 is the abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$ equals the desired confidence level, e.g., 95%)

e : is the desired level of precision,

p is the estimated proportion of an attribute that is present in the population, and

q (which is equal to $1-p$): is the value for Z is found in statistical tables which contain the area under the normal curve.

Example: $e = 0.05$

Appendix 5.2 (The Study's Online Questionnaire, English and Arabic versions)

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)	
Research Summary	ملخص البحث

Please complete this questionnaire if you are Arab individual investing or interested in investing in stocks.

Thank you for agreeing to take part in this important questionnaire, which study the behaviour of Arab individuals (males and females) investing, or interested in investing in the stock markets.

The aim of this questionnaire is to examine the investment behaviour of Arab males and females in regards to their risk tolerance level, social influence, religion effect, investment confidence level, and investment literacy level.
Additionally, Identify the main investment motives and barriers.

Your anonymous responses will make essential differences for Arab individual investors trading in the stock markets. The results will motivate more individuals to invest in stocks, especially women. This questionnaire should take maximum 15 minutes to complete. Be assured that all responses you provide will be highly confidential. The information that you provide in this questionnaire will only be used as part of this academic study.

Your participation, time, and effort to complete this questionnaire are highly appreciated and valued.

Razan O Salem
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أرجو إكمال الاستبيان إذا كنت مستثمر أو مهتم بالاستثمار في الأسهم.
شكراً لموافقتكم على المشاركة في هذا الاستبيان الهام الذي يدرس سلوك المستثمرين الأفراد (ذكور وإناث)، أو المهتمين في الاستثمار في أسواق الأسهم العربية .
نتائج هذا الاستبيان مهمة، لأنها ستساعد على تحفيز المزيد من الأفراد بالاستثمار في الأسهم، خاصة في أسواق الأسهم العربية .
إكمال هذا الاستبيان سيأخذ كحد أقصى ١٥ دقيقة.
من أجل الحفاظ على خصوصية المشاركين ، لن يتم الكشف عن هوية المشارك أو المشاركة.
أقدم شكري وتقديري لكل من شارك/ شاركت في تعبئة هذا الاستبيان.

رزان سالم
طالبة دكتوراه
(قسم المحاسبة والمالية)
كلية إدارة الأعمال الدولية
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باحث دكتوراه
كامبرج
المملكة المتحدة
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Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Survey Language

* What language would you prefer to take the questionnaire in?

- ☐ Arabic
- ☐ English

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Background Section

* What is your gender?

- ☐ Female
- ☐ Male

* What is your age?

- ☐ 18 to 24
- ☐ 25 to 34
- ☐ 35 to 44
- ☐ 45 to 54
- ☐ 55 to 64
- ☐ 65 to 74
- ☐ 75 or older

* What is your marital status?

- ☐ Single
- ☐ Married
- ☐ Divorced
- ☐ Widow

* What is your annual income?

- ☐ Less than \$20,000
- ☐ \$20,000-39,999
- ☐ \$40,000-74,999
- ☐ \$75,000-more than \$75,000

* What is the main source of your wealth?

- ☐ Inherited
- ☐ Self made
- ☐ Provided by close family (e.g. parents)
- ☐ Inherited and self made
- ☐ Provided by close family and self made
- ☐ Inherited and provided by close family

* What is the highest level of education you have completed?

- ☐ High school
- ☐ Diploma
- ☐ Bachelor degree (BA)
- ☐ Master
- ☐ PhD

- ☐ Business
- ☐ Finance/Banking
- ☐ Economics
- ☐ Medicine
- ☐ Law
- ☐ Engineering
- ☐ Other

* What is your current occupation?

- ☐ Private Sector employee
- ☐ Public Sector employee
- ☐ Business owner
- ☐ Entrepreneur
- ☐ Retired
- ☐ Unemployed
- ☐ Student
- ☐ Other

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Investment Experience in the Stock Market

* Which of the following assets do you invest (mostly in, moderately in, least in, or do not invest in it) ?

	Mostly invested in	Moderately invested in	Least invested in	Do not invest in
Stocks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bonds or Islamic bonds (SUKUK)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mutual Funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Real Estate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Currencies (GBP, EURO, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commodities (Crude Oil)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* If you are investing in stocks, how long have you been investing ?

- ☐ Less than 5 years
- ☐ 5-10 years
- ☐ More than 10 years
- ☐ Never

* What is your investment time horizon in stocks, if you are investing or interested in investing?

- ☐ Short term (Less than 1 year)
- ☐ Medium term (1-3 years)
- ☐ Long term (more than 3 years)

* Which of the followings, you prefer investing more in?

- ☐ Local Stocks (stocks listed in your home country)
- ☐ Regional Stocks (stocks listed in any country in the Arab region)
- ☐ International Stocks (stocks listed internationally)

* Do you currently invest or interested in investing in Amman Stock Exchange?

- ☐ Yes
- ☐ No

* How frequently do you trade stocks?

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Quarterly
- ☐ Semi annually
- ☐ Annually
- ☐ More than a year

* Do you trade online?

- ☐ Yes
- ☐ No

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Risk Tolerance Level

* Do you prefer a low risk investment that offers low return with steady performance over an investment that offers higher risk but higher returns?

- ☐ Yes
- ☐ No
- ☐ Sometimes

* Assume you won a prize of \$20000 how comfortable are you investing them in stocks?

- ☐ Very comfortable
- ☐ Comfortable
- ☐ Somewhat comfortable
- ☐ Not comfortable
- ☐ Not comfortable at all

* If you have to invest \$20,000 which of the following investment choices would you find most appealing?

- ☐ 60% in low-risk investments, 30% in medium-risk investments, 10% in high-risk
- ☐ 30% in low-risk investments, 40% in medium-risk investments, 30% in high-risk
- ☐ 10% in low-risk investments, 40% in in medium-risk investments, 50% in high-risk
- ☐ 100% in high-risk investments

* Suppose a relative left you an inheritance of \$ 150,000, you must invest all the money in only one of the following choices. Which one would you select?

- ☐ Saving deposits
- ☐ Government bonds
- ☐ Mutual fund that includes bonds and stocks
- ☐ Portfolio with 20 stocks (most of them considered risky)

* How risk averse are you?

- ☐ Very
- ☐ Somewhat
- ☐ risk averse
- ☐ Neutral
- ☐ Not risk averse at all

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Social Influence (Herding)

* When you want to invest in stocks, you depend mainly on:

- ☐ Your experience
- ☐ Broker recommendations
- ☐ Family members opinions
- ☐ Friend recommendations
- ☐ Other investors' recommendations (e.g. recommendations on Twitter)
- ☐ Recommendation reports from investment banks or security firms

* When investing in stocks, do you follow recommendations of friends, colleagues, or close relatives?

- ☐ Strongly agree
- ☐ Agree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

* Do you make all the important stock investments decisions by yourself?

- ☐ Yes
- ☐ No
- ☐ Sometimes

* Which of the following people do you allow the most to invest on your behalf in the stock market?

- ☐ Family member
- ☐ Broker
- ☐ Close friend
- ☐ Colleague
- ☐ I do not allow anyone to invest on my behalf

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Religion Influence

* Does religion play a role in your investment decisions?

- ☐ Yes
- ☐ No
- ☐ Sometimes

* When investing in stocks, you are

- ☐ Purely profit driven
- ☐ Consider religious factors
- ☐ Consider other factors (e.g. fundamental, economical, political factors)

* Do you invest only in stocks that comply with Islamic (Shariah) law?

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ I do not care

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Investment Confidence Level

* In terms of experience, how confident are you investing in stocks?

- ☐ Very confident
- ☐ Confident
- ☐ Somewhat confident
- ☐ Not confident
- ☐ Not confident at all

* How confident are you about predicting the volatility in stock market?

- ☐ Very confident
- ☐ Confident
- ☐ Somewhat confident
- ☐ Not confident
- ☐ Not confident at all

* When you purchase stocks and gain returns, do you feel it is due to your financial and investment abilities?

- ☐ Strongly agree
- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree

* Do you believe that your investment losses are mainly resulted from factors beyond your control (as financial crisis, economic downturn)?

