CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 Introduction

The aim of this research is to examine the effects of accounting and market indicators on the performance of ASE Index companies in 2008-2018. The research intends to accomplish three major objectives. Firstly, to investigate the effects of accounting and market indicators on stock price and stock return. Secondly, to identify the accounting and market indicators that can discriminate and rank between performing and underperforming companies of ASE Index in 2018 according to the discriminant score. Thirdly, to investigate the mediating effect of stock price and return volatility on the relationships between accounting and market indicators and stock price and return.

The previous chapters have presented the research introduction, problem, and theoretical background of the study. Prior studies have also been surveyed. The chapters have also explained the data and methodology and analysed the findings. In this chapter, the key contributions, most important results, and implications of the research are compiled and discussed. Finally, recommendations, limitations, and summary of the research will also be presented.

6.2 Key Contributions

Apart from the major contributions listed in the beginning of the research, this research has also contributed to many other aspects. These are listed in the following subsections.

6.2.1 Expanding Investors' Financial Decision in a New Context

This thesis contributes to the existing theoretical and practical knowledge by proposing stock price, returns, volatility, and performance measurement models that combine those previously developed by several scholars. Additionally, the thesis provides a new contextual benchmark for company performance in Jordan. All of this will give investors and market users a greater possibility to make rational decisions.

6.2.2 Performance Scale for Index Constituents

This study has successfully developed a measurement scale to measure the performance of constituents of the Amman Stock Exchange General Index. The developed scale can be attributed to several studies that have attempted to measure company performance using Z-score (Altman 1968; Altman, Haldeman, & Narayanan 1977; Ederington 1986; Ederington, Yawitz, & Roberts 1987; and recently Mohd Dali et al., 2008). The Z-score scale measures company performance using financial indicators. The results of this study indicate that the "performing companies" group has a different perception of performance, as shown by the computed Z-score. This is the first study to use accounting and market indicators to discriminate between performing and under-performing ASE Index companies. With the introduction of the new context, market users could use the technique on different indices or companies to make appropriate financial decisions.

6.2.3 Investigate of Two New Models

The findings from this study contribute to the current literature. This thesis has succeeded in investigating two new models. Firstly, the mediation effect of stock price volatility on the relationships between accounting and market indicators and stock price. Secondly, the mediation effect of stock return volatility on the relationships between accounting and market indicators and stock return. The models can be used separately or together; they can forecast company performance and identify the best investment opportunity.

Findings for the stock volatility support Aljarayesh et al. (2018), Ahmad et al. (2016), Handayani et al. (2015), and Tan and Floros (2012), who suggest that stock volatility has significant causal relation with company performance. The study has gone some way towards enhancing the understanding on stock volatility. This study concludes that the stock volatility of price and returns are not interdependent and could be measured separately. It is also interesting to point out that the mediation effect of price volatility differs from the mediation effect of return volatility. The results proved that the mediation effects of return volatility on the relationships between financial indicators and returns have a different direction than the mediation effects of price volatility. There are also important mediating relationships for return volatility that were not significant for price volatility. This models is expected to extend future predictive models for company performance.

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.

6.2.4 Integrated Forecasting of Indicators

This is the first time that regression, discriminant, and mediation analyses have been used together to explore significant indicators. This study has successfully integrated three different models to assess different aspects of company performance: regressing on stock price and return, identifying which indicators can discriminate between higher and lower performing companies, and examining the mediating effect of stock volatility. The integration of these models is one of the novel contributions to the body of knowledge and to the performance forecasting technique of constituents of the Amman Stock Exchange General Index. The most important indicators of performance have also been identified through the models used in the study.

6.2.5 Relationships between Stock Volatility and Indicators

This research extends the knowledge on the relationships between stock volatility and accounting and market indicators. The stock volatility mediation analysis shows the significant effects of some indicators and non-significant relationships of other indicators on stock volatility. Accordingly, there are significant contributions that can be derived from the findings.

The empirical findings in this study provide a new understanding on the accounting and market indicators that have a significant impact on stock price, stock return, and the volatility of stock price and return. Furthermore, the evidences from this study suggest a new direction of company performance measurement through the relationships between accounting and market indicators and stock volatility. Indeed, the

differences in investors' behavior to invest in certain opportunities may be influenced by the accounting and market indicators, which represent the performance of internal company activities.

