The effectiveness of technical strategies in Malaysian Sharīʿah vs conventional stocks

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Abstract

Purpose – This study aims to investigate Malaysian stock market efficiency from the view of Sharīʿah-compliant and conventional stocks based on the effectiveness of technical trading strategies.

Design/methodology/approach – This study uses unconventional trading strategies that mix buy recommendations of Bursa Malaysia analysts with sell signals generated from 10 selected technical trading strategies (simple moving average, moving average envelopes, Bollinger Bands, momentum, commodity channel index, relative strength index, stochastic, Williams percentage range, moving average convergence divergence oscillator and shooting star) that are detected using ChartNexus. The period from 1 January 2013 until 31 December 2015 produces a total sample consisting of 1,265 buy recommendations of 125 Sharīʿah-compliant stocks and 400 buy recommendations of conventional stocks. The study period is extended until 31 March 2016 to provide an ample time for detecting the sell signal especially for buy recommendations that are released towards the end of 2015.

Findings – The resulting Jensen's alpha show 8 out of 10 strategies are effective in generating abnormal returns in Sharīʿah-compliant samples while only 3 out of 10 strategies are effective in conventional samples. Prominent effectiveness of technical trading strategies in Sharīʿah-compliant stocks implies clear inefficiency in that stock market segment as opposed to those of the conventional stocks.

Originality/value – The results based on unconventional trading strategies provide new insights of Malaysian stock market efficiency especially in Sharīʿah-compliant and conventional stocks. The paper provides more robust findings on market efficiency as firms' equity level data were focussed together with analysts' buy recommendations from Bursa Malaysia.

Keywords Jensen's alpha, Sharīʿah-compliant stocks, Stock market efficiency, Technical trading strategies

Paper type Research paper

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Introduction

The Islamic capital market (ICM) has shown tremendous growth in recent years, partially because of the increasing wealth of oil-exporting countries, particularly in the Middle East where the population is predominantly Muslim. Banking and financial institutions such as Kuwait Finance House Research (2013) also contributed towards the growth and development of the Islamic finance industry. They support the government's efforts to develop Islamic financial markets and to quell investors' concerns regarding unethical and irresponsible elements in conventional businesses and financial products. Similarly, instability of the conventional equity market has also been acknowledged as one of the driving factors that has contributed towards the growth and development of the Islamic equity market as the latter is being more widely recognised as the alternative to the conventional equity market. As claimed by Siddiqi (2009), financial crises are mainly caused by speculation and gambling, excessive leverage, credit crunches and complicated financial products. Most of these are elements that are allowed in a conventional system but prohibited by the Sharīʿah (Islamic law) principles. Conventional equity markets that are primarily profit-driven typically ignore the moral perspective, creating opportunities for exploitation and corruption to occur. In recent years, the development of the Islamic equity market is no longer just limited to Muslim-dominated countries such as Malaysia, Indonesia, Iran, Saudi Arabia and the United Arab Emirates. In developed markets where Muslims are in the minority such as Europe, the UK, the USA, Japan and Canada, there has been a noticeable development in Islamic equity markets.

The widespread attention on ICM has attracted the interest and attention of many researchers in conducting studies to establish evidence on its viability and performance relative to its conventional counterparts. In some cases, these studies have strongly argued that Muslim investors are prone to limited benefits associated with portfolio diversification given that the Sharīʿah screening process will reduce the number of component stock choices in the formulation of portfolios (Bauer *et al.*, 2005; Hayat and Kraeussl, 2011). In support of this proposition, Ho *et al.* (2014) reported that the size of the investment pools of Islamic indexes is marginally smaller compared to their conventional indexes. Charles *et al.* (2015) have argued that because Islamic indexes are subjected to less diversification as they predominantly focus on particular sectors, they have a significantly higher risk. Likewise, Saiti *et al.* (2014) and Saiti and Noordin (2018) found that Islamic stock indexes do not provide the extra benefit of diversification in comparison to their conventional counterparts. In a similar vein, Albaity and Ahmad (2008) claimed that conventional equity indexes are less risky in comparison to their Islamic counterparts given fewer diversifications. A study by Abbes and Trichilli (2015) pointed out that Sharīʿah-compliant stocks potentially afford certain diversification benefits. Nonetheless, Ali *et al.* (2019) found that while five trading partners of Saudi Arabia could offer portfolio diversification benefits for the Saudi Arabian Islamic equity market (measured by Sharīʿah indexes for each market), the benefits are only realised in the short term. An exception is for the Indian Islamic equity markets, which show diversification benefits in both the short and long term.

A strand of studies (Girard and Hassan, 2008; Ajmi *et al.*, 2014) on these market segments focus on their characteristics to reveal the cause of their differences. Those studies found the Sharīʿah-compliant indexes are asset-based, asset-driven, growth and small capitalisation-oriented stocks; whereas the conventional stock indexes are interest-based, debt-driven, value and mid-capitalisation focussed. Ben Rejeb and Arfaoui (2016) argued that the specific characteristics of each market might potentially cause different efficiency levels in the market. The present study opines that a sound understanding regarding the behaviour of Sharīʿah-compliant and conventional securities is essential to provide investors with clear

guidance on their investment decisions. This is especially so given the difference in the behaviour of stock segments, which may have various implications for investors.

Studies examining the efficiency level between conventional and Sharīʿah-compliant securities remain limited in the context of the Malaysian market as most studies have instead concentrated on foreign markets. That is despite the widespread recognition that this market operates as a dual system. Therefore, this study aims to close the gap found in the research in this area by investigating the efficiency of these segments based on the effectiveness of technical trading strategies in Sharīʿah-compliant vs conventional stocks in the context of the Malaysian market. This will be undertaken by examining the effectiveness of 10 selected technical trading strategies in generating abnormal returns on 1,665 buy recommendations (1,265 for Sharīʿah-compliant and 400 for conventional stocks).

Compared to other Muslim countries, Malaysia posits a unique characteristic given it has been recognised to operate a dual financial system. The conventional financial system in the Malaysian market was initially developed following the Western colonialism era. The Islamic finance industry in Malaysia only began to operate during the early 1980s when the Islamic Banking Act 1983 and the *Takaful* Act 1984 were initially drafted with the establishment of Bank Islam Malaysia Berhad (BIMB) in 1983. Then, during the 1990s, the ICM realised significant growth when shell MDS issued the first corporate *ṣukūk* (Islamic bond). This was next followed by the first Sharīʿah-compliant equity unit trust fund, which was established in 1993. In 1994, BIMB securities was established as the first full-fledged Islamic stockbroking company, and in 1996, securities commission Malaysia (SC) approved the listing of Islamic securities in Bursa Malaysia together with the introduction of Sharīʿah-approved securities. Indeed, this promoted the ICM as being a better alternative compared to the conventional capital market.

In its 2019 annual report, the SC reported that the Malaysian ICM has grown to RM 2.04tn, an increase of 8.23% from RM 1.88tn in the previous year. Meanwhile, the market capitalisation of the Sharīʿah-compliant equity market reached RM 1.1tn in 2019, representing approximately 64% of the total market capitalisation of Malaysian securities. Since 2013, when the revised Sharīʿah screening criteria were introduced, the majority of the stocks listed on Bursa Malaysia (around 75%) are certified Sharīʿah-compliant by the Sharīʿah Advisory Council (SAC) of the SC.

According to Al-Khazali *et al.* (2016), Islamic investing is a form of ethical investing as it excludes unethical business activities by taking into account the religious perspective in investment decision-making. More specifically, Al-Khazali *et al.* (2014) asserted that because religious beliefs guide Islamic investing, Sharīʿah-compliant investment can be considered as socially responsible and ethical investment. Sharīʿah-compliant investment is subjected to five main principles, which include no *ribā* (interest), no *gharar* (excessive uncertainty), no *maysir* (speculation), profit-and-loss sharing and also the prohibition of involvement in industries considered to be *ḥarām* (Islamically unlawful) such as the consumption of alcohol, pork-related products, gambling, prohibited entertainment, military equipment and/or weapons (Abdul-Rahim *et al.*, 2019). In actual practise, the screening process of securities is evaluated using two approaches, namely, qualitative and quantitative. In Malaysia, listed securities that do not comply with the principles of Sharīʿah are excluded from the Sharīʿah-compliant securities list published by the SC through their SAC on a bi-yearly basis (May and November).