- ☐ Strongly agree
- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree

* Do you feel more confident on your own investment opinions over opinions of financial analyst, brokers, friends, or family members?

- ☐ Strongly agree
- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree
- ☐ Strongly disagree

* In terms of experience, how confident are you investing in stocks?

- ☐ Very confident
- ☐ Confident
- ☐ Somewhat confident
- ☐ Not confident
- ☐ Not confident at all

* How confident are you about predicting the volatility in stock market?

- ☐ Very confident
- ☐ Confident
- ☐ Somewhat confident
- ☐ Not confident
- ☐ Not confident at all

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- ☐ Disagree

* Do you believe that your investment losses are mainly resulted from factors beyond your control (as financial crisis, economic downturn)?

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- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree

* Do you feel more confident on your own investment opinions over opinions of financial analyst, brokers, friends, or family members?

- ☐ Strongly agree
- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree
- ☐ Strongly disagree

* Which of the following statements is correct regarding mutual funds:

- ☐ Once one invests in a mutual fund, one cannot withdraw the money in the first year
- ☐ Mutual funds can invest in several assets, for example invest in both stocks and bonds
- ☐ Mutual funds pay a guaranteed fixed rate of return which depends on their past performance
- ☐ None of the above

* If the interest rate falls, bond prices fall?

- ☐ True
- ☐ False
- ☐ I do not know

* Buying a single individual stock usually provides a safer return than a stock in mutual fund

- ☐ True
- ☐ False
- ☐ I do not know

* An investment that pays an above average return is likely to have an above average risk

- ☐ True
- ☐ False
- ☐ I do not know

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

Investment Barriers and Motives

* What are the most important barriers that limit your investment in stocks ? (Rate the following barriers based on their importance)

	Important	Moderately important	Not important
Do not earn enough	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have other financial priorities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plan to save more in future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of interest in financial matters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural, Religious, social factors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of losing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of taking higher risk when investing in stocks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited confidence and investment literacy levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited financial independency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of enough time to closely follow the stock market and my stocks investments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* What are the most important motives that make you participate more in the stock market? (Rate the following motives based on their importance)

	Important	Moderately important	Not important
Rely on financial advisors' opinions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Live Investment/financial educational programs/workshops (face to face)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Live online investment programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilitate more online trading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More available funds that include stocks that comply with Islamic law	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Available specific funds that tailored to meet your demands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More well-diversified portfolios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have demo account before start the actual trading in the stock market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have well-equipped trading rooms that facilitate trading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More financial and analytical reports from the leading investment companies on stock market and financial instruments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More information transparency from the listed companies in the stock markets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* الجنس

- ☐ ذكر
- ☐ أنثى

* الفئة العمرية

- ☐ ٢٤-١٨
- ☐ ٣٤-٢٥
- ☐ ٤٤-٣٥
- ☐ ٥٤-٤٥
- ☐ ٦٤-٥٥
- ☐ ٧٤-٦٦
- ☐ ٧٥ وما فوق

* الحالة الاجتماعية

- ☐ أعزب
- ☐ متزوج
- ☐ مطلق
- ☐ أرمل

* الدخل السنوي

- ☐ أقل من 20,000 دولار
- ☐ 20,000-39,999 دولار
- ☐ 40,000 – 74,999 دولار
- ☐ أكثر من 75,000 دولار – 75,000

* مصدر الأموال

- ☐ موروثة
- ☐ جنيته بنفسك
- ☐ هبة (عن طريق الزوج الأب او الأم)
- ☐ موروثة وجنيته بنفسك
- ☐ موروثة و هبه
- ☐ هبه وجنيته بنفسك

المستوى التعليمي *

- ☐ مرحلة ثانوية أو أقل
- ☐ دبلوم
- ☐ بكالوريوس
- ☐ ماجستير
- ☐ دكتوراه

التخصص الأكاديمي *

- ☐ علوم إدارية
- ☐ مالية/مصرفية
- ☐ اقتصاد
- ☐ طب وعلوم طبية
- ☐ قانون
- ☐ هندسة
- ☐ أخرى

المهنة الحالية *

- ☐ موظف قطاع خاص
- ☐ موظف قطاع عام
- ☐ رجل أعمال
- ☐ صاحب مشروع خاص
- ☐ متقاعد
- ☐ عاطل عن العمل
- ☐ طالب
- ☐ أخرى

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

الخبرة الاستثمارية في سوق الأسهم

في أي من الأصول التالية تستثمر (بكثرة، باعتدال، بقله، أو لا تستثمر فيها)؟ *

لا استثمر في	استثمر بقله في	استثمر باعتدال في	استثمر معظمها في	اسهم
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	اسهم
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	سندات او سندات اسلاميه
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	صناديق الاستثمار المشتركة
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	العقارات
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	العملات
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	مواد الخام (النفط)

منذ متى و أنت تستثمر في البورصة ؟ *

- ☐ أقل من ٥ سنوات
- ☐ ٥ الى ١٠ سنوات
- ☐ أكثر من ١٠ سنوات
- ☐ لا أستثمر في الأسهم

ما هي الفترة الزمنية للاستثمار في الأسهم، اذا كنت مستثمر/مستثمره او لديك الرغبة في الاستثمار ؟ *

- ☐ مدة زمنية قصيرة (أقل من سنة واحدة)
- ☐ مدة زمنية متوسطة (١ إلى ٣ سنوات)
- ☐ مدة زمنية طويلة (أكثر من ٣ سنوات)

في أي مما يلي تفضل الاستثمار أكثر *

- ☐ الأسهم المحلية (أسهم مدرجة في سوق أسهم بلدك الأم)
- ☐ الأسهم الإقليمية (أسهم مدرجة في سوق أي بلد في المنطقة العربية)
- ☐ الأسهم الدولية (أسهم مدرجة دولياً)

هل تستثمر/تستثري في بورصة عمان *

- ☐ نعم
- ☐ لا

إذا كان عليك/عليكي استثمار 20,000 دولار ، أي من الخيارات الاستثمارية التالية تفضل/تفضلين ؟ *

- ☐ في 60% استثمارات منخفضة المخاطر ، في 30% استثمارات متوسطة المخاطر ، في 10% استثمارات عالية المخاطر
- ☐ في 30% استثمارات منخفضة المخاطر ، في 40% استثمارات متوسطة المخاطر ، في 30% استثمارات عالية المخاطر
- ☐ في 10% استثمارات منخفضة المخاطر ، في 40% استثمارات متوسطة المخاطر ، في 50% استثمارات عالية المخاطر
- ☐ في 100% استثمارات عالية المخاطر

افرض/افرضي أنك ورثت عن قريب لك مبلغ 150,000 دولار ، و عليك أن تستثمر كامل المبلغ في خيار واحد فقط من الخيارات التالية , أيهما تختار ؟ *

- ☐ ودائع التوفير
- ☐ سندات أو صكوك
- ☐ الصناديق الاستثمارية المشتركة (التي تشمل سندات وأسهم)
- ☐ محفظة استثمارية فيها 20 سهماً (معظمها يعتبر محفوظاً بالمخاطر)

إلى أي درجة تتجنب/تتجنبي المخاطر؟ *

- ☐ إلى درجة عالية
- ☐ أتجنبها إلى حد ما
- ☐ أتجنب المخاطر
- ☐ محايد/محايدة
- ☐ لا أتجنب المخاطر

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

التأثير الاجتماعي

عندما تريد/تريدي الاستثمار في الأسهم، فإنك تعتمد/تعتمد على الشكل الرئيسي على أي من الآتي ؟ *

- ☐ خبرتك الاستثمارية
- ☐ توصيات الوسيط
- ☐ آراء أفراد العائلة
- ☐ توصيات الأصدقاء
- ☐ توصيات من أفراد عبر الإنترنت
- ☐ توصيات التقارير المالية لشركات الاستثمار

