# CHAPTER 1

# INTRODUCTION

## 1.1 Preface

Company performance measurement is a key element of the organisational management control system. Performance assessment helps the company and its stakeholders to identify deficiencies in its various activities and opportunities to improve future performance. An effective performance measurement system must include the basic performance indicators that measure the activities of the company from the perspectives of clients, management, analysts, users, and other parties interested in the organisation's performance (Dalvi & Baghi, 2014). In addition, good performance metrics help match the company's sub-goals with its strategic objectives, especially when the performance measurement system includes both accounting and financial measures (Villazón, Pinilla, Olaso, Gandarias, & Lacalle, 2020).

The objectives of corporate management include increasing shareholder wealth and evaluating economic and market performance. Accounting performance measures, which are based on accounting information and capital asset pricing model, are used to achieve those objectives (Malgwi & Dahiru, 2014). Financial performance metrics are beneficial as they offer a real perception on the operating, investing, and financing activities of an organisation. Evaluating and comparing the performance of these activities from time to time enables the management to make necessary decisions in an informed manner. Moreover, explaining the costs of transactions and maximising the use of resources enhance the company's realization of efficiency and effectiveness, two

attributes sought by investors (Panagopoulos, Atkin, & Sikora, 2017; Subramanyam & Wild, 2009).

The financial statements of a business enterprise serve two key functions. First, they minimise information asymmetry by transferring information of its activities to those outside of the company. Second, they improve contract efficiency by including financial statement information in contracts between the company and other parties. Financial statements provide data to assist in estimating the expected rate of return on investment (Revsine, Collins, Johnson, & Mittelstaedt, 2012, p.17).

Financial analysis is a tool for interpreting financial statements. It also provides information that helps in assessing the value of companies, evaluating their financial position, measuring the effectiveness and efficiency of their various activities. Companies make use of indicators to determine profitability, value, liquidity, and credit risk. Each item helps to determine the financial position during a certain period and the appropriate decisions to make when evaluating a firm's performance, predictability of future situations, governance of policies, and procedures conducted by its management (Gibson, 2009, p.179; Subramanyam & Wild, 2009, p.19).

The study distinguished the indicators into two components, i.e., accounting and market indicators. A review of past studies revealed numerous terminologies for financial and economic indicators (e.g., financial ratios, financial indicators, fundamental indicators, accounting indicators, market indicators). Alswalmeh and Qaqish (2021) described such indicators as financial ratios. Almomani (2016) categorized them into accounting, market, and economic indicators, while Al-Oshaibat and Al-Manaseer (2018) classified them into accounting and market indicators. In this study, the significance of classifying the indicators into accounting and market indicators is to explain the effects of indicators that reflect the operating activities of the

company (accounting indicators) and indicators that reflect the company's performance in the market (market indicators) on changes in stock prices and returns. This classification enables interested parties to identify the strengths and weaknesses of a company based on its internal factors or external financial market factors.

Accounting and market indicators are some of the most important fundamental elements of company performance analysis (e.g. profitability, solvency, credit risk, and valuation). They are used to identify the company's efficiency, risks, growth, and value. In addition, analysts have widely used these indicators as measures of a company's strengths and weaknesses in the financial markets. Financial markets is an intermediary that allow investors to diversify and optimize their investments. Investors look to increase their wealth by assessing and forecasting certain aspects of the firm using these indicators, which are based on information available in the market. These exercises enable them to make appropriate decisions in the financial markets (Chuang, 2011; Innocent, Mary, & Matthew, 2013; Panagopoulos, Atkin, & Sikora, 2017).

Financial markets around the world have witnessed a significant development in the measurement of company performance following Harry Markowitz's formulation of the formal portfolio selection model in 1952. This has also led to the emergence of several models to measure stock performance and its investment risks. Stocks are one of the most important instruments in global financial markets; they represent the companies, and their prices are fundamental in the valuation of companies. The performance of stock prices are determined by a range of factors, such as investor decisions. Accounting and market indicators are the primary guiding principles for these decisions (Erdugan, 2012; Zulaikha, Zaidi, & Tahir, 2019).

