

# Mutual Funds' Performance Sensitivity to Funds' Attributes. Case Study: Saudi Mutual Funds

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**Abstract.** *This study contributes to the academic literature on faith-based mutual funds, by offering a comparative investigation of Islamic vs. conventional funds' performance sensitivity to changes in a list of seventeen relevant funds' attributes, all in the context of the Saudi market. The performance measures investigated are the excess return, selectivity and timing. The study took place from 2011 to 2015, with a sample of 200 Active Saudi funds, 137 Islamic and 63 conventional. Findings indicated that fund size, management fees, expense ratio cash and price-earnings ratio were irrelevant to both Islamic and conventional fund performances. In addition, we noticed similarities in both Islamic and conventional funds' performances sensitivities towards turnover, unsystematic risk, investment target, past performance, age and management tenure. They however react differently towards a change in the price-to-book ratio. On the other hand, fund systematic risk, cashflow-to-book ratio and faith factors are exclusively relevant to Islamic funds, while fund growth and objective only affect conventional fund performance. Finally, selectivity and timing appear to be mutually exclusive, suggesting management specialization. This work appears to be the first comparative analysis of its kind. A larger, multi-regional sample, and a longer study period will provide better insights.*

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## Introduction

Fund performance can be assessed through many attributes, some of which are very common to investors, managers, and analysts. Fund age, size, investment style (growth or value), investment turnover, overall administrative and management expenses, cash position, management tenure, risk, and past performance, are among the most trusted and sought after by the financial community to better understand the funds' results and help develop more appropriate investment strategies. There is an extensive academic literature on the funds' returns sensitivities to some of the above-mentioned attributes. However, few have investigated selectivity and timing responses to changes in the funds' attributes, such as Atta and Marzuki (2019). Furthermore, most studies worked on regular conventional funds, though very little academic work addressed the same issues for socially responsible, ethical, and faith-based funds, such as Gregory et al.

(1997), Bauer et al. (2005), and Bauer Et Al (2007) on ethical funds, Yong and Ruzita, (2012) and Asad and Siddiqui (2019) on Islamic funds, Das and Rao (2015) and Kiyamaz (2019) on socially responsible funds.

In addition, there has never been any comparative work on faith-based funds versus their conventional counterparts, to determine the common and exclusive associations of the funds' attributes to funds' performances. We wanted to contribute with a comprehensive work on the topic, by offering a new comparative study, and analyzing the effects of major funds' attributes on the funds' performances. Specifically, we will investigate the sensitivities of the funds' returns towards their own attributes and investigate their potential explanatory powers, to unravel the core drivers behind their performances. The work will exclusively target 200 active Saudi funds trading in the TADAWUL Exchange, from 2011 to 2015. The performance measures we're investigating are the fund's excess return, management selectivity skills and market timing abilities. We are deriving selectivity and timing coefficients from both Treynor and Mazuy (1966), referenced as T&M and Henriksson and Merton (1981), referenced as H&M, to test our results' robustness. In addition, we will be looking into the relationship between selectivity and timing overall, to determine whether the skills are mutually exclusive or dependent of one another.

## 1. Theoretical Background

There are many studies made to understand the main drivers of funds' performances and contribute to sounder investment decisions. Fund size is the most obvious fund characteristic, which plays a role in the performance of mutual funds. There are studies suggesting that it should be large enough to positively perform and cover its costs. Others argued that "bigger is not necessarily better", as in as in Jones (2009), Babbar and Sehgal (2018), and that the optimal size is the one compatible with the investment style and objectives.

Fund growth is another fund attribute that reflects the cash inflow and outflow into or out of the fund. An excessive inflow forces the fund to either hold idle cash or be pressured to allocate in less optimal investment substitutions and proxies just to put the money to work. Heavy redemptions, however, affect the fund performance by pulling out of established strategies the managers would not otherwise dump. Overall, large fund inflows most likely improve their performance, as argued in Lynch and Musto (2003).

Investment turnover is another relevant factor to fund performance. Excessive investment turnover leads to unnecessary transaction costs and tax events. The faster the turnover is, the lower the performance seems to get. Warren Buffet advocates openly long-term investment strategies. Value-oriented funds tend to have slower turnover. However, aggressive growth funds engage in faster turnover. Nevertheless, a buy and hold strategy has gained more consensus than active trading, partly due to slower turnover rate, as confirmed by Tower and Zheng (2008).

Risk is an inherent component of trading. An ordinary investor focuses more on return than on risk. A professional investor recognizes the potential risk and allocates funds on a risk-adjusted basis. It is in the nature of any investor to dislike losses more than they like gains. However, unexpected gain is always welcomed. A mutual fund performance must be adjusted to the risk involved and objectives set. Both systematic and unsystematic risks should be considered when budgeting the risk and focusing on a risk-adjusted return basis. Overall, it has been argued that, with higher risk comes higher reward, and safety generally leads to lower performance, as confirmed by Asad and Siddiqui (2019).

Running funds involves expenses varying from sales loads (front and back-end loads), purchase, account, exchange, redemption, distribution and service, management fees, operating expenses, and other expenses i.e. custodial, legal, accounting and audit related expenses. Studies, such as Abramov and Akshentseva (2015), have proven that in most cases, lower overall expense funds outperform. A rule of thumb in the finance industry is to avoid funds with more than 1% expense ratio.