عندما تستثمر في الأسهم، فهل أنت تعمل بتوصيات الأصدقاء، الزملاء أو الأقارب؟ *

- ☐ أوافق بشدة
- ☐ أوافق الى حد ما
- ☐ أوافق
- ☐ لا أوافق
- ☐ لا أوافق بشدة

هل تتخذ/تتخذ جميع قراراتك الاستثمارية المهمة المتعلقة بالأسهم بنفسك؟ *

- ☐ نعم
- ☐ لا
- ☐ أحياناً

لمن تسمح/تسمحي من التالي بأن يستثمر نيابة عنك؟ *

- ☐ أحد أفراد العائلة
- ☐ وسيط
- ☐ صديق مقرب
- ☐ زميل عمل
- ☐ لا اسمح لاحد بالاستثمار نيابة عني

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

تأثير الدين

هل الدين له دور في اتخاذ قراراتك الاستثمارية؟ *

- ☐ نعم
- ☐ لا
- ☐ أحياناً

عند استثمارك في الأسهم، فإنه *

- ☐ يحددك باعث الربح بشكل تام
- ☐ تأخذ/ تأخذ العوامل الدينية في الاعتبار
- ☐ تأخذ/ تأخذ عوامل أخرى في الاعتبار (مثل عوامل اقتصاديه او سياسيه)

هل تستثمر/تستثمري فقط في الأسهم النقية (المتوافقة مع تعاليم الشريعة الإسلامية)؟ *

- ☐ نعم
- ☐ لا
- ☐ أحيانا
- ☐ لا أهتم

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

درجة الثقة عند الاستثمار

من ناحية الخبرة، ما مدى ثقتك بقدرتك على الاستثمار في الأسهم؟ *

- ☐ واثق تماما
- ☐ واثق
- ☐ واثق الى حد ما
- ☐ لست واثقا
- ☐ لست واثقا أبدا

ما مدى ثقتك بقدرتك على توقع التقلب في الأسواق المالية؟ *

- ☐ واثق تماما
- ☐ واثق
- ☐ واثق الى حد ما
- ☐ لست واثقا
- ☐ لست واثقا أبدا

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

درجة الثقة عند الاستثمار (تابع)

عندما تشتري سهماً وتجنّي أرباحاً، هل تشعر/تشعري بأن ذلك نتيجة لقدرتك المالية و الاستثمارية؟ *

- ☐ أوافق بشدة
- ☐ أوافق
- ☐ أوافق إلى حد ما
- ☐ لا أوافق
- ☐ لا أوافق بشدة

هل تعتقد بأن خسارتك الاستثمارية هي نتيجة لعوامل خارجة عن سيطرتك (مثل الأزمات المالية و الركود الإقتصادي)؟ *

- ☐ أوافق تماماً
- ☐ أوافق
- ☐ أوافق إلى حد ما
- ☐ لا أوافق
- ☐ لا أوافق بشدة

هل تتقّ بأرائك الاستثمارية أكثر من تقنّك بآراء المحللين الماليين، الوسطاء، الأصدقاء، أو أفراد العائلة؟ *

- ☐ أوافق بشدة
- ☐ أوافق
- ☐ أوافق إلى حد ما
- ☐ لا أوافق
- ☐ لا أوافق بشدة

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

درجة الثقافة الاستثمارية

أي من العبارات التالية تصف الوظيفة الأساسية للسوق المالي؟ *

- ☐ يساعد السوق المالي في التنبؤ بأرباح الأسهم
- ☐ يسمح السوق المالي بالإقراض والإعراض
- ☐ يجمع سوق المال بين الأشخاص الراغبين في شراء الأسهم و الراغبين في بيعها
- ☐ جميع ما ذكر

* بشكل عام، أي من الأصول المالية التالية هي الأكثر تقلباً مع مرور الوقت؟ *

- ☐ سندات حكومية قصيرة الاجل
- ☐ سندات حكومية طويلة الاجل
- ☐ الأسهم الممتازة
- ☐ الأسهم العادية

* عندما يقوم مستثمر بتوزيع نقوده على أصول مالية مختلفة، فهل خطر خسارة الأموال

- ☐ يزداد
- ☐ ينخفض
- ☐ يبقى كما هو
- ☐ لا أعلم

* إذا كان معامل بيتا للسهم أقل من (1) فإن ذلك يدل على أنه

- ☐ لا يتأثر بحركة السوق المالي
- ☐ أكثر استجابة من السوق المالي
- ☐ بنفس درجة استجابة السوق المالي
- ☐ أقل استجابة من السوق المالي
- ☐ لا أعلم

* أي من العبارات التالية صحيحة فيما يخص صناديق الاستثمار ؟ *

- ☐ عند الاشتراك في صندوق الاستثمار للأسهم لا يمكن سحب النقود في السنة الأولى
- ☐ يمكن لصناديق الاستثمار أن تستثمر في عدة أصول مالية، مثلاً: في الأسهم والسندات
- ☐ تدفع صناديق الاستثمار نسبة عائد ثابتة و مضمونة وتكون مبنية على أدائها السابق
- ☐ لا شيء مما ذكر

* إذا هبط معدل الفائدة، تهبط أسعار السندات؟ *

- ☐ صحيح
- ☐ خطأ
- ☐ لا أعلم

هل الاستثمار بشكل مباشر وشخصي بالأسهم أكثر أماناً (من حيث العائد المالي) من الاستثمار بأسهم في صناديق الاستثمار ؟ *

- ☐ صحيح
- ☐ خطأ
- ☐ لا أعلم

هل عادة تكون الاستثمارات التي تعود بربح فوق المعدل محفوفة بالمخاطر بشكل أعلى من المعدل الطبيعي؟ *

- ☐ صحيح
- ☐ خطأ
- ☐ لا أعلم

Examine Investment Behaviour of Arab Individual Investors (Saudi Arabia AND Jordan)

عوائق و حوافز الاستثمار في الأسهم

ما هي العوائق الرئيسية التي تحد من استثمارك في الأسهم؟ *

غير هام	هام إلى حد ما	هام
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
لا يعود بأرباح كافية		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
لدي أولويات مالية أخرى		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
أخطط لأن أدخر أكثر مستقبلاً		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
لست مهتماً بالمسائل المالية		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
عوامل دينية واجتماعية		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
الخوف من الخسارة		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
الخوف من اتخاذ مخاطر عالية عند الاستثمار بالأسهم		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
الثقة و الثقافة الاستثمارية لدي محدوده		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
الاستقلال المالي محدود		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
لا يوجد الوقت الكافي لمتابعة السوق المالي والاستثمارات		

Appendix (Chapter Six)

Appendix (6-A)

Analysis of the Distribution of the Study Variables

Table AA1. Tests of normality for raw and transformed variables

Variable	Transformation	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Risk Tolerance Total Score	None (Raw Variable)	.076	526	.000	.985	526	.000
	Inverse	.146	526	.000	.876	526	.000
	Square Root	.073	526	.000	.987	526	.000
	Square Root Inverse	.119	526	.000	.935	526	.000
	Square	.121	526	.000	.945	526	.000
	Square Inverse	.212	526	.000	.698	526	.000
	Log base 10 (log)	.097	526	.000	.971	526	.000
	Log base e (ln)	.097	526	.000	.971	526	.000
	z-Score	.076	526	.000	.985	526	.000
Herdling Effect Total Score	None (Raw Variable)	.126	526	.000	.926	526	.000
	Inverse	.140	526	.000	.924	526	.000
	Square Root	.111	526	.000	.949	526	.000
	Square Root Inverse	.103	526	.000	.948	526	.000
	Square	.187	526	.000	.852	526	.000
	Square Inverse	.192	526	.000	.839	526	.000
	Log base 10 (log)	.104	526	.000	.957	526	.000
	Log base e (ln)	.104	526	.000	.957	526	.000
	z-Score	.126	526	.000	.926	526	.000
Religion Effect Total Score	None (Raw Variable)	.168	526	.000	.894	526	.000
	Inverse	.205	526	.000	.805	526	.000
	Square Root	.169	526	.000	.887	526	.000
	Square Root Inverse	.192	526	.000	.842	526	.000
	Square	.156	526	.000	.886	526	.000
	Square Inverse	.249	526	.000	.709	526	.000
	Log base 10 (log)	.178	526	.000	.870	526	.000
	Log base e (ln)	.178	526	.000	.870	526	.000
	z-Score	.168	526	.000	.894	526	.000