The current study measured firm performance by proxy of its stock performance in the financial market. Performance can be measured using many metrics (e.g., ROE,

ROA, and ROE), but financial market investors typically focus on stock prices and returns. Therefore, predicting firm performance through stock prices and returns enables investors to make sound investment decisions. In addition, investment risks are associated with the volatility of stock prices and returns. Incorporating stock volatility into the financial models enables investors to predict firm performance based on trading information instead of the firm's operational activities. This can enhance investors' ability to choose the best investment opportunities.

In addition, investor decisions are associated with volatility, that is, the rate of increase or decrease in stock prices for a given set of returns. Because stock volatility reflects the state of prices and returns, volatile conditions are an opportunity for investors to reassess and diversify their holdings. Moreover, volatility reflects the health of firms' returns in several ways. It gives investors the ability to decide whether to buy or sell stocks. Most importantly, when building a diversified portfolio, volatility provides a way to measure the relative risk across asset classes and markets (Chiang & Doong, 2001). However, the volatility is an important measure of the uncertainty of changes in asset prices and is used by market participants, traders, and observers. Investor appetite for volatility varies: some favour it, while others avoid it. The scaling rate of volatility indicates larger moves and changes in the asset's value. An asset with higher volatility is likely to make a large move up as it does down. This condition would also create a noticeable impact on performance (Al-Najjar, 2016; Alexander, 1998; Poon & Granger, 2003).

Previous studies have highlighted the relationships between stock performance, accounting and market indicators, and stock volatility. Dadrasmoghadam and Akbari (2015) found that debt ratio, current ratio, and return on assets have a significant effect on stock prices. In addition, return on equity is positively and significantly related to

stock prices. Din (2017) revealed that accounting and market indicators are significantly related to stock returns; some indicators, such as asset turnover ratio and earnings per share, negatively relate to stock returns. Recently, Tarmidi, Pramukty, and Akbar (2020) analyzed the effects of accounting and market indicators, including return on assets (ROA), net profit margin (NPM), and debt to equity ratio (DER), on stock prices before and after the publication of financial statements. The result showed that the effects of ROA and NPM on stock prices after publication are stronger than before publication, while the effect of DER is the opposite. These results suggest that financial ratios are still one of the most common benchmarks used by investors as the basis for their decisions.

Furthermore, past studies have also linked between stock volatility, accounting and market indicators, and firm performance. Christiansen, Schmeling, and Schrimpf (2012) predicted return volatility using financial indicators. They found that credit risk and funding liquidity are common predictors of volatility across asset classes. The variables also perform well as predictors of volatility, but performance varies across asset classes. Recently, Aharon and Yagil (2019) examined the volatility of stock returns as a function of the firm's financial leverage. The results showed that stock return volatility is positively related to the firm's financial leverage. Using market measures of financial leverage tends to generate a higher coefficient of determination and a more accurate approximation of the theoretical relationship between financial leverage and stock return volatility.

## 1.2 Problem Statement

The Amman Stock Exchange (ASE) is a small emerging market with a limited number of listed companies. In recent years, small trading volume and market capitalisation have become major issues challenging ASE. In December 2017, it experienced approximately 80, 60, and 80 percent decline in trade volume, traded shares, and average contract value. To illustrate, Figure 1.1 shows that the daily average trade volume in 2008 was JOD 78,559,212, while in 2017 was JOD 11,847,100. Traded shares in 2008 were JOD 21,059,115, while in 2017 was JOD 6,950,381.