Fund management fees are opaque and confusing. They may not be always justified. Chris and Graham (2012), in their investigation of funds' management charges and performance, concluded that, first, the costs incurred should not be looked at in isolation, rather as an integral part in the assets' selection process, second, the fund management through active selection process was able to generate returns over and above their trading costs. However, this is not always the case, as it involves active management and expertise. The consensus appears to be in favor of lower asset management fees, as in Servaes and Sigurdsson (2022).

As for fund age, new funds appear to have a lot to prove, and that is what makes them work harder to generate higher performance. Even though older funds have been around the block longer than new entrants have, this acquired knowledge and experience were not enough to stay ahead, as studies have shown, such

as Babbar and Sehgal (2018) and Farid and Wahba (2022). Older funds tend to be larger, restricted, and fear reputational risk. It is harder for them to improve fast enough to outperform new entrants in the industry.

Investment target directly affect fund performance. Funds can invest domestically or internationally. The decision depends on the size of the market opportunity, diversification opportunities or issues, political stability, emerging versus developed markets preferences and social-cultural boundaries. Going global provides access to fastest-growing markets, even with high level of risk, as confirmed by Boudreaux et al. (2007). Currency risk, however, should be appropriately hedged. Since the start of the bull market in March 2009, US investors have been increasingly pouring cash into internationally oriented funds, even though foreign markets have been laggards since then. One main reason investors are rushing to international funds is in part, for diversification purposes, following the conventional wisdom investment rate of 20% in international stocks.

There are two main investment objectives, growth, and value oriented. Growth seekers are looking to “go big or go home”, chasing after the “next big hit” for capital appreciation. Value investing on the other hand is the art of “finding diamond in the rough”, undervalued investments. They are usually safer, with lower total return, versus growth investments. Growth funds seem to perform well in bull markets, while income or value funds show better results in bear markets. Shukla (2004) confirmed the generally good results from growth seeking funds. James (2001) argued that although growth funds did not exhibit abnormal returns, value funds showed negative abnormal returns during the same period.

Faith based funds are considered subsets of socially responsible funds, with investment screening based on ethical or religious believes. The screening process may however limit the investment universe and ultimately affect performance. Sharia screening process proved useful in the 2008 financial crisis. It is however associated with higher fees for the extra screening and smaller average size funds. Nevertheless, involved investors seem willing to bear such higher costs as long as the funds’ investment objectives are in line with their believes. Faith-based investments appeared to be competitive in bull markets, and less risky in bear markets, as in Asutay et al. (2022). In addition, with the growing awakening and interest for these relatively new investment venues, huge inflows have been pouring into faith-based funds, rendering them viable competitive alternative to conventional unrestricted funds.

For lag return, good past performance is not necessarily carried out in the future, as indicated by Ferreira et al. (2013). Yet, there is still a strong believe that past winners will continue to outperform, as shown in Damayanti and Cintyawati (2015). It has been common for investors to look at past performance to make decisions. Past returns might help gage the security’s performance. No one prefers to invest in past losers. This approach is mostly due to a combination of availability bias, and a belief in market inefficiency. Investors should inquire about the drivers behind past performances and focus on fundamentals rather than historical momentums.

For Cash holding, higher cash position might be a good resource for management to take advantage of good investment opportunities, face a redemption pressure especially in a downturn market, or meet transaction costs, as seen in Simutin (2013). However, a fund holding on to a high level of liquidity instead of being invested, might miss an upswing market. Khan Et Al (2021) argued the more cash a fund holds, the lower its performance may be.

As for tenure, longer management tenure refers to higher experience, usually associated with good performance. It is one important key factor in identifying winning funds. Funds with longer-tenured staff typically outperformed their peers, as shown in Kiymaz (2019). Experience does matter. However, tenured managers may avoid reputation risks by staying overly cautious in their investments and keeping their bonuses. Younger managers, despite their lack of experience, are bolder, creative, and ambitious, which can help drive performance up, as in Lückoff (2011).

Any level of price-earning-ratio, by itself, has no merit. Other factors should be considered, such as growth potential, soundness of earning estimations, and industry average. When a high price-earning-ratio is associated with a sound earning income from good operating performance, it is a sign of a high earning growth potential. Otherwise, a high ratio would indicate an overpriced security. A fund with high price-earning-ratio should come from a sound growth investment philosophy based on fundamentals, competitiveness, solid governance, and management expertise. As for cash flow-to-book ratio, a high value associated with high performance, indicates that the business is generating enough cash from its operating activity. Excess operating cashflow can be further used to finance new investments or redeem outstanding

debts. Laurie et al. (2004) argued that a good fund performance is associated in part with both high price-earning-ratio and cash flow-to-book ratio.

A high price-to-book ratio might refer to a growth security. A low price-to-book ratio may be a sign of a value security. However, value trap or growth trap concerns might emerge. One must always keep track of the return on equity alongside the price-to-book ratio to make sure they're both moving in the same direction, otherwise, it's a cause of concern. For instance, a high price-to-book ratio with a low return on equity can signal an overvalued investment. It's a useful ratio for fund managers because it is best suited in portfolios with large number of assets. Overall, funds with high price-to-book ratio outperform, as mentioned in Kiymaz (2015).