As for market investors, there are some accounting and market indicators that were found to be relevant in determining the volatility of company stock. In addition, the findings of this study suggest that the relationships between return volatility and accounting and market indicators are stronger than the relationships between price volatility and accounting and market indicators. This may guide investors to focus more attention on stock return, rather than stock prices, of the Amman Stock Exchange.

6.3 Summary and Implications

The analysis estimations tested the research hypotheses, answered the research questions, and accomplished the three research objectives. To conclude all research findings, the following sections present a summary and implications for each research objective.

6.3.1 Effects of Accounting and Market Indicators

Several regression analyses, namely pooled OLS and random and fixed effects GLS models, have been employed to test the effects of accounting and market indicators towards company performance. In the first, company performance was measured using stock price, while in the second with stock return. The pooled (OLS) regression model assumes that all of the sample companies were identical, but this was not true. The fixed and random effects GLS estimators were therefore utilised. The best model was determined using the Hausman test. The findings suggested that the random effects model was more appropriate for both stock price and stock return estimations. In

addition, the Breuch-Pagan test indicated that the heteroskedasticity problem was found in the stock price model. To correct this issue, the random effects panel FGLS model was used to estimate the parameters, assuming a heteroskedastic and correlated error structure. Nonetheless, even after the correction test, the findings of all models were not significantly different from each other. Accordingly, the stability of results supported and validated the constructed model. The results of each regression model can be summarised as follows.

First, the stock price model showed that EPS had the highest significantly positive effect on stock price. Additionally, ROA, MC, STR, and BPS significantly and positively affected stock price. TOA was a significantly negative determinant of stock price, whereas DR had a marginally significant and positive impact on stock price. CR, NPM, ROE, PER, and PBV did not show any significant impact on stock price. Furthermore, the model fit was significant, and it explained 78.3 percent of the variance in the sample's stock price. Accordingly, the study concludes the robust validity and applicability of the accounting and market indicators on ASE Index companies over the sample period. Investors can utilise this model to predict the stock price in Jordan. These results are congruent with Susilawati and Suryaningsih (2020), Tarmidi, Pramukty, and Akbar (2020), Ligocká and Stavárek (2019), Haryanti and Murtiasih (2019), Al-oshaibat and Al-manaseer (2018), Arkan (2016), Al-Qudah, Alsharari, Al-Rjoub, and Haddad (2013), and Clemente, Taffarel, and Silva (2012), all of whom suggested that the variance in stock price can be explained by accounting and market indicators and financial ratios.

Second, the stock return model showed that TOA had the highest significantly positive effect on stock return. ROA, EPS, STR, and PBV also had significant positive impact on stock return. In addition, DR had a significantly negative impact on stock

return, while the effect of BPS was marginally negative. On the other hand, MC, ROE, NPM, CR, and PER did not affect stock return. The model fit was significant, explaining 5.65 percent of variance in stock return. Accordingly, the study concludes the weak validity and applicability of the financial indicators on ASE Index companies over the sample period. However, investors could still use this model to predict stock return in Jordan. These results are consistent with Allozi and Obeidat (2016), Afrino and Masdupi (2019), Kai and Abdrahman (2018), Musallam (2018), Din (2017), Stefano (2015), Asiri (2015), Erdoğan, Erdoğan, and Ömürbek (2015), Jiang & Lee (2012), and Alireza et al. (2012), who suggested that the variance in stock return can be explained by accounting and market indicators and financial ratios.

The investigations of the effects of accounting and market indicators could help investors and portfolio managers to identify the indicators that affect stock prices and returns of ASE Index companies. Investors may consider the significantly positive accounting and market indicators as factors that influence the companies' stock prices and returns. Therefore, in making investment decisions in the ASE, investors could refer to those accounting and market indicators. Such action may reduce their risk exposure and maximise the capital gain from the investment (Kai & Abdrahman, 2018).