a. Lilliefors Significance Correction

Table AA1. Tests of normality for raw and transformed variables (Continued)						
Variable	Transformation	Kolmogorov-Smirnov ^a			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	df Sig.
Investment Confidence Total Score	None (Raw Variable)	.097	526	.000	.984	526 .000
	Inverse	.144	526	.000	.886	526 .000
	Square Root	.079	526	.000	.986	526 .000
	Square Root Inverse	.116	526	.000	.942	526 .000
	Square	.128	526	.000	.951	526 .000
	Square Inverse	.200	526	.000	.694	526 .000
	Log base 10 (log)	.091	526	.000	.974	526 .000
	Log base e (ln)	.091	526	.000	.974	526 .000
	z-Score	.097	526	.000	.984	526 .000
Investment Literacy Total Score	None (Raw Variable)	.118	526	.000	.954	526 .000
	Inverse	.262	526	.000	.703	526 .000
	Square Root	.127	526	.000	.951	526 .000
	Square Root Inverse	.215	526	.000	.817	526 .000
	Square	.185	526	.000	.886	526 .000
	Square Inverse	.357	526	.000	.497	526 .000
	Log base 10 (log)	.171	526	.000	.906	526 .000
	Log base e (ln)	.171	526	.000	.906	526 .000
	z-Score	.118	526	.000	.954	526 .000

a. Lilliefors Significance Correction

Appendix (6-B)

Table AB1. Reliability analysis: Item-total statistics

Instrument Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Invest Stock	114.95	102.798	.038	.588
Invest Bonds	116.54	104.161	.045	.584
Invest Funds	116.30	102.298	.138	.578
Invest Real Estate	115.65	100.954	.117	.580
Invest Commodities	116.33	103.035	.073	.583
Invest Currencies	116.38	103.599	.048	.584
Invest Stock Period	116.09	103.148	.035	.587
Invest Time Span	115.58	102.821	.080	.582
Prefer Invest	115.16	104.744	-.028	.590
Invest SEM	115.98	102.898	.202	.577
Trade Stock Frequency	114.06	97.339	.109	.587
Trade Online	116.13	103.972	.070	.583
RT Q1	115.93	106.043	-.109	.594
RT Q2	114.11	102.781	.052	.586
RT Q3	115.87	103.993	.010	.588
RT Q4	114.86	102.861	.029	.589
RT Q5	114.74	103.842	-.012	.593
HESI Q1	115.22	95.438	.171	.577
HESI Q2	114.75	99.971	.196	.573
HESI Q3	116.15	102.943	.099	.581
HESI Q4	115.29	94.295	.229	.567
REQ 1	115.46	99.599	.266	.568
REQ 2	115.63	102.518	.102	.581
REQ 3	114.81	98.244	.232	.569

Reliability analysis: Item-total statistics

Table AB1. Reliability analysis: Item-total statistics (Continued)

Instrument Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CLInvestment Q1	114.42	104.882	-.049	.594
CLInvestment Q2	114.96	104.307	-.025	.593
CLInvestment Q3	115.15	103.467	.052	.584
CLInvestment Q4	115.13	101.391	.148	.577
CLInvestment Q5	114.53	105.342	-.071	.596
ILL Q1	117.36	105.479	-.080	.589
ILL Q2	116.97	104.758	-.003	.585
ILL Q3	116.99	104.583	.014	.585
ILL Q4	117.47	104.975	-.028	.586
ILL Q5	117.26	104.166	.049	.583
ILL Q6	117.38	104.588	.011	.585
ILL Q7	117.25	104.819	-.015	.586
ILL Q8	116.94	104.183	.065	.583
Barrier 1	115.49	102.590	.124	.579
Barrier 2	115.37	102.789	.105	.581
Barrier 3	115.36	101.032	.223	.573
Barrier 4	116.12	102.444	.142	.578
Barrier 5	115.75	97.871	.391	.560
Barrier 6	115.49	101.722	.171	.576
Barrier 7	115.31	102.756	.117	.580
Barrier 8	115.55	101.780	.166	.577
Barrier 9	115.73	102.089	.162	.577
Barrier 10	115.75	103.173	.078	.582

Table AB1. Reliability analysis: Item-total statistics (Continued)

Instrument Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Motive 1	115.33	99.456	.338	.566
Motive 2	115.72	100.190	.264	.570
Motive 3	115.56	99.318	.319	.566
Motive 4	115.05	101.483	.249	.573
Motive 5	115.58	97.993	.400	.560
Motive 6	115.43	99.683	.309	.567
Motive 7	115.31	101.034	.254	.572
Motive 8	115.96	100.564	.230	.572
Motive 9	115.76	99.052	.303	.566
Motive 10	115.17	100.401	.296	.569
Motive 11	115.10	101.427	.240	.573

Appendix (6-C)

Instrument Validity: Factor Analysis

Table AC1: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.467	14.598	14.598	8.467	14.598	14.598	3.833	6.609	6.609
2	3.664	6.317	20.915	3.664	6.317	20.915	3.122	5.382	11.991
3	3.475	5.991	26.906	3.475	5.991	26.906	3.092	5.331	17.322
4	2.628	4.531	31.436	2.628	4.531	31.436	2.861	4.933	22.255
5	2.370	4.086	35.523	2.370	4.086	35.523	2.678	4.617	26.872
6	2.083	3.591	39.114	2.083	3.591	39.114	2.504	4.317	31.189
7	1.921	3.311	42.425	1.921	3.311	42.425	2.501	4.313	35.502
8	1.789	3.084	45.509	1.789	3.084	45.509	2.341	4.037	39.539
9	1.674	2.887	48.395	1.674	2.887	48.395	2.305	3.974	43.513
10	1.578	2.721	51.116	1.578	2.721	51.116	2.165	3.732	47.245
11	1.349	2.326	53.442	1.349	2.326	53.442	1.855	3.197	50.442
12	1.229	2.119	55.561	1.229	2.119	55.561	1.591	2.742	53.185
13	1.200	2.070	57.631	1.200	2.070	57.631	1.570	2.708	55.892
14	1.125	1.939	59.570	1.125	1.939	59.570	1.493	2.575	58.467
15	1.082	1.865	61.435	1.082	1.865	61.435	1.471	2.536	61.002
16	1.032	1.780	63.215	1.032	1.780	63.215	1.283	2.213	63.215
17	.990	1.707	64.922						
18	.903	1.558	66.480						
19	.864	1.490	67.970						
20	.853	1.470	69.440						
21	.820	1.415	70.854						
22	.803	1.385	72.239						
23	.775	1.336	73.575						
24	.749	1.291	74.866						
25	.728	1.255	76.121						

Extraction Method: Principal Component Analysis.

Table AC1: Total Variance Explained (Continued)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
26	.718	1.239	77.360						
27	.680	1.173	78.532						
28	.639	1.102	79.635						
29	.627	1.082	80.716						
30	.618	1.065	81.781						
31	.599	1.032	82.813						
32	.584	1.008	83.821						
33	.556	.959	84.780						
34	.542	.935	85.715						
35	.510	.879	86.594						
36	.490	.846	87.439						
37	.479	.825	88.264						
38	.456	.786	89.050						
39	.452	.779	89.829						
40	.439	.758	90.587						
41	.424	.731	91.318						
42	.404	.697	92.015						
43	.389	.671	92.687						
44	.374	.646	93.332						
45	.372	.641	93.974						
46	.360	.620	94.594						
47	.349	.601	95.195						
48	.321	.553	95.748						
49	.308	.531	96.279						

Extraction Method: Principal Component Analysis.

Table AC1: Total Variance Explained (Continued)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
50	.296	.511	96.789						
51	.288	.496	97.285						
52	.258	.444	97.729						
53	.249	.428	98.158						
54	.242	.417	98.575						
55	.224	.387	98.962						
56	.216	.373	99.335						
57	.200	.346	99.680						
58	.185	.320	100.000						

Extraction Method: Principal Component Analysis.