## 2. Literature Review and Hypothesis Formulation

This section will present the previous empirical findings on the most common attributes and their effects on funds' return, selectivity, and timing:

**Size.** On the effect on fund return, Lückoff (2011), James Et Al (2011), Babalos Et Al (2013), Ferreira Et Al (2013), Wisudanto Et Al (2014), Abramov and Akshentseva (2015), Inderjit (2018), Babbar and Sehgal (2018), and Farid and Wahba (2022) found that smaller equity funds outperform larger ones and showed higher returns consequently. On a different note, Bialkowski and Otten (2011), Zabiulla (2014), Damayanti and Cintyawati (2015), Alam and Qadar (2016), Zia Et Al (2017), and Kiymaz (2019) found a positive association between equity fund size and return. Meanwhile, Yong and Ruzita (2012), Mohammad (2013), Asad and Siddiqui (2019), and Surang (2022) found no significant relationship between size and return for equity funds. Abramov and Akshentseva (2015) and Javier (2015) shared similar findings for bond funds and hybrid funds respectively. On the selectivity, Babalos Et Al (2009), Soo-Wah (2012), Lubos Et Al (2014), Bessler Et Al (2016), and Atta and Marzuki (2019), under T&M model, argued that large size hurts the selectivity returns. Serkan and Ümit (2008), Kent Et Al (2009), and Lobão and Gomes (2015), and Maroof Et Al (2020), on the other hand, found that larger equity funds are associated with positive selectivity skills performance. Das and Rao (2015) and Surang (2022) failed to statistically link fund size to selectivity performance. On market timing, Serkan and Ümit (2008) and Maroof Et Al (2020) noticed that large equity funds showed poor market timing. Soo-Wah (2012) and Atta and Marzuki (2019), under H&M model, on the other hand, stated that large funds showed good market timing performance overall. Das and Rao (2015) however, were not successful in finding a statistical link between market movement forecasting and fund size.

**Growth.** On the effect on fund return, Lückoff (2011) found that equity funds sample performance tends to benefit from outflows at least for the long run. Soo-Wah (2012), Ferreira et al. (2013) and Babbar and Sehgal (2018) found that fund growth is negatively associated to its return. Meanwhile, Wisudanto et al. (2014) and Abramov and Akshentseva (2015) argued that equity fund growth improves its return. On the selectivity, Bessler Et Al (2016) and Das and Rao (2015) showed that growing equity funds were associated with weak selectivity performance. Maroof Et Al (2020), however, found that selectivity performance is positively associated with growth. Nevertheless, Lobão and Gomes (2015) found no significant effect of equity fund growth on management selectivity skills. On the timing, Das and Rao (2015) found that growing funds were able to show positive market timing results. Meanwhile, Soo-Wah (2012) and Maroof Et Al (2020) observed no statistically relevant link between management macro-selection and fund growth.

**Turnover.** On the effect on fund return, Lückoff (2011), and Babalos Et Al (2015) worked on equity funds and argued that higher turnover hurts fund's performance. Abramov and Akshentseva (2015) found similar results with bond and blend funds. However, James Et Al (2011), Alam and Qadar (2016), Inderjit (2018), and Kiymaz (2019) found that funds turnover is positively related to fund's performance. On the other hand, Yong and Ruzita (2012), James Et Al (2011) with momentum strategy, Yong and Ruzita (2012), Kiymaz (2015), Abramov and Akshentseva (2015), and Babbar and Sehgal (2018) all failed to find a significant relation between equity fund performance and turnover. On the selectivity, Lobão and Gomes (2015) noticed that faster turnover in equity funds hurt stock selection performance. Nevertheless, Maroof Et Al (2020) argued that a good selectivity performance is associated with a fast turnover. Meanwhile, Soo-Wah (2012), Kiymaz (2015), and Das and Rao (2015) noticed no statistically significant association between investment turnover and management stock picking skills performance. On market timing, Wei (2003) argued that good market movement prediction is associated with lower turnover ratio, while, Cao Et Al (2013) and Maroof Et Al (2020) noticed that frequent turnover helps improve market timing results. Soo-Wah (2012), and Das and Rao (2015) on the other hand, couldn't find statistically relevant effect of turnover on timing abilities.

**Risk.** On the effect on fund return, Mohammad (2013) and Surang (2022) found that fund return is associated with lower risk level. Meanwhile, Soo-Wah (2012), Yong and Ruzita (2012), and Asad and Siddiqui (2019) worked on equity funds and argued that higher risk has led to better results. On the other hand, Mohammad (2013) argued that funds' systematic risk measure was not significant in affecting the funds' returns. On the selectivity, Soo-Wah (2012), Das and Rao (2015), Maroof Et Al (2020), and Surang (2022) noticed good selectivity performance requires lower risk. Nevertheless, Brown, and Goetzmann (1995), and Atta and Marzuki (2019), under H&M model, realized that good stock picking performance is actually associated with higher risk. Meanwhile, Lobão and Gomes (2015) failed to statistically significantly associate risk taking and micro-selection returns. On market timing, Soo-Wah (2012), Das and Rao (2015), Atta and Marzuki (2019), under T&M model, and Maroof Et Al (2020), all proved that timing abilities are most appropriate in a risky market. However, Das and Rao (2015), under H&M method, noticed no relevant relationship between market timing and risk involved.