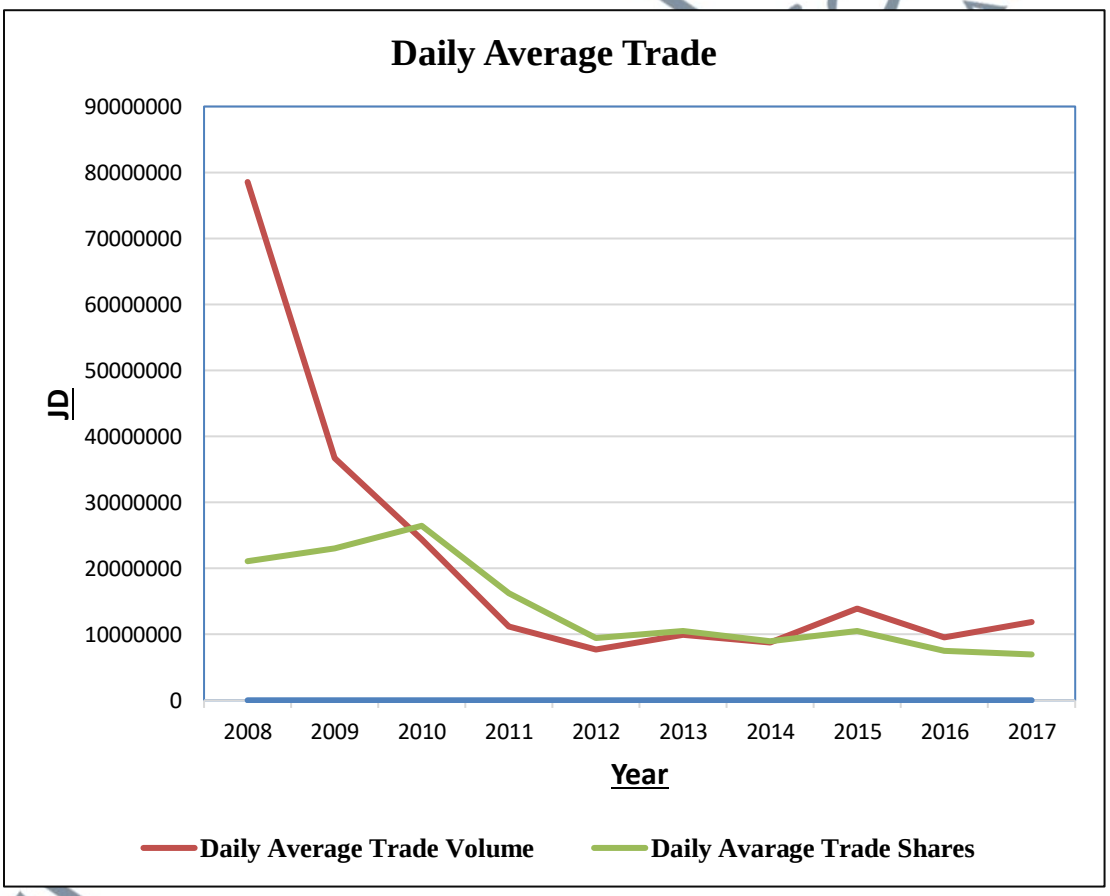


**Figure 1.1:** Daily Average Trade

As the Jordan Securities Commission (JSC) appears to be unable to solve these issues. Despite attempts to improve the trade volume of the ASE, the decline continues. In October 2018, trade volume declined by 89 percent to JOD 6,290,196; and traded shares declined by 73 percent to JOD 4,461,003. At the same time, the number of listed companies dropped from 230 to 190 (ASE).

The crises surrounding Jordan have a major influence on the operating activities of firms (internal factors). This is reflected in their accounting and market indicators. In addition, there is strong evidence of a gap between accounting indicators and firms' performance, as indicated by the financial position and their stocks in the market. Viorica & Yang (2013) revealed that the correlation between accounting and market indicators and stock prices and returns vary across industries and over time in both strength and direction. This gap reflects badly on the companies' image and performance, which in turn negatively affects their investment opportunities. Such a situation would lead to a decline in trading volume and stock prices and returns. Thus, the current verification of the effects of accounting and market indicators on stock prices and returns may motivate investors to invest in the market, which in turn could increase trading volume and market performance.