Table AC2. Instruments construct validity analysis: The rotated component matrix ^a																
Item	Component															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CLInvestment Q1	.746															
CLInvestment Q5	.734															
CLInvestment Q2	.731															
CLInvestment Q3	.722															
Barrier 8	-.490															
Barrier 6	-.416															
CLInvestment Q4	.413															
Barrier 7																
RE Q3		.803														
Barrier 5		.753														
RE Q1		.731														
RE Q2		.729														
Motive 5		.613														
Motive 10			.767													
Motive 7			.739													
Motive 11			.719													
Motive 6			.612													
Motive 1			.461													
Motive 9			.459		.453											
HESI Q2				.758												
HESI Q1				.694												
HESI Q4				.685												
HESI Q3				.601												
Motive 2					.809											
Motive 3					.727											
Motive 8					.524											
ILL Q1																
Barrier 2						.756										
Barrier 3						.695										
Barrier 4						.531										
Barrier 1						.497										
Barrier 9						.434										

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table AC2. Instruments construct validity analysis: The rotated component matrix^a (Continued)

Item	Component															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RT Q3							.769									
RT Q5							.682									
RT Q1							.595									
RT Q4							.572									
RT Q2																
Invest SEM							.709									
Invest Stock Period							.683									
Invest Stock							.627									
ILL Q8								.664								
ILL Q3								.626								
ILL Q7								.488								
ILL Q2								.472								
ILL Q6																
Invest Currencies										.773						
Invest Commodities										.723						
Prefer Invest							.443			-.503						
Invest Bonds										.428						
Motive 4											.713					
Trade Online											.686					
ILLQ 5												.786				
ILLQ 4												.516				
Invest Real Estate													.766			
Trade Stock Frequency														.640		
Invest Funds														.479		
Barrier 10															.705	
Invest Time Span																.721

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix (6-D)

Differences between age groups of Arab women in investment behaviours: Ranks

Table AD1. Differences between the age groups of Arab women investors in investment behaviors: Ranks

	Age Group	N	Mean Rank
Risk Tolerance	18-24 Years	22	80.14
	25-34 Years	57	83.56
	35-44 Years	53	67.78
	45-54 Years	12	51.83
	55-64 Years	2	11.75
	65-74 Years	1	114.00
	Total	147	
Herding Effect	18-24 Years	22	80.02
	25-34 Years	57	77.28
	35-44 Years	53	69.63
	45-54 Years	12	71.96
	55-64 Years	2	27.25
	65-74 Years	1	104.00
	Total	147	
Religion Effect	18-24 Years	22	72.64
	25-34 Years	57	76.20
	35-44 Years	53	72.30
	45-54 Years	12	71.33
	55-64 Years	2	82.75
	65-74 Years	1	83.00
	Total	147	
Investment Confidence	18-24 Years	22	56.73
	25-34 Years	57	81.15
	35-44 Years	53	74.86
	45-54 Years	12	64.88
	55-64 Years	2	59.00
	65-74 Years	1	140.50
	Total	147	
Investment Literacy	18-24 Years	22	74.95
	25-34 Years	57	74.69
	35-44 Years	53	77.85

45-54 Years	12	57.58
55-64 Years	2	47.50
65-74 Years	1	59.50
Total	147	

Appendix (6-E)

Group Mean Comparisons: Differences between the age groups in investment behaviour

Table AE1. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	1	22	38.95	857.00
	2	57	40.40	2303.00
	Total	79		

Table AE2. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	1	22	43.39	954.50
	3	54	36.51	1971.50
	Total	76		

Table AE3. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	1	22	19.59	431.00
	4	12	13.67	164.00
	Total	34		

Table AE4. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	1	22	13.39	294.50
	5	2	2.75	5.50
	Total	24		

Table AE5. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	1	22	11.82	260.00
	6	1	16.00	16.00
	Total	23		

Table AE6. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	2	57	62.23	3547.00
	3	54	49.43	2669.00
	Total	111		

Table AE7. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	2	57	37.74	2151.00
	4	12	22.00	264.00
	Total	69		

Table AE8. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	2	57	30.89	1760.50
	5	2	4.75	9.50
	Total	59		

Table AE9. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	2	57	29.29	1669.50
	6	1	41.50	41.50
	Total	58		

Table AE10. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	3	54	34.66	1871.50
	4	12	28.29	339.50
	Total	66		

Table AE11. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	3	54	29.31	1583.00
	5	2	6.50	13.00
	Total	56		

Table AE12. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	3	54	27.68	1494.50
	6	1	45.50	45.50
	Total	55		

Table AE13. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	4	12	8.29	99.50
	5	2	2.75	5.50
	Total	14		

Table AE14. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	4	12	6.50	78.00
	6	1	13.00	13.00
	Total	13		

Table AE15. Ranks

	Age Group	N	Mean Rank	Sum of Ranks
Risk Tolerance	5	2	1.50	3.00
	6	1	3.00	3.00
	Total	3		

Appendix (6-F)

Differences between the ‘Annual Income’ groups of Arab women investors in investment behaviours: Ranks

Table AF1. Differences between the ‘Annual Income’ groups of Arab women investors in investment behaviors: Ranks

	Annual Income	N	Mean Rank
Risk Tolerance	< 20,000 US\$	76	99.68
	20,000-39,999 US\$	69	108.09
	40,000-74,999 US\$	46	123.23
	≥ 75,000	31	130.65
	Total	222	
Herding Effect	< 20,000 US\$	76	120.01
	20,000-39,999 US\$	69	102.51
	40,000-74,999 US\$	46	116.84
	≥ 75,000	31	102.73
	Total	222	
Religion Effect	< 20,000 US\$	76	120.64
	20,000-39,999 US\$	69	110.20
	40,000-74,999 US\$	46	117.25
	≥ 75,000	31	83.45
	Total	222	
Investment Confidence	< 20,000 US\$	76	93.16
	20,000-39,999 US\$	69	124.37
	40,000-74,999 US\$	46	122.91
	≥ 75,000	31	110.89
	Total	222	
Investment Literacy	< 20,000 US\$	76	85.57
	20,000-39,999 US\$	69	121.80
	40,000-74,999 US\$	46	127.72
	≥ 75,000	31	128.10
	Total	222	

Appendix (6-G)

Group mean comparisons: Pairwise comparisons between the ‘Annual Income’ groups of Arab women investors in the religion effect

Table AG1. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Religion Effect	1	77	76.56	5895.00
	2	69	70.09	4836.00
	Total	146		

Table AG2. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Religion Effect	1	77	62.63	4822.50
	3	46	60.95	2803.50
	Total	123		

Table AG3. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Religion Effect	1	77	59.71	4597.50
	4	31	41.56	1288.50
	Total	108		

Table AG4. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Religion Effect	2	69	56.54	3901.00
	3	46	60.20	2769.00
	Total	115		

Table AG5. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Religion Effect	2	69	54.20	3739.50
	4	31	42.27	1310.50
	Total	100		

Table AG6. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Religion Effect	3	46	43.71	2010.50
	4	31	32.02	992.50
	Total	77		

Appendix (6-H)

Group Mean Comparisons: Differences between Arab women investors of the different ‘Annual Income’ groups in their investment confidence

Table AH1. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Confidence	1	77	63.64	4900.00
	2	69	84.51	5831.00
	Total	146		

Table AH2. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Confidence	1	77	55.64	4284.00
	3	46	72.65	3342.00
	Total	123		

Table AH3. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Confidence	1	77	52.12	4013.00
	4	31	60.42	1873.00
	Total	108		

Table AH4. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Confidence	2	69	58.43	4031.50
	3	46	57.36	2638.50
	Total	115		

Table AH5. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Confidence	2	69	52.20	3602.00
	4	31	46.71	1448.00
	Total	100		

Table AH6. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Confidence	3	46	40.73	1873.50
	4	31	36.44	1129.50
	Total	77		

Appendix (6-I)

Group Mean Comparisons: Differences between Arab women investors of the different

‘Annual Income’ groups in investment literacy

Table AI1. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	1	76	61.80	4697.00
	2	69	85.33	5888.00
	Total	145		

Table AI2. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	1	76	52.28	3973.00
	3	46	76.74	3530.00
	Total	122		

Table AI3. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	1	76	48.49	3685.00
	4	31	67.52	2093.00
	Total	107		

Table AI4. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	2	69	56.96	3930.50
	3	46	59.55	2739.50
	Total	115		

Table AI5. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	2	69	49.50	3415.50
	4	31	52.73	1634.50
	Total	100		