**Expense Ratio.** On the effect on fund return, Lückoff (2011), Babalos Et Al (2013), Mohammad (2013), Abramov and Akshentseva (2015), and Kiymaz (2019) found that higher expense ratio hurts their funds' return performance. However, Yong and Ruzita (2012), Javier (2015), Alam and Qadar (2016), Zia Et Al (2017), Inderjit (2018), and Farid and Wahba (2022) showed that higher expenses, do actually lead to better fund performance. Meanwhile, Bialkowski and Otten (2011), Soo-Wah (2012), Ferreira Et Al (2013), Abramov and Akshentseva (2015), Babbar and Sehgal (2018), and Asad and Siddiqui (2019) found no significant association between equity fund's expense ratio and return, suggesting that expenses are not relevant in determining fund's performance. On the selectivity, Babalos Et Al (2009), Gil-Bazo and Ruiz-Verdu (2009), and Wallick Et Al (2015) showed that funds selectivity returns are negatively associated with funds' expense ratio. On the other hand, Lobão and Gomes (2015) argued that equity funds selectivity skills were highly effective when they are associated with higher expense ratio. However, Soo-Wah (2012), Das and Rao (2015), and Maroof Et Al (2020) found that stock picking skills are statistically independent from funds' expense ratio. On the timing sensitivity, Das and Rao (2015) noticed that higher expense ratio is associated with poor market timing returns. However, Soo-Wah (2012), Cao Et Al (2013), and Maroof et al. (2020) argued that good market timing are associated with higher expenses.

**Management Fees.** On the effect on fund return, Carl Et Al (1999) and Servaes and Sigurdsson (2022) found that higher management fees are negatively affecting funds' performance. However, Alam and Qadar (2016) and Surang (2022) argued that higher management compensation leads to better results. Ippolito (1989) and Kiymaz (2015) on the other hand failed to detect any statistical significance of management fees possibly affecting funds' performance. Looking for the impact on selectivity, Serkan and Ümit (2008) and Servaes and Sigurdsson (2022) noticed that good equity funds selectivity returns are associated with lower management fees, whereas Golec (1996), Haslem Et Al (2007), Kiymaz (2015) and Surang (2022) argued that higher management compensation is associated with positive funds selectivity performance. On the effect on timing however, Serkan and Ümit (2008) discovered that lower management fees are associated with better market movement predictions.

**Age.** On the effect on fund return, Lückoff (2011), Yong and Ruzita (2012), Ferreira Et Al (2013), Abramov and Akshentseva (2015), and Farid and Wahba (2022) realized that old equity funds did not exhibit good performance. On the other hand, Mohammad (2013), Wisudanto Et Al (2014), Damayanti and Cintyawati (2015), Kiymaz (2015), Zia Et Al (2017), Babbar and Sehgal (2018), Inderjit (2018), and Kiymaz (2019) found a positive association with fund age and return. Meanwhile, Pollet and Wilson (2008), Soo-Wah (2012), Asad and Siddiqui (2019), and Surang (2022) failed to find any statistically significant association between funds' age and return. On the selectivity sensitivity, Babalos Et Al (2009), Lobão and Gomes (2015), and Atta and Marzuki (2019) noticed that older equity funds enjoy better selectivity results overall. Nevertheless, Soo-Wah (2012), Das and Rao (2015), and Maroof Et Al (2020) found no statistical evidence of a relationship between funds' age and stock picking performance. Lubos Et Al (2014) and Surang (2022) on the other hand, showed better selectivity performance with younger funds. On timing abilities, Cao Et Al (2013), and Atta and Marzuki (2019), under H&M model, shared a positive association between fund age and timing performance. Nevertheless, Atta and Marzuki (2019), under T&M model favored younger funds for a better timing. Soo-Wah (2012), Das and Rao (2015), and Maroof Et Al (2020) found that fund age is not a determinant factor for market timing.

**Objective.** On the impact on fund return, Chang (2004) realized that income oriented funds were able to get better results than aggressive growth funds. On another note, Shukla (2004) argued that growth funds showed better results than income funds. On the impact on selectivity, Das and Rao (2015) realized that when selecting aggressive growth type investments, managers fail to show good stock picking performance.

However, Soo-Wah (2012) and Kiymaz (2015) argued that growth objective would improve selectivity results. On the effect on timing, Soo-Wah (2012) showed that market timing ability fails to be effective when funds are seeking growth-oriented investments. Meanwhile, Das and Rao (2015) noticed that market timers do actually perform better with growth investment-type objective.

**Lag Return.** Past performance showed different effects on fund return. Wisudanto Et Al (2014) and Abramov and Akshentseva (2015) looked into equity, bond and blend funds, and they both noticed that funds' performance is negatively related to past returns. Meanwhile, Talat and Ali (2009), Fulkerson Et Al (2013) and Damayanti and Cintyawati (2015) realized that good past performance helps generate higher returns. On the other hand, Ferreira Et Al (2013) showed that funds' returns are not statistically significantly dependent on their past performance. On the Selectivity, Lobão and Gomes (2015) and Bessler Et Al (2016) agreed that past equity funds' performance is positively associated to selectivity returns. However, Phelps and Detzel (1997) failed to statistically link fund selectivity performance with historical returns. To the best of our knowledge, there was no previous study probing market timing sensitivity to fund historical returns.