Since the last decade, significant steps have been taken to improve ASE performance. Such steps include the registration of ASE as a public shareholding company wholly owned by the government. Furthermore, to ensure the quality and reliability of the financial information, ASE suspends trading in the shares of companies that miss certain financial disclosure deadlines. Likewise, the top ten traded companies are published in the statistical bulletins to encourage investment and improve ASE performance (ASE). In addition, the ASE has focused its attention to disclosing

accounting and market indicators, which play an important role in determining the financial position of companies (ASE).

Towards this end, ASE has published important accounting and market indicators in the financial reports of the listed companies. Arkan (2016) showed that financial indicators that reflect company activities could enhance stock price predictability. Moreover, Mpofu (2012) found a strong, significant relationships between financial indicators and stock price, and that stock returns also tended to induce trading volumes.

Additionally, the importance of accounting and market indicators has emerged in many dimensions to examine company performance. The dimensions of firm characteristics and financial analyses used accounting and market indicators to predict stock prices and returns. The Z-score (MDA) dimension was used to develop a Z-score model to predict firm performance failure and distinguish between high- and low-performing companies. The firm characteristics dimension used accounting indicators (e.g., ROA, ROE, NPM, CR, DR, and TOA) to reflect the internal factors of the company. Financial analyses dimension used market indicators (e.g., MC, STR, EPS, BPS, PER, and PBV) to reflect financial market factors. The Z-score dimension discriminates between performing and underperforming companies using these indicators. If the ASE enforces disclosing these important indicators, investors and market users can conduct further investigations on the relationships between those indicators and corporate performance, allowing them to make more rational financial decisions. The following three paragraphs detail the research problems, reflected in three main questions.

Investors often rely on accounting and market indicators (i.e. ratios) to invest in the Amman Stock Exchange. These are publicly available in the financial statements and annual reports of the listed companies. Financial information strongly correlates

with returns after controlling for earnings innovations, firm size, and market value (Lev & Thiagarajan, 1993). Indeed, ASE investors cannot rely on indicators alone to make their decisions. The logical concerns of owners, investors, business partners, stakeholders, and creditors about the financial position of a company calls for appropriate assessment tools (Alireza, Parviz, & Mina, 2012). Predictive models that use financial ratios are one of the accepted tools, but they may not entirely meet investors' needs, since financial ratios may have weak predictive strength in the short-run and some predictive power in the long-run (Jiang & Lee, 2012). In addition, the predictive ability of the indicators on stock prices and returns seems to suffer from structural instability over time (Lettau & Van Nieuwerburgh, 2006). Fama and French (2002) found that the average return on equity was much higher than expected and continued to rise (at that time), while the financial ratios in the 1990s were low. Nonetheless, the efficient market hypothesis posits that an efficient financial market provides all investors with similar access to financial information at minimum cost (Matar, 2009). It also theorises that current stock prices and returns reflect all relevant information; prices and returns only change upon the emergence of new information (Gabriela, 2015; Silva, Neves, & Horta, 2016). Financial information, as provided by accounting disclosures, thus plays an important role in creating an efficient market, as investors and other decision makers rely on them to make informed decisions. Firms must provide and present information to help investors make their investment decisions. Al-Oshaibat & Al-Manaseer (2018) recommended that ASE investors must be perceptive of the feasibility and significance of these indicators.

The number of constituents of the Amman Stock Exchange General Index (ASE Index) is continually changing. Some of them are performing, while others are underperforming. However, since the trading volume of these companies is still low,

there is a lack of financial analysis techniques in determining the factors that discriminate between performing and underperforming ASE Index constituents. Because the performances of these companies differ, it is necessary to develop a Z-score model that can discriminate between performing and underperforming companies and rank them according to the discriminant function to get better investment opportunities. In addition, there is an urgent need to construct a robust ranking method to distinguish investment opportunities, which enable investors to improve investment decisions. This is especially true for constituents of the ASE index, which are considered as the main references of prices and returns information. Moreover, investors have the right to distinguish good investment opportunities from undesirable ones.