Table AI6. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	3	46	38.42	1767.50
	4	31	39.85	1235.50

Table AI6. Ranks

	Annual Income	N	Mean Rank	Sum of Ranks
Investment Literacy	3	46	38.42	1767.50
	4	31	39.85	1235.50
	Total	77		

Appendix (6-J)

Group Mean Comparisons: Differences between Arab women investors of the different education groups in investment literacy

Table AJ1. Differences between the 'Education' groups of Arab women investors in investment behaviors: Ranks

	Level of Education	N	Mean Rank
Risk Tolerance	High school	7	93.07
	Diploma Certificate	6	108.08
	Bachelor's degree	113	90.55
	Master's degree	44	107.52
	Doctorate Degree	27	119.98
	Total	197	
Herding Effect	High school	7	133.57
	Diploma Certificate	6	96.17
	Bachelor's degree	113	102.58
	Master's degree	44	89.69
	Doctorate Degree	27	90.83
	Total	197	
Religion Effect	High school	7	104.79
	Diploma Certificate	6	106.25
	Bachelor's degree	113	94.11
	Master's degree	44	106.41
	Doctorate Degree	27	104.30
	Total	197	
Investment Confidence	High school	7	85.36
	Diploma Certificate	6	93.92
	Bachelor's degree	113	95.47
	Master's degree	44	103.58
	Doctorate Degree	27	110.96
	Total	197	
Investment Literacy	High school	7	46.43
	Diploma Certificate	6	82.33
	Bachelor's degree	113	93.92
	Master's degree	44	119.57
	Doctorate Degree	27	104.06
	Total	197	

Table AJ2. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	1	7	5.50	38.50
	2	6	8.75	52.50
	Total	13		

Table AJ3. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	1	7	33.50	234.50
	3	113	62.17	7025.50
	Total	120		

Table AJ4. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	1	7	9.43	66.00
	4	44	28.64	1260.00
	Total	51		

Table AJ5. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	1	7	10.00	70.00
	5	27	19.44	525.00
	Total	34		

Table AJ6. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	2	6	54.25	325.50
	3	113	60.31	6814.50
	Total	119		

Table AJ7. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	2	6	15.58	93.50
	4	44	26.85	1181.50
	Total	50		

Table AJ8. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	2	6	14.25	85.50
	5	27	17.61	475.50
	Total	33		

Table AJ9. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	3	113	73.32	8285.50
	4	44	93.58	4117.50
	Total	157		

Table AJ10. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	3	113	69.12	7811.00
	5	27	76.26	2059.00
	Total	140		

Table AJ11. Ranks

	Level of Education	N	Mean Rank	Sum of Ranks
Investment Literacy	4	44	38.00	1672.00
	5	27	32.74	884.00
	Total	71		

Appendix (6-K)

Equations of some common non-linear models

Linear Model:

$$Y = b_0 + (b_1 * X) + \varepsilon$$

Logarithmic Model:

$$Y = b_0 + (b_1 * \ln(X)) + \varepsilon$$

Inverse Model:

$$Y = b_0 + (b_1 / X) + \varepsilon$$

Quadratic Model:

$$Y = b_0 + (b_1 * X) + (b_2 * X^{**2}) + \varepsilon$$

Cubic Model:

$$Y = b_0 + (b_1 * X) + (b_2 * X^{**2}) + (b_3 * X^{**3}) + \varepsilon$$

Power Model:

$$Y = b_0 * (X^{**b_1})$$

$$\text{or } \ln(Y) = \ln(b_0) + (b_1 * \ln(X))$$

Compound Model:

$$Y = b_0 * (b_1^{**X})$$

$$\text{or } \ln(Y) = \ln(b_0) + (\ln(b_1) * X)$$

Sigmoid (S-Curve) Model:

$$Y = e^{** (b_0 + (b_1/X))} \varepsilon$$

$$\text{or } \ln(Y) = b_0 + (b_1/X) + \ln \varepsilon$$

Growth Model:

$$Y = e^{** (b_0 + (b_1 * X))} \varepsilon$$

$$\text{or } \ln(Y) = b_0 + (b_1 * X) + \ln \varepsilon$$

Exponential Model:

$$Y = b_0 * (e^{** (b_1 * X)}) \varepsilon$$

$$\text{or } \ln(Y) = \ln(b_0) + (b_1 * X) + \ln \varepsilon$$

Appendix (6-L)

Investigation of the effect of 'Religion' on the herding behaviour of Arab women investors

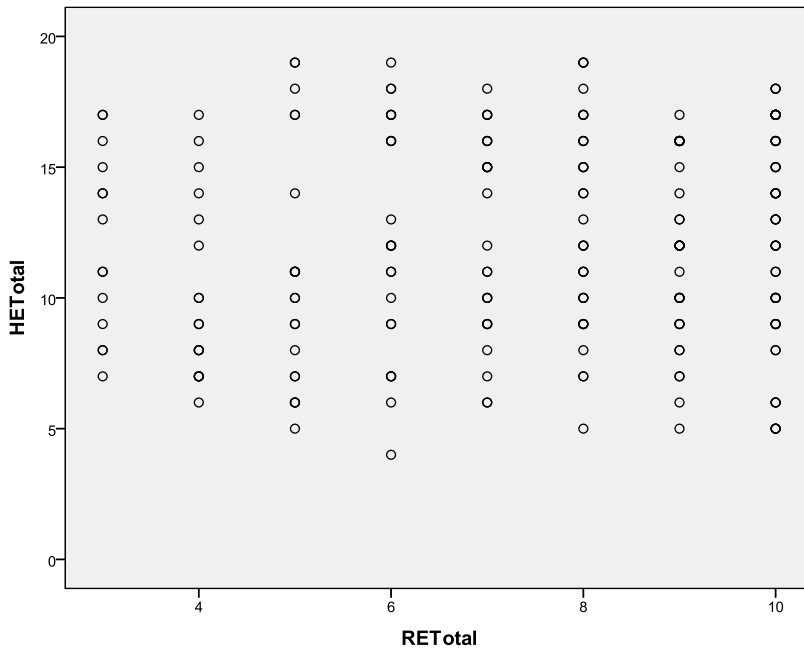


Figure AL1. Scatter plot of the relation between the 'Religion Effect' and 'Herding'