**Cash.** On the cash holding effect on fund return, Talat and Ali (2009), Alam and Qadar (2016), and Inderjit (2018) found that higher cash holdings did actually hurt funds' returns. Ferreira Et Al (2013) on the other hand, argued that higher liquidity helps in improving funds' performance. On the effect on Selectivity, Babalos Et Al (2009) and Khan Et Al (2021) noticed that large liquidity holding negatively affects selectivity performance. However, Haslem Et Al (2008), Kent Et Al (2009), and Simutin (2013) argued that higher equity funds cash reserves are positively associated with good micro-selection results. Nonetheless, Babalos Et Al (2009), using fixed effect model equity funds, failed this time to unveil any significant relation between cash position and stock selection performance.

**Tenure.** On management experience and tenure effect on fund return, Lückoff (2011) found that new fresh managers with very few experience are the ones that actually showed better results. Meanwhile, Thomas and Marina (2005) and Kiymaz (2019) found that longer management experience and tenure help improve funds' performance. Peterson Et Al (2001), Laurie Et Al (2004) and Kiymaz (2015) however, were not able to prove any effect of management tenure statistically significantly on funds' return. On the selectivity, Golec (1996) realized that longer tenured management shows better selection skills. However, Kiymaz (2015) failed to showed any effect of tenure on selectivity. We were unable to find any academic investigation on management tenure impact on market timing.

**Price-Earning-Ratio.** On the its effect on fund return, Laurie Et Al (2004) found that the price-earning-ratio positively affects funds' return. However, the ratio was a part of the cross-sectional risk representation along with the market-to-book value and the median capitalization in Indro Et Al (1999) work. Kiymaz (2019) showed a negative relation of the price-earning-ratio, with the socially responsible funds' performance. Kiymaz (2015) on the other hand failed to show a statistically significant impact of the price-earning-ratio on his funds' performance and selectivity return, represented by Jensen alpha. We could not find any previous work highlighting the price-earning-ratio effect on market timing.

**Cash Flow-to-Book Ratio.** Laurie Et Al (2004) worked on such attribute and found that higher cash flow-to-book value is associated with higher equity fund return. We were unable to observe any academic inquiry on the sensitivity of both selectivity and timing to changes in cash flow-to-book ratio.

**Price-to-Book ratio.** Kiymaz (2019) found that the funds' performance in his sample had a statistically significant negative relation with the price-to-book ratio. Kiymaz (2015) however, argued that the ratio improves fund performance and selectivity skills. To our knowledge, there was no previous work available on the impact of this ratio on market timing.

**Target.** Rao and Aggarwal (1987) proved that international funds earned a rate of return consistent with the risk involved with international allocations. Boudreaux Et Al (2007) argued that nine out of ten of the international mutual fund portfolios outperformed the local U.S. market. In addition, Detzler and Wiggins (1997) proved that international funds showed better return, but no statistical evidence of selectivity performance. On the other hand, Turtle and Zhang (2012) argued that emerging market fund selectivity performance is often significantly positive in global bull regimes. Kiymaz (2019) showed that global investments were however, negatively related to fund performance. We failed to identify any work on market timing sensitivity to geographical target factor.

**Faith.** Adams & Ahmed (2012) showed, in their investigation on performance sensitivity to a dummy faith factor of both Christian and Islamic funds, that faith has no statistically significant effect on funds' performance.

Kiyamaz (2019) used a similar dummy variable for socially responsible investment screening and found a positive relation with the funds' performance. However, there were signs of negative selectivity associated with it. No information on faith used as independent factor affecting market timing abilities was found.

Based on the theoretical background and historical academic work, we present in table 1 our list of hypotheses for each of the fund's attributes presented above, and their impact on the fund performance, represented by the excess return over a benchmark, stock selection skills and market timing abilities. We're addressing the hypothesis for both Islamic and Conventional funds.

Table 1. List of Hypothesis by Attribute

Attributes	H°	Hypothesis
Size	H1	Small fund size improves fund's performance
Growth	H2	Growth from high cash inflow improves fund's performance
Turnover	H3	Slower turnover improves fund's performance
Systematic Risk	H4	Higher systematic risk improves fund's performance
Unsystematic Risk	H5	Higher unsystematic risk improves fund's performance
Management Fees	H6	Lower management fees improve fund's performance
Expense Ratio	H7	Lower expense ratio improves fund's performance
Age	H8	Younger age improves fund's performance
Target	H9	International investments improve fund's performance
Objective	H10	Growth oriented investment style improves fund's performance
Faith	H11	Faith-based orientation improves fund's performance
Lag Return	H12	High past returns do not necessarily improve fund's performance
Cash	H13	High cash holdings improve fund's performance
Tenure	H14	Longer tenured management fund improves fund's performance
PER: Price-Earning-Ratio	H15	High Price-Earning-Ratio improves fund's performance
CF/B: Cash Flow-to-Book	H16	High Cash Flow-to-Book ratio improves fund's performance
P/B: Price-to-Book	H17	High Price-to-book ratio improve fund's performance

The hypothesis is per attribute for each performance measure (Excess Return, Selectivity & Timing), for both Islamic & conventional funds. Statistical significance of 1%: \*\*\*, 5%: \*\*, 10%: \* Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Systematic Risk: Fund systematic risk, Unsystematic Risk: Fund unsystematic risk, Management Fees: Fund management fees, Expense Ratio: Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio.

Source: Compiled by authors.