As the vision of most listed companies is to maximise shareholder wealth, and that stock prices and returns correlate with accounting and market indicators, managers should design and review strategies to improve their company's financial performance to produce better financial indicators. Better financial indicators will ultimately lead to better stock prices and returns, which will in turn create value for shareholders. Therefore, this study provides a brief idea for financial managers regarding the extent to which their companies' stock prices and returns are influenced by the movements of accounting and market indicators. Furthermore, it is suggested that they utilise the

findings of this study as a preliminary idea to draw out a business plan to improve their companies' performance. This will allow the company to improve their stock prices and returns.

The correlation between accounting and market indicators and stock prices and returns will serve as a reference to assist financial market regulators to audit price transparency. Regulators may review those companies whose stock prices and returns have risen or fallen greater than the movements of accounting and market indicators to assess the sustainability of their operations.

6.3.2 Discriminate of Companies

This section presents the conclusions and recommendations of the Z-score model. It aims to identify the indicators that could discriminate between performing and underperforming companies and to rank them. Jensen's alpha and multiple discriminate analyses were employed to accomplish this objective. Monthly share price data were collected from ASE's website to determine the Jensen's alpha for the 63 sample companies. Likewise, relevant indicators were also collected from the annual reports of those companies. A total of 12 indicators were used for this research.

Out of the 12 indicators, only three indicators significantly discriminated between performing and underperforming companies: STR, EPS, and TOA. This finding showed the efficiency of using accounting and market indicators to evaluate the performance of ASE Index companies. These findings are similar to those of Mohd Dali et al. (2008), which states that inventory turnover and credit turnover/day could discriminate between performing and non-performing Shariah compliant plantation companies. In this research, STR, EPS, and TOA were found to be significant discriminators between performing and underperforming companies in the ASE Index.

This section introduces a simple model using multivariate analysis. The uniqueness of this approach is that it does not depend on a single variable. Another aspect that should be considered is model accuracy. The model was fairly accurate, as the three determinants of STR, EPS, and TOA were able to correctly classify 76.2 percent of the original grouped cases. Finally, the findings identified indicators that investors can use to discriminate between performing and underperforming companies in the ASE.

The discriminate of companies study could be duplicated and expanded using comprehensive data from companies of different industries and sectors listed on the ASE or other emerging markets. In addition, applying the study to developed markets may provide an opportunity to expand and generalise the results, as well as building new knowledge on company performance in financial markets. The companies listed on the Amman Stock Exchange could also be ranked annually based on their performance measured using the method employed in this research. Furthermore, the findings were able to determine the indicators that can discriminate between performing and underperforming companies. Investors and traders could focus more on these indicators when making investments decisions in the Amman Stock Exchange.

6.3.3 Mediating Effect of Stock Volatility

The study used the GARCH and ARCH models to measure the volatility of stock prices and returns. The results showed that there was a significant difference in stock price and return volatility from a company to another. The results also showed that some companies were less or more volatile than the market. The difference in volatility across companies reflects the different performance of their stocks in the ASE. This indicates that there were companies with high and low performance. The findings will afford

investors better choices when investing their funds in ASE-listed companies. There is a difference in investors' willingness to invest in high risk investments. With these results, the investors may have a better chance to make investment decisions that suit their preferences when investing in the ASE. In addition, these results will provide analysts of ASE the opportunity to build GARCH and ARCH models to measure volatility.

The study also used the GARCH coefficient to investigate the mediating effect of stock price and stock return volatility on the impact of accounting and market indicators towards stock prices and returns. Two mediation models were employed in this study to accomplish this objective. A set of techniques were used to verify the models' goodness-of-fit. The results of each mediation model can be summarised as follows.

First, the results showed that stock price volatility (PV) fully and positively mediated the effect of STR on stock price. Specifically, the findings demonstrated that STR affected PV positively, which in turn affected stock price positively. In addition, the findings showed that PV partially and positively mediated the effects of ROA, MC, and EPS on stock price. Similarly, ROA, MC, and EPS affected PV positively, which in turn affected stock price positively. In contrast, the results showed that PV had no mediating effect on the predictions of ROE, NPM, CR, DR, TOA, BPS, PER, and PBV on stock price. Nevertheless, the results demonstrated that high (or low) PV, and other significant indicators, could explain the variance in stock price. These conclusions would allow one to make better investment decisions.