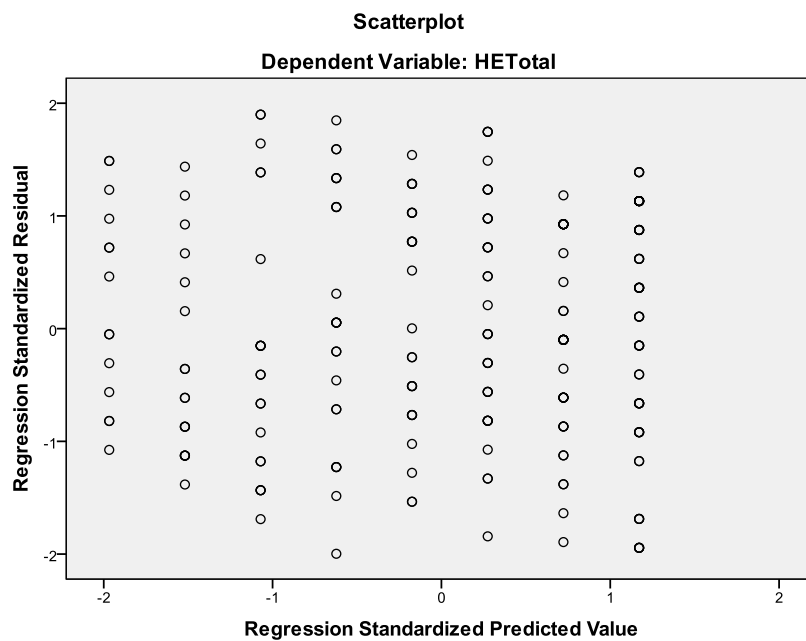


Figure AL2. A plot of *ZRESID against *ZPRED

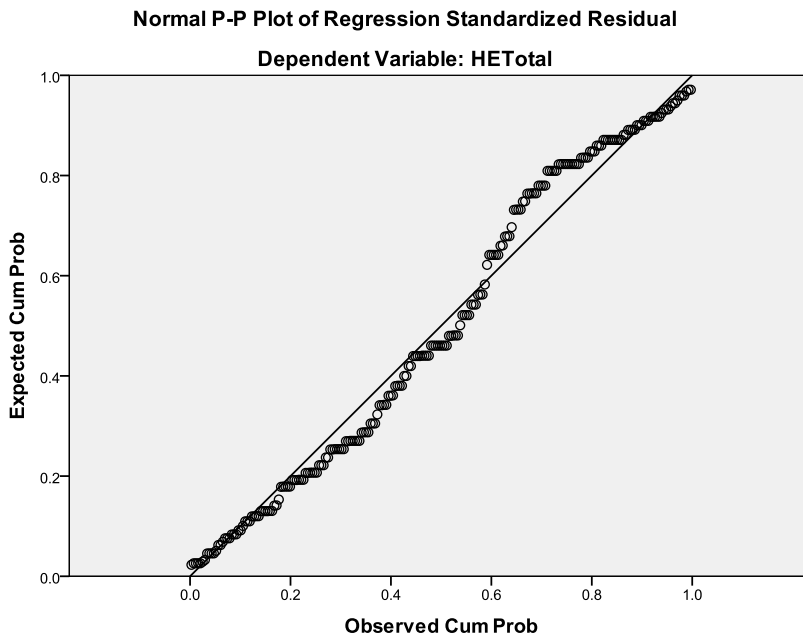


Figure AL3. Plot of the regression standardized residual error versus frequency.

Appendix (6-M)

Investigation of the effect of 'Religion' on the 'Investment Confidence' of Arab women

investors

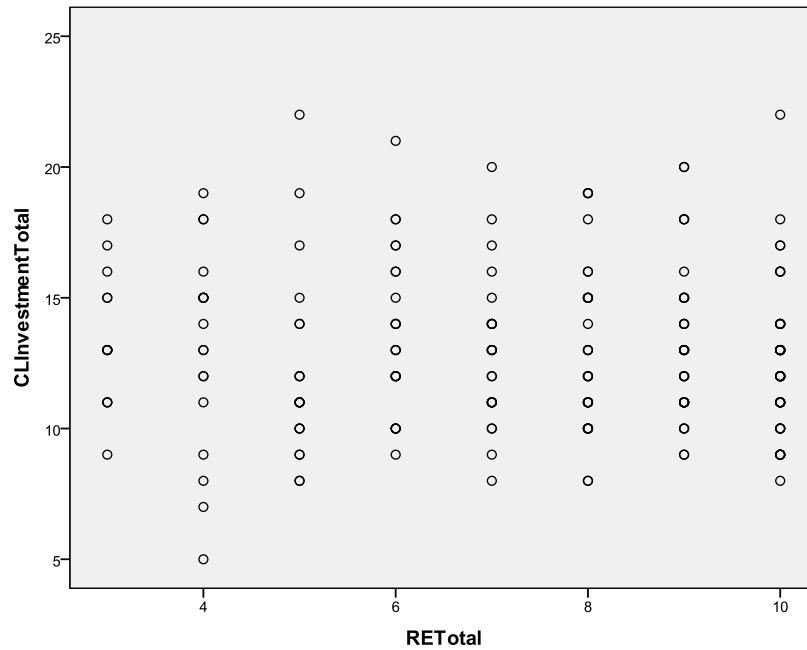


Figure AM1. Scatter plot of the relation between the 'Religion Effect' and 'Investment Confidence'

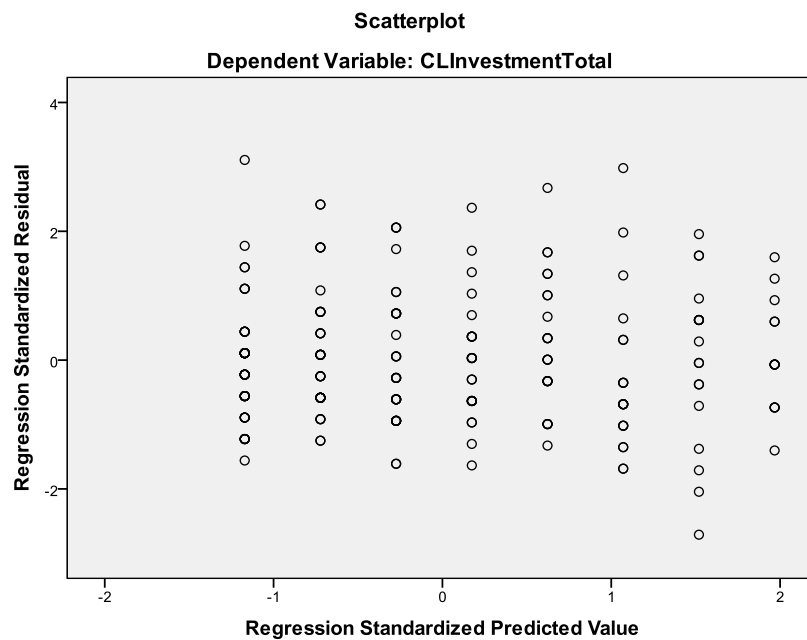


Figure AM2. A plot of *ZRESID against *ZPRED

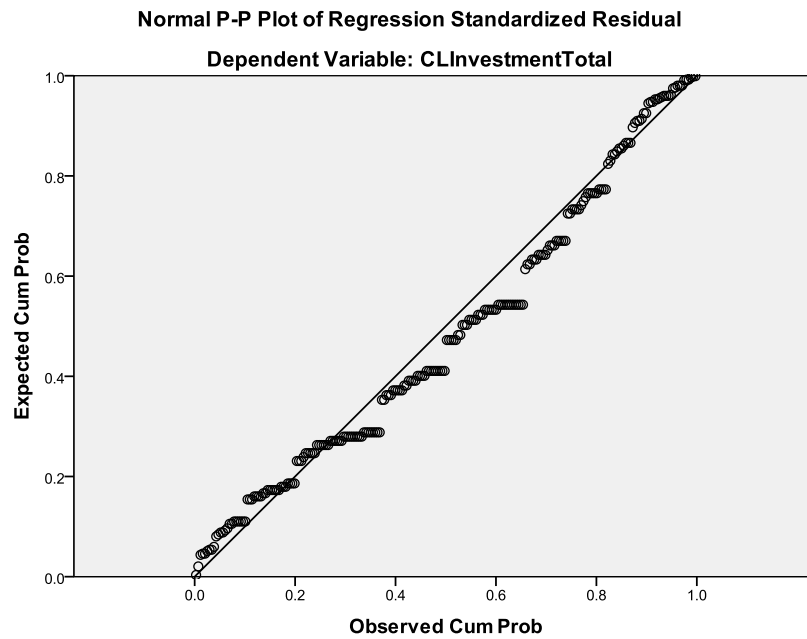


Figure AM3. Plot of the regression standardized residual error versus frequency.