Investors can likely obtain the best information by minimising uncertainty. Research on the effects of financial indicators on stock prices and returns has been increasing over recent years. A number of studies have tried to theoretically and empirically determine the associations between the accounting and market indicators and stock prices and returns. The studies revealed that these indicators are essential for investors to make investment decisions. However, the extant literature is inconclusive about the associations between accounting and market indicators and stock prices and returns, as it implicitly assumes that they are direct. That is, the studies assumed the direct relationships between accounting and market indicators and stock prices and returns. These relationships were inconclusive due to the varying effects of accounting and market indicators on stock prices and returns across industries and time (Gonta and Yang, 2013; Asiri, 2015; Stefano, 2015; Islamoglu, 2015; Meriç, Kamisli, & Temizel, 2017; Kai & Abdrahman, 2018). An alternative view, one that has received little attention in the literature, is that these relationships can be explained better through the

mediation of other contextual variables, such as the stock price and return volatility. Accounting and market indicators can explain the volatility of both (Gautam, 2017; Oluseyi, 2015). Investors mainly found their decisions on these indicators, as the performance of firms is typically reflected in their stock prices and returns. Variations in the effects of accounting and market indicators on stock price and return are likely due to stock volatility. Verifying the mediation effect of stock volatility on the effects of accounting and market indicators can provide investors with new insights into the market. In turn, this can help them identify the most appropriate investment opportunities based on their risks. As an emerging stock market, the ASE is subject to higher risk and return, predictability, and volatility compared to other markets (Aljarayesh, Malahim, & Al-Abdallah, 2018). This perspective challenges the prevalent view of the literature that implies simple direct relationships between financial indicators and stock prices and returns. There are opposing and mixed evidences from prior studies that suggest that these relationships are, in fact, not direct. Rather, they appear to be mediated by other contextual variables, such as stock price and return volatility. In other words, the high (or low) volatility of stock prices and returns, rather than accounting and market indicators, may be the actual determinant of prices and returns (Handayani, Muharam, Mawardi, & Robiyanto, 2019). Clarifying this hypothesis would help investors make better investment decisions. This point has received little attention from scholars.

## 1.3 Research Questions

1. What are the effects of accounting and market indicators on stock price and stock return?
2. What are the accounting and market indicators that can discriminate and rank between performing and underperforming companies?
3. What is the mediating effect of stock price and return volatility on the relationships between accounting and market indicators and stock price and return?

## 1.4 Research Objectives

1. To investigate the effects of accounting and market indicators on stock price and stock return.
2. To identify the accounting and market indicators that can discriminate and rank between performing and underperforming companies.
3. To investigate the mediating effect of stock price and return volatility on the relationships between accounting and market indicators and stock price and return.

## 1.5 Research Significance

Several studies have measured firm performance on a large scale. They have tested the effects of numerous internal and external factors on firm performance. Performance measurement consists of measuring the efficiency of operational activities in achieving the main and strategic objectives of companies. It also measures the ability of management to invest resources and assets to generate the largest possible profits and increase shareholder wealth. Stock price and return are also among the most important indicators that reflect the efficiency of companies in the financial markets. They are essential for investors to identify high-performing firms and the best investment opportunities. Therefore, this study examined the effects of accounting and market indicators used by investors on firm performance in the financial market. In addition, the study identified the most important indicators that can distinguish between performing and underperforming companies. It also verified the mediating effects of stock price and return volatility on the relationships between accounting and market indicators and stock prices and returns. The results can assist investors to choose the most suitable investment opportunities according to their risks.