### 3. Research Statement, Data and Methodology.

Our main problem statement revolves around the following question: How do Islamic and conventional funds' performances react to changes in a range of selected fund attributes? We're using a sample of 200 actively traded funds in Saudi Arabia TADAWUL exchange from 2011 to 2015. Selected funds should have a minimum of 2-year activity during the study period, and still active by the end of 2015. We used equal weighing method as in Hoepner Et Al (2011), to avoid over representing larger funds. Table 2 presents the portfolios and benchmarks used in our study:

Table 2. Portfolios and Benchmarks

Portfolio	Funds	Benchmark	Description
Islamic	137	MSCI ACWI I	MSCI All Countries World Index Islamic
Conventional	63	MSCI ACWI	MSCI All Countries World Index

Source: Compiled by authors.

The performance measures are determined following these methods:

Excess return ER is calculated from TADAWUL monthly funds returns in excess of the monthly Saudi risk-free rate or SIBOR:

$$ER = (R_{i,t} - R_{f,t}) \tag{1}$$

$R_{i,t}$  : Return on fund i at month t, and

$R_{f,t}$  : Risk free rate at month t (1 month SIBOR)

Selectivity and Timing coefficients are derived from Treynor and Mazuy (1966) or T&M model, and Henriksson and Merton (1981) or H&M model. We're using both models to assess our findings' robustness.

The T&M model is represented as follow:

$$(R_{i,t} - R_{f,t}) = \alpha_i + \beta_i * (R_{M,t} - R_{f,t}) + \gamma_i * (R_{M,t} - R_{f,t})^2 + \varepsilon_i \quad (2)$$

$R_{i,t}$  : Return on fund i at month t,

$R_{M,t}$  : Return on market portfolio at month t,

$R_{f,t}$  : Risk free rate at month t (1 month SIBOR),

$\alpha_i$  : Selectivity measure of fund i,

$\beta_i$  : Systematic risk measure of fund i,

$\gamma_i$  : Timing coefficient of fund i, and

$\varepsilon_i$ : Error term with zero mean.

The second model H&M is as follow:

$$(R_{i,t} - R_{f,t}) = \alpha_i + \beta_i * (R_{M,t} - R_{f,t}) + D * [\gamma_i * (R_{M,t} - R_{f,t})] + \varepsilon_i \quad (3)$$

D: dummy variable that equals 0 if  $R_{M,t} > R_{f,t}$  and -1 otherwise, and

Remaining variables are same as above T&M model.

Next, we build a multifactor regression model to investigate the fund's performance relation with the chosen attributes.

$$\text{Performance}_i = \beta_0 + \beta_1 * \text{Size}_i + \beta_2 * \text{Growth}_i + \beta_3 * \text{Turnover}_i + \beta_4 * \text{Sys. Risk}_i + \beta_5 * \text{Unsys. Risk}_i + \beta_6 * \text{Mgt. Fees}_i + \beta_7 * \text{Expense R}_i + \beta_8 * \text{Age}_i + \beta_9 * \text{Target}_i + \beta_{10} * \text{Objective}_i + \beta_{11} * \text{Faith}_i + \beta_{12} * \text{Lag Return}_i + \beta_{13} * \text{Cash}_i + \beta_{14} * \text{Tenure}_i + \beta_{15} * \text{PER}_i + \beta_{16} * \text{CF/B}_i + \beta_{17} * \text{P/B}_i + \varepsilon_i \quad (4)$$

$\text{Performance}_i$  : Excess Return / Selectivity skills / Timing abilities,

$\text{Size}_i$  : Natural Logarithm of fund i year Net Asset Value NAV,

$\text{Growth}_i$  : Fund i average growth rate:  $(\text{NAV}_t - \text{NAV}_{t-1}) / \text{NAV}_{t-1}$ ,

$\text{Turnover}_i$  : Ratio of fund i average total sales (purchases), whichever is greater, over average net investments,

$\text{Sys. Risk}_i$  : Fund i average systematic risk: Fund i beta \* market standard deviation,

$\text{Unsys. Risk}_i$  : Fund i average unsystematic risk:  $\sqrt{\text{Fund i total variance} - \text{systematic variance}}$ ,

$\text{Mgt Fees}_i$  : Fund i average management fees ratio over NAV<sub>i</sub>,

$\text{Expense R}_i$  : Fund i average total expense ratio:  $(\text{Mgt. fees} + \text{Administrative fees}) / \text{NAV}_i$ ,

$\text{Age}_i$  : Natural Logarithm of fund i age,

$\text{Target}_i$  : Dummy variable equal 1 if fund i is local and 0 otherwise,

$\text{Objective}_i$  : Dummy variable equal 1 if fund i seeks growth, 0 if Income, Income-growth or cap-preservation,

$\text{Faith}_i$  : Dummy Variable equal 1 if Islamic and 0 if conventional,

$\text{Lag Return}_i$  : Fund i average historical (lagging) 12-month return,

$\text{Cash}_i$  : Fund i average liquidity position,

$\text{Tenure}_i$  : Fund i management tenure (in years),

$\text{PER}_i$  : Fund i average Price-Earning-Ratio,

$\text{CF/B}_i$  : Fund i average cash flow (operating cash flow) over book ratio,

$\text{P/B}_i$  : Fund i average Price (NAV) over book ratio,



$\beta_0$  : Intercept representing the non-explained performance portion by the variables

$\beta_1$  to  $\beta_{17}$  : Corresponding variables coefficients, and

$\varepsilon_i$  : Error term with zero mean.