The remainder of this article proceeds by reviewing the relevant literature in this field, followed by a description of the research methodology. That is then followed by reporting and discussing the results of the study. The last section presents the conclusion and implications of this study.

Literature review

The efficient market hypothesis (EMH) was initially introduced by Fama (1970), which can be disaggregated into three different levels beginning with a weak form, semi-strong form and strong form, depending on the information incorporated and reflected in the price of the asset. The most basic form is the weak form, which is founded on basic market information, specifically on historical prices and how trading volume influences (or does not) asset prices. The semi-strong form of EMH is when asset prices fully reflect all market and public information such as corporate announcements and the release of financial reports. Finally, the highest and most rigid form of efficiency is the strong form. In this form, the hypothesis states that asset prices reflect all relevant information including non-public or private information. When a market is efficient, investors would not be able to use the respective information to generate abnormal returns given that the information has been entirely reflected in the asset prices.

In proposing the probable difference between the market efficiency level of Sharīʿah-compliant and conventional market segments, this study relies on the findings of previous studies indicating diverse characteristics or behaviours (Ben Rejeb and Arfaoui, 2016). It should, however, be mentioned at this stage that while many of these studies revealed differences in the performance of both market segments, the evidence in these studies is inconclusive. For example, in several countries having different periods of study, a number of studies revealed that Islamic or Sharīʿah stock market indexes performed better compared to their conventional counterparts (Hassan, 2004; Bauer *et al.*, 2006; Al-Khazali *et al.*, 2014; Habib and Islam, 2014; Ho *et al.*, 2014; Jawadi *et al.*, 2014; Asutay and Hendranastiti, 2015; Charles *et al.*, 2015; Dharani *et al.*, 2019; Gonzalez *et al.*, 2019; Tahir and Ibrahim, 2020). Other studies found similar or insignificantly different performance characteristics in both segments (Girard and Hassan, 2008, 2010; Dharani and Natarajan, 2011; El-Khamlichi *et al.*, 2014a; Trabelsi *et al.*, 2020; Yildiz, 2020). However, there are limited studies providing evidence that conventional indexes outperform their Islamic counterparts (Merdad *et al.*, 2010; Hayat and Kraeussl, 2011; Al-Khazali *et al.*, 2014; Abu-Alkheil *et al.*, 2020).

Furthermore, concerning risks, both market segments are anticipated to exhibit different risks given the screening process based on the Sharīʿah principles, which may reduce the number of possible listed securities for constructing investment portfolios. The studies by Dewandaru *et al.* (2015), Pranata and Nurzanah (2016), Mwamba *et al.* (2017), Rizvi and Arshad (2017), Abu-Alkheil *et al.* (2020) and Yildiz (2020) indicate that Islamic stocks are not as risky compared to their conventional counterparts. Moreover, Sharīʿah-compliant companies typically have low leverage with less exposure to the credit market and with less volatility. In fact, Sharīʿah indexes usually comprise stocks with high asset backing and growth-oriented and small-cap stocks. This finding contradicts the results of Albaity and Ahmad (2008), Hayat and Kraeussl (2011) and Charles *et al.* (2015) claiming that Sharīʿah stocks are riskier compared to conventional stocks because they lack diversification.

Many of the studies on the efficiency of Sharīʿah vs conventional market segments have been carried out in foreign markets, as mentioned earlier and Malaysian studies in this area are limited. Many of these studies, including the study by Hassan (2004), revealed that the Dow Jones Islamic Market (DJIM) index demonstrated efficient behaviour relative to its conventional counterparts. Similarly, Obaidullah (2001) found that the Islamic stock market is more efficient compared to its conventional market. Girard and Hassan (2008) reported new evidence in which The Financial Times Stock Exchange (FTSE) Islamic stock indexes were just as efficient compared to their counterparts. Similar results have also been reported by El-Khamlichi *et al.* (2014b) in four index families including Dow Jones, financial times,

standard and poor's and Morgan Stanley. Likewise, the relative efficiency of Islamic stock markets compared to their conventional counterparts has been documented by Ali *et al.* (2018) in all sampled markets except for Russia, Jordan and Pakistan. Ali *et al.* (2018) further attributed the efficiency of Islamic stock markets to the Sharīʿah principles, good governance and the mechanisms of information disclosure that are practised in Islamic stock markets. Ben Rejeb and Arfaoui (2019) further disclosed that Islamic stock indexes are more efficient than the conventional stock indexes although Islamic indexes are more volatile than their conventional counterparts. Similar findings were confirmed by Mnif *et al.* (2020) whereby the Islamic index of DJIM has higher efficiency compared to a sustainability index and a conventional index [Dow Jones Sustainability Indexes (DJSI) and Dow Jones industrial average indexes (DJIA), respectively].

However, in recent studies by Alvarez-Diaz *et al.* (2014), Sensoy *et al.* (2015), Jawadi *et al.* (2015) and Al-Khazali *et al.* (2016), opposing results were identified. For instance, Alvarez-Diaz *et al.* (2014) concluded that DJIMs were less efficient and predictable as compared with DJIA (conventional or rather generic stocks). Likewise, Sensoy *et al.* (2015) reported that conventional market indexes were relatively more efficient compared to Islamic market indexes in a sample of 12 different Dow Jones Index series. In the same year, Jawadi *et al.* (2015) provided new evidence indicating that Islamic emerging markets were less efficient compared to Islamic developed markets. This result could be due to less liquidity, the impediments posed by Sharīʿah principles and less diversification amongst Sharīʿah stocks. Al-Khazali *et al.* (2016) revealed that conventional indexes were more efficient compared to their Islamic counterparts in the study of nine indexes globally.

Amongst Islamic stocks, Bouoiyour *et al.* (2018) and Ali *et al.* (2018) found that the Islamic indexes in emerging markets are relatively less efficient compared to developed markets, whereas similar behaviour was reported in conventional indexes in the latter study. Moreover, by considering the effect of the global financial crisis (GFC), Mensi *et al.* (2017) concluded that the GFC had worsened the efficiency level of DJIM sectoral indexes. However, Ben Rejeb and Arfaoui (2016) in another study found that, regarding informational efficiency, Islamic markets are relatively more efficient compared to their counterparts. Meanwhile, Alam *et al.* (2016) concluded that although conventional and Islamic markets had a similar pattern, more recently, Islamic sectoral indexes have tended to be more efficient over the past decade. However, the majority of recent studies failed to analyse Malaysian Sharīʿah-compliant stocks, particularly through the effectiveness of using technical analysis. Therefore, this study aims to fill this gap found in the literature by analysing the efficiency level between Sharīʿah-compliant and conventional stocks through the effectiveness of technical trading strategies in the context of Malaysia.

Previous studies that are most related to this paper are the studies by Majid *et al.* (2016) and Kabbani (2016) examining the market efficiency of Islamic and conventional markets in Malaysia. Similar studies have also been conducted in other markets but have mainly been undertaken in the context of developed markets (Hassan, 2004; Girard and Hassan, 2008; El-Khamlichi *et al.*, 2014b; Alvarez-Diaz *et al.*, 2014; Sensoy *et al.*, 2015; Al-Khazali *et al.*, 2016; Ben Rejeb and Arfaoui, 2016; Alam *et al.*, 2016). Obaidullah (2001) offered theoretical arguments on ethics and efficiency in Islamic stock markets, claiming that Islamic stock markets could not be less efficient compared to conventional markets.

While there are many similar studies, this present study projects a different point of view, beginning from a setup that differs from those used by Hassan (2004), Girard and Hassan (2008), Alvarez-Diaz *et al.* (2014), El-Khamlichi *et al.* (2014b), Sensoy *et al.* (2015), Al-Khazali *et al.* (2016), Alam *et al.* (2016), Kabbani (2016), Majid *et al.* (2016) and Ben Rejeb and Arfaoui (2016) in several respects. Firstly, many of the previous studies analysed the market

efficiency of Sharīʿah-compliant or Islamic markets compared with their conventional counterparts using market indexes. For instance, Kabbani (2016) examined Bursa Malaysia's market efficiency by applying three index series (FTSE Bursa Malaysia (BM) Kuala Lumpur Composite Index (KLCI), Exchange's Main (Market) All Shares (EMAS) Sharīʿah Index and HIJRA Sharīʿah Index), whereas Majid *et al.* (2016) used two market indexes in Malaysia (Kuala Lumpur Stock Exchange and FBM HS) and two market indexes in Indonesia (Jakarta Composite Index and JII). Several other studies dealt with the Dow Jones index series such as the studies by Hassan (2004), Alvarez-Diaz *et al.* (2014) and Ben Rejeb and Arfaoui (2016). Aside from other studies such as those by Girard and Hassan (2008) that tested the FTSE Indexes, El-Khamlichi *et al.* (2014b) tested four index families (Dow Jones, financial times, standard and poor's and Morgan Stanley), and Al-Khazali *et al.* (2016) studied nine conventional and Islamic indexes from a global perspective.