Second, the results showed that stock return volatility (RV) fully and positively mediated the effects of MC and STR on stock return. The findings demonstrated that both variables affected RV positively, which in turn affected stock return positively. In addition, the findings showed that RV fully and negatively mediated the effects of DR,

TOA, BPS, and PER on stock return. Meanwhile, RV partially and negatively mediated the effects of ROA and EPS on stock return. The effects of these indicators on RV were negative, and RV produced a negative mediation effect on stock return. The results also showed that RV had no mediation effect on the relationships between ROE, NPM, CR, and PBV and stock return. Nevertheless, the results demonstrated that high (or low) RV, and other significant indicators, could explain the variance in stock return. These conclusions would allow one to make better investment decisions.

The volatility of stock prices and return plays an important mediating role to explain the effects of certain accounting and market indicators on stock price and return. To the best of the researcher's knowledge, this study is the first to provide empirical evidence on the mediating effect of stock volatility on the relationships between accounting and market indicators and company performance. Moreover, the research contributes to the literature by providing empirical evidence from the emerging market of ASE, as much of existing research comes from more developed markets.

The findings offer certain implications for practitioners and academic researchers. For practitioners, if it is true that investors are interested in stock volatility, then managers should be able to improve their firms' attractiveness to investors by justifying the stock volatility of their companies in the form of earnings. This is indeed of great importance, as the absence of such justifications would drive investors away from their firms, further reducing their performance and attractiveness.

For academic researchers, these findings may open new directions for future research. Identical investigations on the mediating effect of stock volatility on the relationships between accounting and market indicators and company performance can be replicated in other developing and developed markets. This is important because the results may be context-specific, as firm performance and its determinants would vary

according to the social, politic, and economic conditions of a country. These studies could contribute to better understanding on the determinants of company performance. Such cross-country studies could produce possible applicable alternatives that can encourage investors to take on more risk.

Furthermore, the sample consisted of companies that constitute the ASE Index. Investors' perception of volatility may differ from one sector to another. Studying the effect of investors' appetite for stock volatility towards company performance could be another promising area for future research. In fact, this is an important issue, as some investors may be willing to invest in certain industries due to their associated (volatile) risks. In addition, traders and analysts may develop standard forms of financial analysis to improve trading activities. They can utilise GARCH and ARCH models as financial analysis tools to help make investment decisions. Future studies may also examine how the relationships between accounting and market indicators and company performance varies are mediated by other variables, such as trading volume movement.

6.4 Recommendations

According to the results found, the study recommends the policy-makers, investors, and academic community as follows:

6.4.1 Policy-Makers

The companies listed on the ASE should consider the effects of disclosing accounting and market indicators on the investment decisions of investors. In addition, firms should periodically disclose all data to investors to ensure transparency in the market. In the ASE, for instance, firms could disclose their accounting and market indicators on a quarterly basis. This will produce more accurate results when predicting performance using accounting and market indicators. Moreover, investors' future valuations of a firm's profit distribution policy may be influenced by the investors' preferences. Therefore, it is necessary to consider investors' preferences in dividend distribution, which will affect stock prices and returns. Finally, financial markets present stock volatility information as the standard deviation of stock prices. The development of new GARCH models in financial markets may enhance the prediction of stock price volatility.

6.4.2 Investors

Investors should be more cognisant of the importance and feasibility of the accounting and market indicators. Referring to the accounting and market indicators as factors that identify the companies' stock prices and returns and distinguish between companies. Such action may reduce their risk exposure and maximise the capital gain from the investment. In addition, investors and traders should focus more on the indicators that discriminated between performing and underperforming companies

when making investments decisions. Moreover, investors should adopt the stock volatility to get a better chance in making investment decisions that suit their preferences when investing in the ASE.

6.4.3 Academic Community

Accounting and market indicators are primarily numbers that reflect the performance of company activities. The researcher notes the lack of studies regarding the issue of accounting and market indicators in the ASE. Therefore, studies by academics to develop standard models using accounting and market indicators will enhance the predictability of company performance. In addition, they may use GARCH models to examine the mediation effect of stock volatility on various important economic variables to assist analysts, investors, and managers. Identical investigations on the mediating effect of stock volatility on the relationships between indicators and company performance should be replicated in other developing and developed markets. Academics may also examine how the relationships between accounting and market indicators and company performance varies are mediated by other variables, such as trading volume movement.