Appendix (6-N)

Investigation of the effect of 'Religion' on the 'Investment Literacy' of Arab women

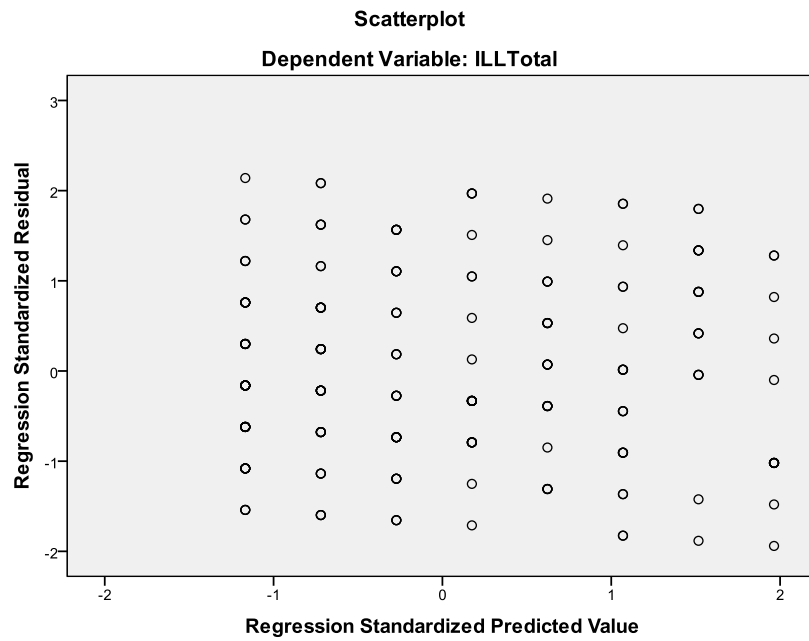


Figure AN1. Scatter plot of the relation between the 'Religion Effect' and 'Investment Literacy'

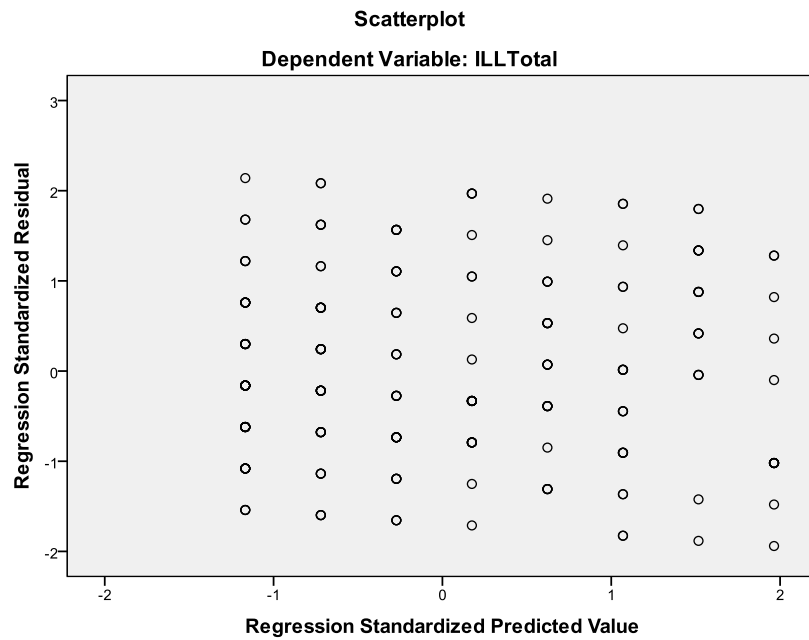


Figure AN2. A plot of *ZRESID against *ZPRED

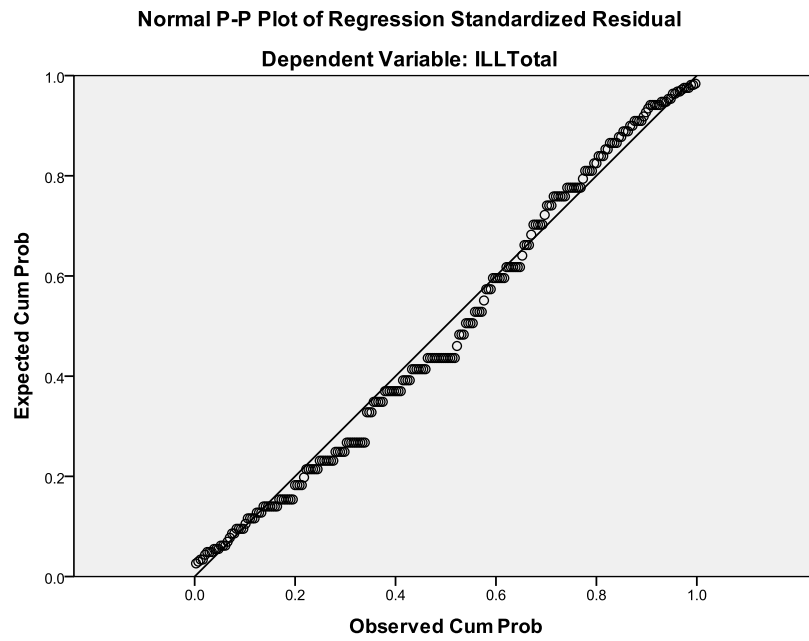


Figure AN3. Plot of the regression standardized residual error versus frequency.

Appendix (6-O)

Descriptive statistics for the study's Primary Sample (Men and Women)

Table AO1 Description of the study sample (Men and Women)							
Characteristic	Category	Men			Women		
		Frequency	Percentage		Frequency	Percentage	
			Valid	Cumulative		Valid	Cumulative
Country	Jordan	105	32.7	32.7	50	22.1	22.1
	KSA	216	67.3	100.0	176	77.9	100.0
	Total	321	100.0		226	100.0	
Preferred Language	Arabic	216	67.3	67.3	145	64.2	64.2
	English	105	32.7	100.0	81	35.8	100.0
	Total	321	100.0		226	100.0	
Age Group	18-24 Years	18	9.3	9.3	22	14.7	14.7
	25-34	78	40.4	49.7	58	38.7	53.3
	35-44	58	30.1	79.8	55	36.7	90.0
	45-54	18	9.3	89.1	12	8.0	98.0
	55-64	12	6.2	95.3	2	1.3	99.3
	65-74	8	4.1	99.5	1	.7	100.0
	≥ 75 Years	1	.5	100.0	0	0.0	100.0
	Total	193	100.0		150	100.0	
Marital Status	Single	101	31.5	31.5	101	44.7	44.7
	Married	211	65.7	97.2	105	46.5	91.2
	Divorced	9	2.8	100.0	16	7.1	98.2
	Widow	0	0.0	100.0	4	1.8	100.0
	Total	321	100.0		226	100.0	

Table AO1. (Continued)							
Characteristic	Category	Men			Women		
		Frequency	Percentage		Frequency	Percentage	
			Valid	Cumulative		Valid	Cumulative
Annual Income	< 20,000	73	22.7	22.7	79	35.1	35.1
	20,000-	73	22.7	45.5	70	31.1	66.2
	40,000-	89	27.7	73.2	46	20.4	86.7
	≥ 75,000	86	26.8	100.0	30	13.3	100.0
	Total	321	100.0		225	100.0	
Source of Wealth	Inherited	9	2.8	2.8	14	6.2	6.2
	Self-Made	250	77.9	80.7	101	44.7	50.9
	Provided by	13	4.0	84.7	37	16.4	67.3
	Inherited and Self-Made	22	6.9	91.6	18	8.0	75.2
	Provided by Family Member and Self-Made	18	5.6	97.2	22	9.7	85.0
	Inherited and Provided by Family Member	9	2.8	100.0	34	15.0	100.0
	Total	321	100.0		226	100.0	
Level of Education	High	17	5.3	5.3	8	3.5	3.5
	Diploma	26	8.1	13.4	6	2.7	6.2
	Bachelor's	181	56.4	69.8	116	51.3	57.5
	Master's	82	25.5	95.3	68	30.1	87.6
	Doctorate	15	4.7	100.0	28	12.4	100.0
	Total	321	100.0		226	100.0	

Table AO1. (Continued)							
Characteristic	Category	Men			Women		
		Frequency	Percentage		Frequency	Percentage	
			Valid	Cumulative		Valid	Cumulative
Field of Study	Business	72	22.4	22.4	57	25.2	25.2
	Finance/B	97	30.2	52.6	58	25.7	50.9
	Economics	18	5.6	58.3	8	3.5	54.4
	Medicine	11	3.4	61.7	8	3.5	58.0
	Law	8	2.5	64.2	10	4.4	62.4
	Engineerin	34	10.6	74.8	7	3.1	65.5
	Other	81	25.2	100.0	78	34.5	100.0
	Total	321	100.0		226	100.0	
Occupation	Private	145	45.2	45.2	77	34.1	34.1
	Public	77	24.0	69.2	51	22.6	56.6
	Business	23	7.2	76.3	6	2.7	59.3
	Entreprene	21	6.5	82.9	8	3.5	62.8
	Retired	22	6.9	89.7	7	3.1	65.9
	Unemploy	4	1.2	91.0	30	13.3	79.2
	Student	20	6.2	97.2	26	11.5	90.7
	Other	9	2.8	100.0	21	9.3	100.0
	Total	321	100.0		226	100.0	