However, the market efficiency analysis in this study differs from these studies; this study instead uses unconventional trading strategies, with the addition of the analysts' recommendations from Bursa Malaysia. The main reason for choosing unconventional trading strategies in testing market efficiency is because the Malaysian market remains at the weak form level (Abdul-Rahim *et al.*, 2016; Ling and Abdul-Rahim, 2016, 2017). Fama (1970) averred that the two relevant and related pieces of information reflected in asset prices in weak form markets are historical prices and trading volumes. Therefore, technical trading strategies are considered a relevant and appropriate approach for testing the weak-form efficiency in the Malaysian stock market.

Secondly, many previous studies investigated the index series (market/macro level), which represents the aggregate stock markets while this present study analyses data at the level of firms' equity (micro) with the addition of investment advisory opinions (or analysts' recommendations). This would invariably offer more robust and reliable results regarding the market efficiency level in both segments by using technical analysis strategies, given that the equity of all relevant firms is included in the sample. Thirdly, this study uses the analysts' recommendations when taking investment decisions. This approach is consistent with Mayo (2011), who suggested investment advisory opinions as one of the main technical indicators that may be useful for investment decisions. In practise, analysts' recommendations are publicly available in Bursa Malaysia and research houses' websites such that they can be considered as one form of financial news. Narayan and Bannigidadmath (2017) emphasised that positive and negative news is often useful as a valuable predictor when it comes to stock returns. Their study found positive news produces more returns to stock markets compared to negative or adverse news. To draw a distinction with the standard approach, which relies on technical strategies for making both buy and sell decisions, this study proposes that this approach be referred to as unconventional trading strategies to identify mixing analysts' recommendations and technical trading strategies. More specifically, this study takes the "buy recommendation" published by securities analysts (or investment advisory opinions) as the predictor for the technical strategies used in this study.

Overall, this study anticipates that it will make a valuable contribution to the current literature of market efficiency between the Sharīʿah-compliant and conventional stock markets in a number of ways. Firstly, this study introduces unconventional trading strategies in testing the market efficiency with the addition of analysts' recommendations as a signal for a buy decision. Positive results of using expert recommended buy decisions would be beneficial, especially for less-informed investors because it will reduce search costs and also investment risks. Secondly, it provides new evidence of the efficiency level between Sharīʿah-compliant and conventional stocks in the context of Malaysia.

Methodology

Two approaches have typically been used regarding investment valuation, namely, fundamental analysis and technical analysis. Fundamental analysis mostly relates to several accounting variables provided in financial statements, while technical analysis is considered more of a high-technology approach, which relies on price trends or movements generated using sophisticated or advanced technology. Therefore, fundamental analysis is more appropriate in identifying the potential stocks related to stock selection. Nonetheless, in this case, advanced or sophisticated technology in technical analysis can be used to determine the timing to enter and exit markets, using several indicators generated by using trends or the movement of stock prices and trading volumes.

Investment advisory opinions (or analysts' recommendations) were used in this study, a strategy that reflects the arguments presented by Mayo (2011) in categorising the opinions and recommendations of analysts as one of the technical indicators referred to by investors. However, this technical indicator is used here as a "momentum" view, although Mayo (2011) suggested it should be offered as a "contrarian" opinion. Therefore, all buy recommendations afforded by securities analysts that are published on Bursa Malaysia's website are accepted and followed. During the period of study between 2013 and 2015, a total of 11 securities houses were given to buy recommendations by professionals or stock analysis experts.

A total of 1,687 buy recommendations were collected during the study period, which involved 182 common stock counters listed in Bursa Malaysia. This was followed by using 10 different technical trading strategies (simple moving average (SMA), moving average envelopes (MAE), Bollinger Bands (BB), momentum, commodity channel index (CCI), relative strength index (RSI), Stochastic, William percentage range (WPR), moving average convergence divergence (MACD) and shooting star – a summary of these strategies is provided in the Appendix) to match with each buys recommendation in the ChartNexus software. The 10 technical trading strategies were selected given that these strategies were amongst the most popular and considered easy to use in performing the technical analysis.

The study period was also extended by 90 days until March 2016 to allow sufficient time to detect the sell signals using the technical trading strategies. However, due to several unforeseen and unavoidable reasons, nine common stock counters needed to be removed as they could not be detected in the ChartNexus software. As a consequence, the sample was limited to 1,665 buy recommendations or 173 common stock counters. The buy recommendations were then divided into two samples according to the Sharīʿah-compliant list published by the SC Malaysia. This resulted in 1,265 buy recommendations in the Sharīʿah-compliant sample (125 common stock counters) and 400 buy recommendations in the conventional sample (48 common stock counters).

Both streams of studies as suggested by Ling and Abdul-Rahim (2017) were adopted where the weak form market efficiency can be examined through the behaviour of stock prices and the effectiveness of technical analysis. Similar to previous studies (Hassan, 2004; El-Khamlichi *et al.*, 2014b; Kabbani, 2016), this study first conducted two unit root tests to test the market efficiency in the weak form by examining the randomness and predictability of the stock price returns for the respective 125 Sharīʿah-compliant common stock counters and 48 conventional common stock counters. The augmented Dickey-Fuller (ADF) test was initially used to test the stock price returns series' stationarity. The ADF equations are given as follows:

$$\Delta Y_t = \alpha + \gamma Y_t - 1 + \sum_{j-1}^{p} (\delta j \Delta t - j) + e_t \quad (1)$$

$$\Delta Y_t = \alpha + \beta_t + \gamma Y_t - 1 + \sum_{j-1}^{p} (\delta j \Delta t - j) + e_t \quad (2)$$

where:

t = the time index;
α = the intercept;
β = the coefficient on the time trend;
γ = the coefficient of the process root;
p = the first difference in the autoregressive process' lag order; and
e_t = the *iid* residual term.

The linear time trend element, βt was included in the second regression model. The null hypothesis in the ADF test was that the stock prices (returns) have a unit root and vice versa in its alternative hypothesis as well.

The Phillips-Perron (PP) unit root test was also used to correct the problem of heteroscedasticity in the error term of the ADF test. This means that the PP tests are the revised or improved version of the Dickey-Fuller test using the Newey-West standard error. The PP test, however, requires a large sample number to perform the test as it depends on the asymptotic theory. The following equations illustrate the PP equation:

$$\Delta Y_{t-1} = \alpha_0 + \gamma Y_{t-1} + e_t \quad (3)$$

Given the PP tests are improved and revised from the Dickey-Fuller test, the description of variables in the PP equation and also the hypothesis is similar to the ADF test explained above.