#### 4. Results and Discussion.

**Descriptive Statistics.** The descriptive statistics in table 3 shows that both Islamic and conventional funds enjoy negative average excess returns, determined using equation (1), with comparable low standard deviations. We notice that both Islamic and conventional funds are enjoying on average, positive selectivity return, however considerably negative market timing performance. This is a preliminary indication that both fund types include acceptable selected combinations of securities, though without the appropriate allocations due to a slightly poor market change prediction. Selectivity and timing performance results from both T&M and H&M models, based on equations (2) and (3), appear to be quite similar.

Table 3. Descriptive Statistics

Measures	Excess Return		T&M				H&M			
			Selectivity		Timing		Selectivity		Timing	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Min	-0.01112	-0.02385	-0.00953	-0.01715	-0.28957	-0.65898	-0.01027	-0.01252	-2.63631	-1.29790
Max	0.01412	0.01277	0.03256	0.02204	0.35532	0.56582	0.0446	0.03214	0.51163	0.79612
Mean	-0.00119	-0.00172	0.00326	0.00142	-0.25927	-0.17665	0.00675	0.00418	-0.48254	-0.36700
Median	-0.00175	-0.00253	0.00246	0.00141	-0.15763	-0.10887	0.00593	0.00311	-0.31152	-0.19234
St. Dev.	0.00455	0.00532	0.00796	0.00667	0.40206	0.22738	0.01102	0.00925	0.56388	0.43977
Skewness	0.652	-0.696	0.908	0.312	-2.438	0.018	0.552	0.664	-0.799	-0.361
Kurtosis	0.941	4.163	0.863	0.897	7.627	0.473	-0.437	0.061	0.594	-0.554

T&M: Treynor and Mazuy (1966), H&M: Henriksson and Merton (1981).

Source: Compiled by authors.

**Correlations.** Table 4 presents the correlations, in percentage terms, between the fund attributes and fund performance measures. Excess return correlation with the different funds variables is quite similar for both Islamic and conventional fund portfolios. Excess return is showing statistically significantly positive correlation with 7 of the fund's attributes.

Table 4. Fund Performance and Attributes Correlations

Attributes	Excess Return		T&M				H&M			
			Selectivity		Timing		Selectivity		Timing	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Size	-10	4	-25	11	26	-12	-22	13	21	-14
Growth	1	28	0	26	-2	-5	-3	22	4	-7
Turnover	10	-1	6	9	-6	-25	-1	-4	4	-29
Sys. Risk	5	17	28	18	-19	-1	26	12	-20	1
Unsys. Risk	60	31	75	65	-67	-75	68	75	-61	-79
Mgt Fees	32	29	41	50	-31	-55	41	56	-36	-57
Expense R.	29	25	39	45	-31	-53	39	51	-35	-54
Age	-26	-10	-39	-11	45	16	-31	-12	29	13
Target	35	23	39	45	-38	-61	45	56	-49	-66
Objective	22	42	24	58	-22	-46	31	58	-24	-47
Faith	0	0	22	0	-12	0	24	0	-16	0
Lag Return	85	83	86	81	-55	-53	89	75	-73	-50
Cash	20	-10	31	16	-33	-56	28	29	-28	-53
Tenure	-29	-8	-38	-12	37	16	-34	-13	31	14
PER	-29	-1	-37	-5	25	6	-36	-7	29	7
CF/B	11	49	3	37	6	6	-2	28	10	0
P/B	10	37	-3	35	12	-16	-7	29	15	-13

Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Sys. Risk: Fund systematic risk, Unsys. Risk: Fund unsystematic risk, Mgt Fees: Fund management fees, Expense R. Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio.

Source: Compiled by authors.

The strongest correlations are registered with lag return and unsystematic risk. Signs of modest positive correlations were seen with fund's management fees, expense ratio, target and objective. Excess return is

however showing, with statistical significance, modest negative correlation with fund's age, tenure and price-earning-ratio, more pronounced in Islamic funds.

As for selectivity, we notice that both Islamic and conventional selectivity coefficients are positively correlated with most of the fund's attributes. Strongest correlations are registered with lag return and unsystematic risk. Islamic and conventional selectivity on the other hand are inversely correlated to fund age, tenure and price-earning-ratio. The degree of correlation however is weaker on conventional funds side. Islamic fund selectivity is exclusively positively correlated to fund systematic risk and faith, though negatively correlated to fund size. Meanwhile, conventional fund selectivity has an exclusive positive correlation with cash flow-to-book ratio. Turnover does not seem to show a significant correlation with either portfolios. We noticed that, both T&M and H&M models based results are very close.

Contrary to selectivity, timing is mostly negatively correlated to most of the attributes. This is true for both Islamic and conventional funds. The strongest negative correlations are seen with lag return and unsystematic risk as well. Islamic fund Timing has positive correlation with size, age, tenure, and price-earning-ratio. In addition, it is negatively correlated to systematic risk, while conventional timing is exclusively negatively correlated to turnover. Same as in selectivity, both T&M and H&M models based results are quite similar. The study of correlation of attributes to performance measures are mostly exhibiting similar relations for both conventional and Islamic funds. Selectivity and timing are showing inverse correlations overall. Lag return and unsystematic risk appear the most relevant attributes for their highest correlations to fund performances.