The current study differs from past research on firm performance in several aspects. First, it supported previous studies by investigating the relationships between accounting and market indicators and stock prices and returns. These tests provided more comprehensive results regarding the factors that affect stock prices and returns in the financial markets, including the companies' operating activities.

Second, the current study built on past empirical studies to assess and discriminate company performance using accounting and market indicators. The study contributes new empirical evidence to the literature by determining the important factors that affect stock performance using Z-score analysis. Moreover, the current study ranked the

sample companies based on their performance. The discriminant function was used to rank companies from best to worst performance. This is expected to help investors to identify the best investment opportunities in the market.

Third, the study verified the mediating effect of stock volatility on the relationships between accounting and market indicators and stock performance. This model is expected to extend future predictive models for company performance. The study first examined the mediation effect of stock price volatility on the relationships between the indicators and stock price. At the second iteration, it estimated the mediation effect of stock return volatility on the relationships between indicators and stock return. The results can assist investors to make investment decisions based on the investment risks associated with both stock prices and returns. In addition, the mediation models returned comprehensive findings on the relationships between accounting and market indicators and stock volatility. Therefore, investors and stakeholders can use these models to predict stock validity using indicators that reflect the performance of firms' operating activities. Additionally, they enable policymakers and market regulators to make rational decisions to enhance investment policies.

Fourth, the study contributes to the theoretical and practical knowledge with a systematic literature review that comprehensively documents the determinants of firm performance. It identified the main dimensions of firm performance determinants from the surveyed literature. This will help academics and other interested parties to gain insight into the factors that determine firm performance. Such a review provides a clearer picture to academics and analysts in economics and finance. This will subsequently help to enhance financial information published in financial statements and modernise accounting practices to improve its quality and transparency.

Furthermore, the study connects the fundamental analysis of financial statements, which are commonly applied in financial studies, with capital asset pricing theory, as well as adopting volatility, to accomplish the study's objectives. The study expands the existing techniques of financial statement analysis by examining additional variables. It also contributes new methodological knowledge to the literature by using stock volatility as a mediator, which was expected to explain the relationships between the research variables. The independent and dependent variables were identified from previous studies. The sample of the study was constituents of the ASE Index. They were chosen as they are the most traded companies in the market. The findings could further assist investors, managers, and traders to develop more effective investment strategies in ASE. ASE users would be able to evaluate performance and seek higher-performing companies. Distinguishing between best and worst performing companies will highlight investment opportunities in the most efficient companies. Analysing the performance of market instruments is the key to unlock investment opportunities and present a new analytical approach in evaluating company performance.

The contributions of this study seeks to explain the gap in the extant literature by examining the mediating effect of stock volatility on the relationships between accounting and market indicators and company performance. Furthermore, it adds to the understanding of current theories in the emerging market by studying a sample of ASE Index constituents and ranking their performances. These contributions made an urgent necessity to conduct such research. Much of the existing evidence is within the context of developed markets. Presenting evidence from less developed countries would further develop the existing theories of corporate performance and stock volatility, as conclusions from prior studies may not be readily applied or generalised to other organisations in different cultures (Elsayed & Wahba, 2013).

## 1.6 Scope of Research

This study employed empirical analyses to investigate the impacts of accounting and market indicators on company performance. In addition, the study used a specific measure to evaluate the mediation effect of stock volatility on the relationships between accounting and market indicators and performance. Furthermore, this study evaluated the performance of companies and discriminated them into two groups. Company performance was measured as stock price and stock return; for the discriminant analysis, it was measured with Jensen's alpha.

The study limited to accounting and market indicators, stock price, and return due to investors needed, investment instruments, and market conditions. Accounting and market indicators that can discriminate between performing and underperforming companies were identified. Drawing from the company stock price, return, performance measurement, and stock volatility of price and return, this study employed an integrated research framework within all variables. To accomplish the study objectives, the research framework will be practically tested to investigate the performance of ASE Index companies using multiple regression analysis, multiple discriminant analysis (MDA), and structural equation modelling (SEM).