Next, to test whether the technical trading strategies were effective and successful in earning abnormal profits, two tests were carried out to examine this statistically. Here, the examination began by calculating the returns (R_i) with the capital gain yield formula from the *i-th* transaction of the buy recommendations with the sell signal detected in the ChartNexus software. The capital gain yield formulas are presented below (assuming no dividend is given during the transaction) as follows:

$$R_{i,T} = \frac{(P_{i,s,T} - P_{i,b})}{P_{i,b}} x100 \quad (4)$$

where, $R_{i,\ T}$ represents the total return for each *i-th* transaction, $P_{i,b}$ and $P_{i,s,}$ are referred to as the stock price on the day of the buy recommendation, (*b*) is issued at the day of the sell signal and (s) of the particular technical trading strategies (*T-th*) is detected. To estimate the market return, the same formula was used, proxied by using the FBM KLCI Index (conventional) and FBM EMAS Index (Sharī'ah-compliant) for the same transaction period (*i, T*). Meanwhile, the risk-free rate of return was proxied using the nominal return of the Malaysian three-month treasury bill (*T*-bill). In this study, two excess return (ER) series were used as presented below as follows:

$$ER_{i,T} = R_{i,T} - R_{f,T} \tag{5}$$

$$ER_{i,T} = R_{i,T} - R_{M,T} \tag{6}$$

where $ER_{i,\ T}$ is the ER for each of the technical trading strategies (T), $R_{f,\ T}$ is the return of risk-free rate (T-bill rates) and $R_{M,\ T}$ is the return of the market portfolio (FBM KLCI or FBM EMAS) for the same transaction period. Finally, transaction costs (TC) of 0.42% were included in calculating the net excess return (NER) series as follows (0.42% is the brokerage fee rate charged by most broker companies in Malaysia (as provided by www.investor.com):

$$NER_{i,t} = R_{i,t} - R_{f,t} - TC_i \tag{7}$$

$$NER_{i,t} = R_{i,t} - R_{M,t} - TC_i \tag{8}$$

Next, to determine the effectiveness of the selected technical trading strategies (T) in generating abnormal profit, the Jensen's alpha regression test was used to compare the abnormal return generated from the transactions with the market return. The capital asset pricing model equation was used to provide Jensen's alpha regression, as represented below as follows:

$$ER_{i,T} = \left(R_{i,T} - R_{f,T}\right) = \alpha + \beta_i\left(R_{M,T} - R_{f,T}\right) + \varepsilon \tag{9}$$

where α is the Jensen's alpha, which represents the stock performance relative to the market portfolio, ε is the terminology of the error term and the other variables as given in equations 5 and 6. The variables in equations 5 and 6 are used in the Jensen's alpha test because R_M was included in Jensen's alpha model. If Jensen's alpha value was positive (negative), it means that the particular return series outperformed (underperformed) the market return. In this case, having significant (insignificant) α implies that the market is inefficient (or efficient) in a weak form. Statistically, stock performance is consistently significant if the *t-values* of Jensen's alpha is higher than the critical value of 10% significance level.

The one-sample t-test was also used to examine the abnormal return from each technical trading strategy against zero (*H0*: excess return (ER or NER) of each technical trading strategy is not significantly different from zero).

Results and discussion

Before performing the tests to determine the effectiveness of the technical trading strategies in both stock market segments, the weak-form market efficiency of the stocks in each segment stock market was tested via the behaviour of the stock price series. In other words, the first condition before undertaking the technical analysis is when the market is still inefficient (i.e. existing in a weak form). This is undertaken by evaluating whether or not the returns of the respective stocks move randomly. In this study, the randomness of price movement was tested by using two fundamental unit root tests as follows: ADF and PP. The unit root tests were conducted on the returns of stock of the respective 125 Sharīʿah-compliant stocks and the 48 conventional stocks. The results (without trends and including trends) as displayed in Table I show that almost all the stock returns series consistently rejected the null hypothesis.

Accordingly, this finding implies that almost all stock returns series are stationary, which means that the stock prices do not move randomly (at a 5% significance level). This

finding further implies that the Malaysian stock market, regardless of whether it involves Sharīʿah-compliant or conventional stocks, is still inefficient in the weak form EMH. Therefore, with the attribute of the market setting established, investigation on the effectiveness of the technical trading strategies is justified.

Figure 1 illustrates the average monthly returns generated collectively by the 10 technical trading strategies, as applied on the Sharīʿah and conventional stocks, compared to their market benchmarks (FBM KLCI and FBM EMAS, respectively). The returns for the Sharīʿah stocks are shown to be consistently higher compared to the returns on the FBM EMAS except in a few months, which can be identified as being bearish markets (between September 2014 and February 2016, measured by using 200 days SMA). A similar pattern is also observed regarding the returns of the conventional stocks, except for a few months when the technical trading strategies failed to outperform FBM KLCI, which, therefore, cannot be associated with any particular market condition. Overall, the technical trading

Table I.
Summary of the ADF and PP tests

	Panel A: Sharīʿah-compliant				Panel B: conventional			
	Without trend		Including trend		Without trend		Including trend	
Level of sig. (%)	Prob.*	(%)	Prob.*	(%)	Prob.*	(%)	Prob.*	(%)
			ADF				ADF	
1	123	98.40	123	98.40	46	95.84	48	100.00
5	2	1.60	1	0.80	1	2.08	0	0.00
10	0	0.00	0	0.00	1	2.08	0	0.00
Total	–	100.00	–	99.20	–	100.00	–	100.00
			PP				PP	
1	125	100.00	125	100.00	48	100.00	48	100.00
5	0	0.00	0	0.00	0	0.00	0	0.00
10	0	0.00	0	0.00	0	0.00	0	0.00
Total	–	100.00	–	100.00	–	100.00	–	100.00

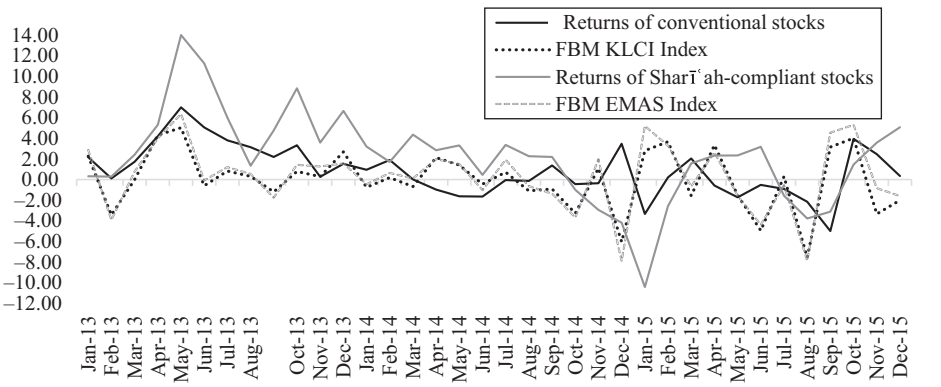

Figure 1.
Performance of Sharīʿah-compliant and Sharīʿah non-compliant stocks relative to benchmark indexes

Note: All returns of stocks and markets are based on the calculations of the authors using the sample's data
Source: Chart Nexus application

strategies appear to outperform their respective benchmarks. Accordingly, this finding suggests that when a market is still inefficient an active investment strategy based on market timing using technical trading rules fares much better compared to a passive investment strategy undertaken through index tracking.

Table II displays a summary of the returns for all selected technical trading strategies tested on both samples, namely, Sharīʿah-compliant and conventional stocks. A total of 1,265 buy recommendations were collected for the Sharīʿah-compliant stocks and 400 buy recommendations for the conventional stocks between 2013 and 2015. These buy recommendations were then matched with a sell signal based on each of the technical trading strategies (i.e. BB, CCI, MACD, MAE, momentum, RSI, SMA, shooting star, stochastic and WPR). As mentioned earlier, the study was extended by 90 days until March 2016 to complete the matching process. Only a few cases were found where the sell signals were not found by the last day of the study period (i.e. end of March 2016), and therefore, a force selling method was executed to complete the transaction.

As displayed in Table II below, from amongst all the selected trading strategies, MAE required the longest time to detect a sell signal with an average of 224 days in the Sharīʿah-compliant sample and 335 days in the conventional sample. In contrast, Momentum only required about 16 days to produce a sell signal in both samples. As shown in the table, the shooting star strategy is recorded as being the most profitable strategy with an average return of 3.88% per cycle followed by SMA (3.77%) and MACD (2.62%) in the Sharīʿah-compliant sample. It was noted that MACD nonetheless ranks in the top three in the Sharīʿah-compliant stocks and ranks the highest (most profitable strategy) in the conventional stocks with average returns of 1.78%. Regarding MAE, it remains relevant when used in the Sharīʿah-compliant sample (1.14%) but generally fails when it is applied in the conventional sample (−1.58%).