6.5 Limitations

Every study faces limitations; they should be improved by future studies. The sample for this study was only limited to companies constituting the ASE Index. The Index comprises 100 companies, but the study only included 63 companies due to the lack of data, such as stock price and indicators, for the other 37 firms. Future studies should replicate the study on other sectors in the ASE, such as the financial, industrial, service, and tourism sectors, and in other emerging and developed markets. By doing so, the robustness and generalisability of the findings can be enhanced.

In addition, this study only examined the effects of certain indicators because not all indicators are available in the Amman Stock Exchange. Future studies may use other indicators to determine their effects on stock prices and returns, while at the same time investigating the mediation effect of stock price and return volatility. The findings will contribute new knowledge to the literature concerning firm performance and its determinants.

6.6 Conclusion

The concerns of owners, investors, business partners, stakeholders, and creditors about the financial position of companies lead to the demand for an appropriate performance assessment tool. Most often, they rely on accounting and market indicators, which are publicly available in financial statements. The predictive relationships between financial indicators and stock prices and returns seem to suffer from structural instability over time.

The efficient market hypothesis posits that the financial market provides all investors with similar access to financial information. There is an interaction between financial information and decision makers. Investors must be provided with information to help them make informed investment decisions. In ASE, there is a lack of financial analysis techniques to determine the indicators that discriminate between performing and underperforming companies. This creates the necessity to develop a Z-score model that can discriminate and rank ASE companies according to their performance. Furthermore, there is a possibility that investors can obtain better information by reducing uncertainty.

A number of studies have attempted to investigate the association between financial indicators and stock prices and returns, but the results have been inconclusive. The reason for this may be the implicit assumption of those studies that this relationship is direct. However, this relationship could perhaps be mediated by other contextual variables, such as the volatility of stock price and return. In light of this issue, the present research aims to: 1) investigate the impact of accounting and market indicators on stock price and return; 2) evaluate company performance and distinguish companies into performing and underperforming; and 3) investigate the mediating effect of stock volatility on the impact of accounting and market indicators towards stock price and

return. To achieve these objectives, the study analysed panel data of 63 companies for 2008-2018 using OLS and GLS regressions, as well as MDA and SEM. The contributions of research are: 1) financial market users would be able to evaluate firm performance and seek high performing companies; 2) investigation of a new model that can benefit investors and analysts to predict future company performance and stock volatility; 3) helping to enhance financial statement information and modernise accounting practices to improve its quality and transparency; and 4) connecting the theories of financial statement analysis and capital asset pricing theory. The findings also present new evidences:

1) Significant and positive effects of EPS, ROA, MC, STR, and BPS on stock price; TOA had a significantly negative impact on stock price.
2) Significant and positive impact of TOA, ROA, EPS, STR, and PBV on stock return. DR had a significantly negative impact on stock return.
3) STR, EPS, and TOA significantly discriminated performing and underperforming companies.
4) PV fully and positively mediated the effect of STR on stock price and partially and positively mediated the effects of ROA, MC, and EPS on stock price.
5) RV fully and positively mediated the effects of MC and STR on stock return. It also fully and negatively mediated the impact of DR, TOA, BPS, and PER on stock return. Additionally, RV partially and negatively mediated the effects of ROA and EPS on stock return.

The results were robust despite the use of different estimation methods and analysis techniques. The findings allow a deeper understanding on the accounting and market indicators that strongly predict company performance. Indeed, they support the

argument that financial indicators, as the main sources of financial information, are reflect in firm performance. These findings will further permit more comprehensive theoretical and analytical understanding to assist scholars and policymakers to design methods to evaluate current and future firm performance. Therefore, the results of this study are expected to provide an informative guideline to financial policymakers in designing appropriate evaluation models and investors in making appropriate financial decisions.

Future studies may consider replicating the analysis in developed and emerging markets. The study is limited to companies constituting the ASE Index, producing clear results for ASE companies. But to ensure the robustness of the findings, future research should consider expanding this study in other emerging and developed markets.