The models adopted in this research may provide fellow academics the opportunity to develop other financial prediction models and financial analysis techniques that can be used by financial market users or applied to a different sample. In addition, the study provides investors and other stakeholders with a new technique to analyse the performance of companies in the financial market. Using the study's findings, investors could be more informed if they wish to invest in the stock market.

## 1.7 Operational Definitions

Table 1.1 lists the constructs and terms used in the study. They are namely price, return, expected return, beta (β), alpha (α), accounting indicators, market indicators, volatility, financial market, and investment.

**Table 1.1:** Keywords in the Study

| # | Keyword | Definition | Reference |
|---|---|---|---|
| **1** | **Price** | The current price that a share of stock is trading for on the market. | (Geiger & Kirch 1988; Shamsudin, Mansor, & Ismail, 2013) |
| **2** | **Return** | The sum of the price per share at the end of the year and cash gained over the year. | (Strong 2008, p. 30; Allozi & Obeidat, 2016) |
| **3** | **Expected Return** | Expected return is the probability weighted average of the rate of return in each cycle. The interval of the "cycle" may differ according to different market conditions | (Geiger & Kirch, 1988; Shams & Rezvani, 2015; Narayan & Reddy, 2018) |
| **4** | **Beta ($\beta$)** | Reflects the sensitivity of securities in the stock index | (Reilly & Wright, 1988; Mossin, 1966; Lintner, 1965) |
| **5** | **Alpha ($\alpha$)** | The difference between the required and realized rated of return for a given amount of risk | Reilly & Brown (2012, p. 967; Jensen, 1968) |
| **6** | **Accounting Indicators** | Indicators that determine the ability of the company to generate earnings and evaluates its ability to meet obligations | Gibson, 2009, p. 297 & Subramanyam & Wild (2009, p. 36) |
| **7** | **Market Indicators** | Indicators that determine the estimation of intrinsic value of a company stock and product of current share price with the number of shares outstanding. | Subramanyam & Wild (2009, p. 36) & Olson (2005) |
| **8** | **Volatility** | The rate at which a stock price increases or decreases for a given set of returns | Poon & Granger, 2003 |
| **9** | **Financial Market** | The system of forming supply and demand for stocks and investment sources | Adambekova & Andekina, 2013 |
| **10** | **Investment** | The commitment of funds for a certain period to derive future returns as compensation for the time taken to commit funds. | Reilly & Brown (2012, p. 4)<br>Moss & Lux (2014) |

## 1.8 Organisation of the Thesis

The first chapter has presented the research introduction, problem, objectives, and significance. The subsequent chapters of the thesis are organized as follows.

Chapter 2 presents the overview of Jordanian economic and Amman Stock Exchange. Lastly, the chapter highlighted the current issues in ASE.

Chapter 3 discusses the basic theories of performance, namely the theories of investment in financial markets and financial analysis techniques. The subsequent parts of the chapter include the systematic review of major studies on company performance from 2008 to 2018. The 11-year review primarily focuses on financial analyses, Z-score analysis, and studies related to stock volatility. The explanatory variables of the study and hypotheses have been developed. The proposed research framework has also been presented.

Chapter 4 deals with the researcher's philosophical stance and research design. The study employed the quantitative method, and the data were collected from the financial market and annual reports. In addition, this chapter clarifies the methodology and methods: sampling, variables and their measurements, and analysis techniques.

Chapter 5 presents the findings of the study. It begins with descriptive analysis, followed by the results of regression, MDA, and mediation analysis. In addition, the discussions in this chapter are organised to answer the research questions and to test the formulated hypotheses.

Chapter 6 presents the key contributions, conclusions, and implications of the study. The discussion in this chapter clarifies the significant determinants and discriminants of company performance. In addition, it explains the recommendations and limitations of the study and suggests the direction of future research.