Overall, the technical trading strategies performed much better in the Sharīʿah-compliant sample, associated with a higher standard deviation (risk). Here, such a risk-return trade-off would possibly imply that investors need to be well-versed regarding the functioning of these technical trading strategies given the greater possibility of unfavourable outcomes. Indeed, this is consistent with the argument of Narayan and Bannigidadmath (2017), who

	Panel A: Sharīʿah-compliant					Panel B: conventional				
Trading strategies	N(D)	Mean (%)	SD	Max (%)	Min (%)	N(D)	Mean (%)	SD	Max (%)	Min (%)
BB	42.21	2.24	18.49	470.00	−63.04	50.62	1.56	8.05	48.51	−49.32
CCI	40.39	0.19	9.99	81.13	−64.49	39.67	−0.53	7.24	48.51	−45.21
MACD	31.85	2.62	10.98	177.78	−45.68	30.6	1.78	10.09	74.01	−21.1
MAE	224.93	1.14	23.50	169.44	−170	335.2	−1.58	18.15	62.67	−53.88
Momentum	15.78	1.72	9.54	116.67	−47.46	16.27	0.93	5.94	45.90	−15.15
RSI	55.92	0.59	14.16	94.34	−160	73.6	−0.28	11.04	33.33	−52.65
SMA	41.21	3.77	20.56	470.00	−54.32	28.53	0.04	6.18	36.07	−30.14
Shooting star	75.88	3.88	17.89	188.89	−60.49	65.51	1.28	11.03	63.64	−52.94
Stochastic	29.25	0.45	9.08	70.00	−65.94	27.72	0.60	5.89	19.92	−49.32
WPR	31.39	0.48	8.94	70.00	−65.94	27.58	0.44	5.69	19.92	−49.32

Notes: N(D) = number of days between the day of buy to the day of sell. SMA = simple moving average, MAE = moving average envelopes, RSI = relative strength index, CCI = commodity channel index and WPR = William percentage range. Std dev is a standard deviation. The total number of transactions is 1,265 in the Sharīʿah-compliant sample and 400 for the conventional sample

Table II.
Descriptive statistics of selected technical trading strategies

found that positive news and Islamic stocks are able to generate higher returns, and thus, the buy recommendation can provide higher returns.

Next, Table III summarises the NER for all selected technical trading strategies for both samples. For the sample of Sharīʿah-compliant stocks, five strategies report significant positive returns while the other five strategies (CCI, MAE, RSI, stochastic and WPR) produce negative or insignificant positive returns. Notably, the performance of these technical trading strategies is noticeably worse in the conventional sample. That is to say, only two strategies produce significant positive NER while the other two strategies (momentum and shooting star) produce positive but insignificant NER. Regarding annualised returns, all technical trading strategies could outperform the market (FBM EMAS) in the Sharīʿah-compliant sample with momentum recording the highest returns at 40% per annum. However, only six strategies produce returns higher than FBM KLCI in the conventional sample.

Table IV provides a summary of the results of Jensen's alpha in determining the effectiveness of the selected technical trading strategies in generating the abnormal returns in both samples. As shown in panel A, all strategies except SMA have alpha values represented as positive and significant, at the 10% level at a minimum. This finding suggests that these strategies can produce gross ER that are superior to the market after adjusting for their respective risks. The result of NER indicates that eight strategies remain positive and significant after deducting the TC (0.42%) as MACD becomes insignificant. In brief, eight technical strategies are shown to be effective in generating abnormal NER in the sharīʿah-compliant sample. In contrast, the results shown in Panel B depict a remarkable difference in that only four strategies have significant positive alpha values. (the alpha of CCI is also significant but negative).

Therefore, this finding infers that only four strategies (BB, MACD, MAE and momentum) are effective in generating gross ER. Indeed, the TC reduces this number to only three when the alpha of the momentum strategy becomes insignificant. Moreover, only three strategies (Bollinger Bands, MACD and MAE) remain effective in generating risk-adjusted

Trading strategies	Panel A: Sharīʿah-compliant				Panel B: conventional			
	R_I-R_{FR-} TC (%)	R_I-R_{M-} TC (%)	AR_I (%)	AR_M (%)	R_I-R_{FR-} TC (%)	R_I-R_{M-} TC (%)	AR_I (%)	AR_M (%)
BB	1.47***	1.81***	19.35	0.04	0.72*	0.71	11.22	3.06
CCI	−0.56**	−0.23	1.75	0.02	−1.28***	−1.23***	−4.90	2.52
MACD	1.93***	2.19***	30.00	0.08	1.11**	0.99**	21.25	4.47
MAE	−1.14*	0.72	1.86	0.01	−4.79***	−1.42*	−1.72	−0.64
Momentum	1.16***	1.29***	39.69	0.06	0.37	0.41	20.82	2.25
RSI	−0.29	0.17	3.85	0.03	−1.32**	−0.92*	−1.41	1.06
SMA	3.00***	3.34***	33.36	0.06	−0.62**	−0.51*	0.47	1.60
Shooting star	2.83***	3.45***	18.67	0.05	0.31	0.31	7.11	3.03
Stochastic	−0.21	0.03	5.63	0.01	−0.45	−0.02	7.91	2.63
WPR	−0.20	0.06	5.60	0.01	−0.21	−0.19	5.87	2.80

Notes: A = annualised return = R_I X (365/N(D)), SMA = simple moving average, MAE = moving average envelopes, RSI = relative strength index, CCI = commodity channel index and WPR = William percentage range. The number of transactions for each technical trading strategy is 1,265 in the Sharīʿah-compliant sample and 400 for the conventional sample. Asterisks ***; ** and *indicate significance at 1, 5 and 10% levels, respectively. The detailed summary results of the one-sample *t*-test are attached in the Appendix

Table III.
Summary of NER for all selected technical trading strategies

Trading strategies	Panel A: Sharīʿah-compliant ER α	Panel A: Sharīʿah-compliant NER α	Panel B: conventional ER α	Panel B: conventional NER α
BB	7.4631***	7.0431***	1.1333***	0.7133*
CCI	2.5300***	2.1100***	−0.8123**	−1.2323***
MACD	0.8747*	0.4547	1.4036***	0.9836**
MAE	6.6350***	6.2150***	1.8792**	1.4592*
Momentum	2.0419***	1.6219***	0.8139***	0.3939
RSI	7.9835***	7.5635***	−0.2761	−0.6961
SMA	−4.7564***	−5.1764***	−0.1024	−0.5224*
Shooting star	3.4648***	3.0448***	0.7314	0.3114
Stochastic	6.0372***	5.6172***	0.3975	−0.0225
WPR	2.4691***	2.0491***	0.2292	−0.1908

Notes: Refer to the Appendix for the detailed results. SMA = simple moving average, MAE = moving average envelopes, RSI = relative strength index, CCI = commodity channel index and WPR = William percentage range. Asterisks ***; ** and *indicate the level of significance at the 1, 5 and 10%, respectively

Table IV.
Summary results of Jensen's alpha (α) test

NER in the conventional sample. Statistically, the results show that technical trading strategies are more effective in producing abnormal profits in the Sharīʿah-compliant sample compared to their application in the conventional sample.

Accordingly, these findings appear to have an important implication regarding the efficiency or, rather, the inefficiency of the Malaysian stock market. The different results of Jensen's alpha obtained from the same technical trading strategies imply that the weak form inefficiency of the Malaysian stock market is more prevalent amongst the Sharīʿah-compliant stocks segment compared to the conventional stocks segment. Further, these results support and are consistent with previous studies (Alvarez-Diaz *et al.*, 2014; Sensoy *et al.*, 2015; Al-Khazali *et al.*, 2016), which found that the conventional market is more efficient, while the Islamic or Sharīʿah-compliant markets tend to be inefficient. According to Jawadi *et al.* (2015), the inefficiency of the Islamic market may result from the restrictions of the Sharīʿah principles, lack of liquidity and diversity.

Conclusion and implications

This study investigates the weak form efficiency of Sharīʿah-compliant and conventional stocks in the context of the Malaysian stock market based on the effectiveness of unconventional technical trading strategies. The buy recommendations suggested by securities analysts are used to provide reliable timing to enter the market, as suggested by Mayo (2011), who categorises "investment advisory opinion" as one of the main technical indicators. Mayo (2011), however, suggested that this expert opinion be adopted as a "contrarian" view. In contrast, this study applies it as a "momentum" view by following the suggestion of securities analysts given that it represents the opinion of investment experts. Accordingly, this study attains 1,265 buy recommendations in the Sharīʿah-compliant stocks and 400 buy recommendations in the conventional stocks from January 2013 to December 2015. The test period was further extended for 90 days until March 2016 to allow sufficient time to detect the sell signals for all technical trading strategies that were selected in the ChartNexus application.

The results of this study revealed that, firstly, the unit root tests (ADF and PP) indicated that almost all stock price returns series (without trends and including trends) do not move randomly and should, therefore, be predictable through some methods. This suggests that

the Malaysian stock market – be it Sharīʿah-compliant or conventional – is still inefficient in a weak form. Secondly, the result of the one-sample *t*-tests indicated that only five strategies (BB, MACD, momentum, SMA and shooting star) were able to generate significant positive returns in the Sharīʿah-compliant sample whereas, the positively significant strategies were reduced to only two strategies (BB and MACD) in the conventional sample. The main results from Jensen's alpha regression tests indicated that all strategies were significant at the 10% level except for the SMA strategy in the Sharīʿah-compliant sample.

However, after considering the TC, MACD became insignificant whereas SMA turned out to be negatively insignificant. There are eight out of 10 strategies that were effective in generating NER in the Sharīʿah-compliant samples. Contrasting results were found in the conventional sample where only three out of 10 strategies proved to be effective in producing abnormal profits. The results of Jensen's alpha test in both samples indicated overall that the efficiency level in the Sharīʿah-compliant sample was dominated by the inefficient and contrastive result in the conventional sample. These results are indeed consistent with those of Alvarez-Diaz *et al.* (2014), Sensoy *et al.* (2015) and Al-Khazali *et al.* (2016), who also found that the conventional market is more efficient while the Islamic or Sharīʿah-compliant market tends to be more inefficient.

The efficiency level of the stock market is the scenario of the funding and capital allocation and distribution process in the capital market. In this study, the Sharīʿah-compliant stocks tended to be inefficient in the weak form, which implies that the stock prices of Sharīʿah-compliant stocks listed on Bursa Malaysia are predictable and do not move in a random manner. Intuitively, it means that using certain high technologies or complex strategies, investors would be able to predict and generate abnormal profits. Different behaviours were found in the conventional sample, which is proven to be more efficient with only a few strategies being still effective to predict stock prices and detecting profitable sell signals. Overall, the results indicate that the authorities of the Malaysian capital market such as Bursa Malaysia and SC Malaysia should regulate and produce-related policies and rules to promote a practical and conducive investment environment for investors and all listed companies. The results indicating different behaviours of stocks in both segments imply that new policies or regulations may be needed to place a greater focus on Sharīʿah-compliant stocks or the Islamic market, which tended to be inefficient in this study.

Meanwhile, high technology investment tools or applications could be introduced to Muslim investors through certain training programs to equip investors with more recent technology, insights and knowledge. The inefficiency of the Sharīʿah-compliant stocks could be a target for manipulation and exploitation by certain investor groups equipped with more sophisticated technology, especially during this fintech (financial technology) era. The authorities also need to be more intuitive in promoting stock investments to potential Muslim investors to boost and increase the number of active Muslim investors via programs and competitions such as the Bursa Young investors club and the CIMB ASEAN stock challenge, which provide platforms for new and young investors to gain much-needed knowledge and experience.

The results of this study will help to provide additional information or guidelines for investors, whether they be professional, institutional or retail investors. The results imply that certain technical strategies are still effective for generating ER, which should help to enhance investor confidence in the usefulness of using technical trading strategies. Finally, the recommendations and opinions of professional securities analysts have also been proven to be reliable as a guide for market entry timing. This could be adopted as an initial step towards minimising the speculation element, which is prohibited in Islam. Similar to other

studies, the most important limitation in this study has been the short period of study for the research; in this study, the buy recommendations were only collected for a three-year period (2013–2015) and needed to be extended by a further 90 days for the detection of sell signals. Also, the small number of technical trading strategies included in the research could be broadened.

Regarding further research, it is proposed that further study be conducted to examine the effectiveness of technical trading strategies through the involvement of more advanced and recent technical trading strategies over a longer period of study, especially including bear and bull markets as an opportune area of study.

References

Abbes, M.B. and Trichilli, Y. (2015), "Islamic stock markets and potential diversification benefits", *Borsa Istanbul Review*, Vol. 15 No. 2, pp. 93-105.

Abdul-Rahim, R., Abdul-Rahman, A. and Ling, P.S. (2019), "Performance of Shariah versus conventional funds: lessons from emerging markets", *Journal of Nusantara Studies (JONUS)*, Vol. 4 No. 2, pp. 193-218.

Abdul-Rahim, R., Taqiyaddin-Arizan, A. and Mohd-Nor, S. (2016), "Analisis teknikal dan implikasinya terhadap kecekapan pasaran saham di Malaysia", *Jurnal Pengurusan*, Vol. 48 No. 1, pp. 3-20.

Abu-Alkheil, A., Khan, W.A. and Parikh, B. (2020), "Risk-reward trade-off and volatility performance of Islamic versus conventional stock indices: global evidence", *Review of Pacific Basin Financial Markets and Policies*, Vol. 23 No. 1, p. 2050002, doi: 10.1142/S0219091520500022. (accessed 6 June 2020).

Ajmi, A.N., Hammoudeh, S., Nguyen, D.K. and Sarafrazi, S. (2014), "How strong are the causal relationships between Islamic stock markets and conventional financial systems? Evidence from linear and nonlinear tests", *Journal of International Financial Markets, Institutions and Money*, Vol. 28 No. 1, pp. 213-227.

Al-Khazali, O.M., Lean, H.H. and Samet, A. (2014), "Do Islamic stock indexes outperform conventional stock indexes? A stochastic dominance approach", *Pacific-Basin Finance Journal*, Vol. 28 No. 1, pp. 29-46.

Al-Khazali, O.M., Leduc, G. and Alsayed, M.S. (2016), "A market efficiency comparison of Islamic and non-Islamic stock indices", *Emerging Markets Finance and Trade*, Vol. 52 No. 7, pp. 1587-1605.

Alam, N., Arshad, S. and Rizvi, S.A.R. (2016), "Do Islamic stock indices perform better than conventional counterparts? An empirical investigation of sectoral efficiency", *Review of Financial Economics*, Vol. 31 No. 1, pp. 108-114.

Albaity, M. and Ahmad, R. (2008), "Performance of Syariah and composite indices: evidence from Bursa Malaysia", *Asian Academy of Management Journal of Accounting and Finance*, Vol. 4 No. 1, pp. 23-43.

Ali, S., Shahzad, S.J.H., Raza, N. and Al-Yahyaee, K.H. (2018), "Stock market efficiency: comparative analysis of Islamic and conventional stock markets", *Physica A: Statistical Mechanics and Its Applications*, Vol. 503 No. 1, pp. 139-153.

Ali, M.H., Uddin, M.A., Chowdhury, M.A.F. and Masih, M. (2019), "Cross-country evidence of Islamic portfolio diversification: are there opportunities in Saudi Arabia?", *Managerial Finance*, Vol. 45 No. 1, pp. 36-53.

Alvarez-Diaz, M., Hammoudeh, S. and Gupta, R. (2014), "Detecting predictable non-linear dynamics in Dow Jones Islamic market and Dow Jones industrial average indices using nonparametric regressions", *The North American Journal of Economics and Finance*, Vol. 29 No. 1, pp. 22-35.

Asutay, M. and Hendranastiti, N.D. (2015), "Comparison of portfolio selection and performance: Shari'ah-compliant and socially responsible investment portfolios", *Indonesia Capital Market Review*, Vol. 7 No. 1, pp. 46-55.

Bauer, R., Koedijk, K. and Otten, R. (2005), "International evidence on ethical mutual fund performance and investment style", *Journal of Banking and Finance*, Vol. 29 No. 7, pp. 1751-1767.

Bauer, R., Otten, R. and Rad, A.T. (2006), "Ethical investing in Australia: is there a financial penalty?", *Pacific-Basin Finance Journal*, Vol. 14 No. 1, pp. 33-48.

Ben Rejeb, A. and Arfaoui, M. (2016), "Conventional and Islamic stock markets: what about financial performance?", available at: https://mpra.ub.uni-muenchen.de/73495/1/MPRA_paper_73495.pdf (accessed 29 June 2016).

Ben Rejeb, A. and Arfaoui, M. (2019), "Do Islamic stock indexes outperform conventional stock indexes? a state space modeling approach", *European Journal of Management and Business Economics*, Vol. 28 No. 3, pp. 301-322.

Bouoiyour, J., Selmi, R. and Wohar, M.E. (2018), "Are Islamic stock markets efficient? A multifractal detrended fluctuation analysis", *Finance Research Letters*, Vol. 26 No. 1, pp. 100-105.

Charles, A., Darne, O. and Pop, A. (2015), "Risk and ethical investment: empirical evidence from Dow Jones Islamic indexes", *Research in International Business and Finance*, Vol. 35 No. 1, pp. 33-56.

Dewandaru, G., Bacha, O.I., Masih, A.M.M. and Masih, R. (2015), "Risk-return characteristics of Islamic equity indices: multi-timescales analysis", *Journal of Multinational Financial Management*, Vol. 29 No. 1, pp. 115-138.

Dharani, M. and Natarajan, P. (2011), "Seasonal anomalies between S&P CNX Nifty Sharīʿah index and S&P CNX Nifty index in India", *Journal of Social and Development Sciences*, Vol. 1 No. 3, pp. 101-108.

Dharani, M., Hassan, M.K. and Paltrinieri, A. (2019), "Faith-based norms and portfolio performance: evidence from India", *Global Finance Journal*, Vol. 41 No. 1, pp. 79-89.

El-Khamlichi, A., Sannajust, A. and Sarkar, H.K. (2014a), "Islamic equity indices: insight and comparison with conventional counterparts", *Bankers, Markets and Investors*, Vol. 130 No. 1, pp. 69-80.

El-Khamlichi, A., Sarkar, K., Arouri, M. and Teulon, F. (2014b), "Are Islamic equity indices more efficient than their conventional counterparts? Evidence from major global index families", *Journal of Applied Business Research (JABR)*, Vol. 30 No. 4, pp. 1137-1150.

Fama, E.F. (1970), "Efficient capital markets: a review of theory and empirical work", *The Journal of Finance*, Vol. 25 No. 2, pp. 383-417.

Girard, E.C. and Hassan, M.K. (2008), "Is there a cost to faith-based investing: evidence from FTSE Islamic indices", *The Journal of Investing*, Vol. 17 No. 4, pp. 112-121.

Gonzalez, M.O., Jareno, F. and Haddouti, C.E. (2019), "Sector portfolio performance comparison between Islamic and conventional stock markets", *Sustainability*, Vol. 11 No. 17, p. 4618, doi: 10.3390/su11174618. (accessed 6 June 2020).

Habib, M. and Islam, K.U. (2014), "Performance of Sharīʿah compliant index: a comparative study of India and Malaysia", *International Journal of Interdisciplinary and Multidisciplinary Studies*, Vol. 1 No. 6, pp. 231-241.

Hassan, M.K. (2004), "Risk, return and volatility of faith-based investing: the case of the Dow Jones Islamic index", *Proceedings of the 5th Harvard University Forum on Islamic Finance*, Center for Middle Eastern Studies, Harvard University, *Cambridge, MA*, pp. 43-67.

Hassan, M.K. and Girard, E. (2010), "Faith-based ethical investing: the case of Dow Jones Islamic indexes", *Islamic Economic Studies*, Vol. 17 No. 2, pp. 1-31.

Hayat, R. and Kraeussl, R. (2011), "Risk and return characteristics of Islamic equity funds", *Emerging Markets Review*, Vol. 12 No. 2, pp. 189-203.

Ho, C.S.F., Rahman, N.A.A., Yusuf, N.H.M. and Zamzamin, Z. (2014), "Performance of global Islamic versus conventional share indices: international evidence", *Pacific-Basin Finance Journal*, Vol. 28 No. 1, pp. 110-121.

Jawadi, F., Jawadi, N. and Hicheffou, A. (2015), "Are Islamic stock markets efficient? A time-series analysis", *Applied Economics*, Vol. 47 No. 16, pp. 1686-1697.

Jawadi, F., Jawadi, N. and Louhichi, W. (2014), "Conventional and Islamic stock price performance: an empirical investigation", *International Economics*, Vol. 137 No. 1, pp. 73-87.

Kabbani, A.L. (2016), "Efficiency of Bursa Malaysia: analysing Islamic indices and their counterparties", Master's thesis, Universidade Catolica Portuguesa, Portugal.

Kuwait Finance House Research (2013), "Islamic finance in Asia: development, growth and opportunities", available at: www.mifc.com/?ch=55&pg=195&ac=99&bb=uploadpdf (accessed 15 February 2017).

Ling, P.S. and Abdul-Rahim, R. (2016), "Efficiency of Malaysian stock market: a revisit based on analysts' recommendations", *Geografia-Malaysian Journal of Society and Space*, Vol. 12 No. 2, pp. 1-14.

Ling, P.S. and Abdul-Rahim, R. (2017), "Market efficiency based on unconventional technical trading strategies in Malaysian stock market", *International Journal of Economics and Financial Issues*, Vol. 7 No. 3, pp. 88-96.

Majid, M.S.A., Vakhira, Z.A. and Kassim, S. (2016), "Do conventional and Islamic stock markets subject to different market anomalies? Empirical evidences from Indonesia and Malaysia", *Journal of Applied Economic Sciences*, Vol. 6 No. 5, pp. 848-856.

Mayo, H.B. (2011), *Introduction to Investments*, Cengage Learning, Canada.

Mensi, W., Tiwari, A.K. and Yoon, S.M. (2017), "Global financial crisis and weak-form efficiency of Islamic sectoral stock markets: an MF-DFA analysis", *Physica A: Statistical Mechanics and Its Applications*, Vol. 471 No. 1, pp. 135-146.

Merdad, H., Hassan, M.K. and Alhenawi, Y. (2010), "Islamic versus conventional mutual funds performance in Saudi Arabia: a case study", *JKAU: Islamic Econ*, Vol. 23 No. 2, pp. 163-200.

Mnif, E., Salhi, B. and Jarboui, A. (2020), "Herding behaviour and Islamic market efficiency assessment: case of Dow Jones and *ṣukūk* market", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 13 No. 1, pp. 24-41.

Mwamba, J.W.M., Hammoudeh, S. and Gupta, R. (2017), "Financial tail risks in conventional and Islamic stock markets: a comparative analysis", *Pacific-Basin Finance Journal*, Vol. 42 No. 1, pp. 60-82.

Narayan, P.K. and Bannigidadmath, D. (2017), "Does financial news predict stock returns? New evidence from Islamic and non-Islamic stocks", *Pacific-Basin Finance Journal*, Vol. 42 No. 1, pp. 24-45.

Obaidullah, M. (2001), "Ethics and efficiency in Islamic stock markets", *International Journal of Islamic Financial Services*, Vol. 3 No. 2, pp. 1-10.

Pranata, N. and Nurzanah, N. (2016), "Conventional and Islamic indices in Indonesia: a comparison on performance, volatility, and the determinants", *Indonesia Capital Market Review*, Vol. 7 No. 2, pp. 113-127.

Rizvi, S.A.R. and Arshad, S. (2017), "Understanding time-varying systematic risks in Islamic and conventional sectoral indices", *Economic Modelling*, Vol. 70 No. 1, pp. 561-570.

Saiti, B. and Noordin, N.H. (2018), "Does Islamic equity investment provide diversification benefits to conventional investors? Evidence from the multivariate GARCH analysis", *International Journal of Emerging Markets*, Vol. 13 No. 1, pp. 267-289.

Saiti, B., Bacha, O.I. and Masih, M. (2014), "The diversification benefits from Islamic investment during the financial turmoil: the case for the US-based equity investors", *Borsa Istanbul Review*, Vol. 14 No. 4, pp. 196-211.

Sensoy, A., Aras, G. and Hacihasanoglu, E. (2015), "Predictability dynamics of Islamic and conventional equity markets", *The North American Journal of Economics and Finance*, Vol. 31 No. 1, pp. 222-248.

Siddiqi, M.N. (2009), "Current financial crisis and Islamic economics", *Insights*, Vol. 1 No. 3, pp. 141-150.

Tahir, M. and Ibrahim, S. (2020), "The performance of Shariah-compliant companies during and after the recession period – evidence from companies listed on the FTSE all world index", *Journal of Islamic Accounting and Business Research*, Vol. 11 No. 3, pp. 573-587.

Trabelsi, L., Bahloul, S. and Mathlouthi, F. (2020), "Performance analysis of Islamic and conventional portfolios: the emerging markets case", *Borsa Istanbul Review*, Vol. 20 No. 1, pp. 48-54.

Yildiz, S.B. (2020), "Performance analysis of Turkey's participation and conventional indices using TOPSIS method", *Journal of Islamic Accounting and Business Research*, Vol. 11 No. 7, doi: 10.1108/JIABR-08-2018-0123. (accessed 6 June 2020).

Appendix

Technical strategies	Description
SMA	SMA is an average or means of the stock price for certain periods (e.g. 5 days, 14 days, 20 days and 100 days) and is used to identify the direction of the trend and also generate the buy and sell signals. Besides that, the moving average can be a "support" level in an uptrend or a "resistance" level in a downtrend
MAE	MAE includes the envelopes to the moving average and is used to detect whether stock prices are overextended compared to the moving average. The envelopes of moving average are specified with a certain percentage (e.g. 3%, 5% or 10%) above and below the moving average line
BB	BB consists of three variation lines, namely, the upper band, middle band and lower band, which are generated from the two standard deviations (positive and negative) of the SMA. If the stock price is higher (lower) than the upper (lower) band, this indicates the stock is overbought (oversold), and therefore, the stock prices will bounce back to the moving average of certain periods (e.g. 20 days)
Momentum	Momentum is used to compare the current price with the price in the past. If the current price is higher (lower) than the past, then the momentum indicator will be positive (negative)
CCI	CCI is used to classify the cycle trend of equity, currency or commodity and also to determine whether a stock is overbought or oversold. CCI will fluctuate within ± 100; if CCI moves above (lower) than $+100$ (-100), it indicates the stock has been overbought (oversold)
RSI	RSI is used to measure the current and historical strength or weakness of a stock based on the closing prices of a recent trading period (e.g. 14 days). The stocks are considered as overbought (oversold) when RSI is higher (lower) than 70 (30) level
Stochastic (%K%D)	Stochastic is applied to generate the overbought or oversold situation. The basic idea of stochastic is that the closing price is near the high (low) in an uptrend (downtrend). There are two lines (%K and %D) in this stochastic oscillator. This strategy will provide overbought (oversold) signals when the lines cross above (below) the 80 (20) level
WPR	WPR is adopted to determine overbought or oversold by comparing with the stock closing price to the high-low range over specific periods (e.g. 14 days). This strategy is quite similar to a stochastic oscillator but is plotted upside-down while stochastic is internal smoothing. The overbought (oversold) signal is detected when it crosses above (below) -20 (-80) level
MACD	MACD is used to spot the changes in the strength, direction, momentum and duration of a trend for stock prices. Two lines are provided in MACD (MACD and signal line) and the buy (sell) signal is generated when the MACD line crosses above (below) the signal line
Shooting star	The shooting star looks like an inverted hammer but it only occurs at the top of uptrends of a candlestick graph. It has a long upper wick and is at least two times the length of the lower body. The upper wick indicates that buyers drive prices up during the day but encounter selling pressures and cause the stock prices to fall and close lower than the opening price. This selling pressure could be considered as a potential reversal sign as the stock prices may fall in the future

Table A1. Summary of technical strategies

Table A2.
One-sample *t*-test results

Trading strategies and returns	Return series	Panel A Sharīʿah-compliant ER R_I (*t*-value)	Panel A Sharīʿah-compliant NER R_I(*t*-value)	Panel B Sharīʿah non-compliant ER R_I (*t*-value)	Panel B Sharīʿah non-compliant NER R_I (*t*-value)
BB	R_I-R_{FR}	1.8867 (3.6090)***	1.4667 (2.8050)***	1.1360 (2.7460)***	0.7160 (1.7310)*
–	R_I-R_M	2.2333 (4.3010)***	1.8133 (3.4920)***	1.1320 (2.8230)***	0.7120 (1.7750)*
CCI	R_I-R_{FR}	−0.1421 (−0.4980)	−0.5621 (−1.9700)**	−0.8630 (−2.3150)**	−1.2829 (−3.4420)***
–	R_I-R_M	0.1914 (0.6830)	−0.2286 (−0.8150)	−0.8070 (−2.3300)**	−1.2270 (−3.5430)***
MACD	R_I-R_{FR}	2.3531 (7.6540)***	1.9331 (6.2880)***	1.5271 (3.0370)***	1.1071 (2.2020)**
–	R_I-R_M	2.6110 (8.4680)***	2.1906 (7.1060)***	1.4065 (2.9080)***	0.9865 (2.0400)**
MAE	R_I-R_{FR}	−0.7218 (−1.0690)	−1.1418 (−1.6920)*	−4.3674 (−4.4300)***	−4.7874 (−4.8560)***
–	R_I-R_M	1.1375 (1.7240)*	0.7175 (1.0880)	−0.9962 (−1.2360)	−1.4162 (−1.7570)*
Momentum	R_I-R_{FR}	1.5847 (5.9160)***	1.1647 (4.3480)***	0.7926 (2.6660)***	0.3726 (1.2530)
–	R_I-R_M	1.7134 (6.4000)***	1.2934 (4.8310)***	0.8276 (2.8180)***	0.4076 (1.3880)
RSI	R_I-R_{FR}	0.1255 (0.3100)	−0.2945 (−0.7290)	−0.8962 (−1.5690)	−1.3162 (−2.3040)**
–	R_I-R_M	0.5860 (1.4740)	0.1660 (0.4180)	−0.4979 (−1.0220)	−0.9179 (−1.8840)*
SMA	R_I-R_{FR}	3.4235 (5.9680)***	3.0035 (5.2350)***	−0.2002 (−0.6550)	−0.6202 (−2.0280)**
–	R_I-R_M	3.7595 (6.5120)***	3.3395 (5.7840)***	−0.0880 (−0.3100)	−0.5080 (−1.7870)*
Shooting star	R_I-R_{FR}	3.2504 (6.4740)***	2.8304 (5.6380)***	0.7316 (1.3040)	0.3116 (0.5560)
–	R_I-R_M	3.8705 (7.7080)***	3.4505 (6.8710)***	0.7314 (1.3700)	0.3114 (0.5830)
Stochastic	R_I-R_{FR}	0.2083 (0.8050)	−0.2117 (−0.8180)	0.3705 (1.2260)	−0.0495 (−0.1640)
–	R_I-R_M	0.4507 (1.7690)*	0.0307 (0.1200)	0.4014 (1.4100)	−0.0186 (−0.0650)
WPR	R_I-R_{FR}	0.8640 (0.2206)	−0.1994 (−0.7810)	1.1360 (2.7460)***	−0.2057 (−0.7030)
–	R_I-R_M	1.9170 (0.4808)*	0.0608 (0.2420)	1.1320 (2.8230)***	−0.1883 (−0.6850)

Notes: ***, ** and * indicate the level of significance at the 1%, 5%, and 10%, respectively

Trading strategies	Panel A Sharī'ah-compliant α	Panel A Sharī'ah-compliant β(RM-RFR)	Panel B Sharī'ah non-compliant α	Panel B Sharī'ah non-compliant β(RM-RFR)
Jensen's alpha (α) by ER				
BB	7.4631***	16.0878***	1.1333***	0.6652***
CCI	2.5300***	8.0118***	−0.8123**	0.9046***
MACD	0.8747*	−5.7416***	1.4036***	1.0247***
MAE	6.6350***	3.9568***	1.8792**	1.8529***
Momentum	2.0419***	3.5523*	0.8139***	0.6107***
RSI	7.9835***	17.0649***	−0.2761	1.5568***
SMA	−4.7564***	−24.343***	−0.1024	0.8716***
Shooting star	3.4648***	0.3457	0.7314	0.8861***
Stochastic	6.0372***	24.0424***	0.3975	0.8757***
WPR	2.4691***	8.6427***	0.2292	0.8538***
Jensen's alpha (α) by NER				
BB	7.0431***	16.0878***	0.7133*	0.6652***
CCI	2.1100***	8.0118***	−1.2323***	0.9046***
MACD	0.4547	−5.7416***	0.9836**	1.0247***
MAE	6.2150***	3.9568***	1.4592*	1.8529***
Momentum	1.6219***	3.5523*	0.3939	0.6107***
RSI	7.5635***	17.0649***	−0.6961	1.5568***
SMA	−5.1764***	−24.343***	−0.5224*	0.8716***
Shooting star	3.0448***	0.3457	0.3114	0.8861***
Stochastic	5.6172***	24.0424***	−0.0225	0.8757***
WPR	2.0491***	8.6427***	−0.1908	0.8538***

Notes: ***, ** and * indicate the level of significance at the 1%, 5%, and 10%, respectively

Table A3. Jensen's alpha regression results

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