The correlations results in table 5 between the management skills were similar to Soo-Wah (2012) findings. Selectivity and timing are strongly inversely correlated to each other, in both Islamic and conventional portfolios. This may suggest a trade-off between management micro and macro-forecasting skills, indicating fund management specialization, like the findings of Bilal (2016).

Table 5. Selectivity/Timing Correlations (%)

Models	Islamic	Conventional
	Selectivity/Timing	Selectivity/Timing
T&M	-83	-68
H&M	-93	-84

T&M: Treynor and Mazuy (1966), H&M: Henriksson and Merton (1981).

Source: Compiled by authors.

Next, we calculated the attributes pairwise correlations as shown in table 6. Results showed small to moderate degrees of correlations overall. There were, however, high correlations between management fees and expense ratio, Age and Tenure, cash flow-to-book and price-to-book ratios. This was evidenced by high value VIF (Variance Inflation Factor) score for the six variables. However, we have decided to keep all of them in the mix, for their individual insights in regard to their impact on the funds' performance measures.

Table 6. Attributes Pairwise Correlations (%)

Attributes	Size	Growth	Turnover	Sys. Risk	Unsys. Risk	Mgt Fees	Expense R.	Age	Target	Objective	Faith	Lag Return	Cash	Tenure	PER	CF/B	P/B
Size	1																
Growth	-5	1															
Turnover	2	58	1														
Sys. Risk	-28	-10	-21	1													
Unsys. Risk	-19	-13	-9	28	1												
Mgt Fees	-16	-11	-2	19	37	1											
Expense R.	-28	-12	-2	17	37	<b>95</b>	1										
Age	39	-23	-42	-11	-21	-23	-28	1									
Target	22	0	22	-39	40	28	28	-18	1								
Objective	-8	-15	-18	46	30	26	25	-4	4	1							
Faith	9	15	25	-24	3	8	11	-30	22	-4	1						
Lag Return	-7	1	4	27	48	38	32	-28	30	40	6	1					

Table 6 (cont.). Attributes Pairwise Correlations (%)

Cash	-24	-8	17	-4	24	43	68	-32	28	10	9	17	1				
Tenure	39	-17	-33	-16	-24	-24	-29	<b>93</b>	-20	-13	-31	-28	-26	1			
PER	18	2	6	-41	-29	-23	-22	16	3	-37	9	-30	-5	19	1		
CF/B	2	-5	3	-1	4	7	5	-10	9	6	5	12	5	-8	-4	1	
P/B	5	-1	2	-4	1	2	0	-9	7	5	5	7	-2	-8	-3	<b>95</b>	1
VIF	<b>1.74</b>	<b>1.56</b>	<b>1.97</b>	<b>2.27</b>	<b>1.76</b>	<b>11.34</b>	<b>12.98</b>	<b>9.36</b>	<b>2.29</b>	<b>1.49</b>	<b>1.24</b>	<b>1.59</b>	<b>2.16</b>	<b>8.87</b>	<b>1.24</b>	<b>11.19</b>	<b>11.14</b>

Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Sys. Risk: Fund systematic risk, Unsys. Risk: Fund unsystematic risk, Mgt Fees: Fund management fees, Expense R. Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio, VIF: Variance Inflation Factor.

Source: Compiled by authors.

**Excess Return Sensitivity to Attributes.** Next, we regressed excess returns over the funds' attributes using equation (4). Table 7 displays excess return sensitivity to fund attributes for both Islamic and conventional funds. Both regressions enjoy adjusted R<sup>2</sup> of 83% and 74% respectively, indicating a high explanatory power for both Islamic and conventional excess return changes respectively.

Table 7. Attributes Effects on Excess Return

Attributes	Excess Return	
	Islamic	Conventional
Constant	-0.00245	-0.00365
Size	0.00004	-0.00015
Growth	-0.00006	0.00385*
Turnover	0.00052**	0.00034
Sys. Risk	-0.15445***	-0.0307
Unsys. Risk	0.06042***	-0.02699
Mgt Fees	-0.01276	0.1833
Expense R.	0.01761	-0.21919
Age	0.00019	0.00055
Target	-0.00235***	0.00091
Objective	0.00032	0.00201
Faith	0.00073*	0.00000
Lag Return	0.67224***	0.62356***
Cash	-0.00055	0.00052
Tenure	-0.00001	-0.00006
PER	0.00000	0.00000
CF/B	-0.00023	0.00255
P/B	0.00007	0.00305
ADJ R <sup>2</sup>	%83.39	%74.09

Statistical significance of 1%: \*\*\*, 5%: \*\*, 10%: \* Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Sys. Risk: Fund systematic risk, Unsys. Risk: Fund unsystematic risk, Mgt Fees: Fund management fees, Expense R. Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio.

Source: Compiled by authors.

Islamic funds excess return appears to be statistically significantly positively associated with the fund's turnover, joining the results of James et al. (2011), Alam and Qadar (2016), Inderjit (2018), and Kiyamaz (2019). The funds were also positively related at 1% to unsystematic risk, indicating a preference for a concentrated portfolio. The funds were however, negatively related to systematic risk, same as in Mohammad (2013) and Surang (2022). The target had a negative impact on fund returns, signaling a better performance with international investments, similar to the findings in Rao and Aggarwal (1987), Detzler and Wiggins (1997), Boudreaux Et Al (2007). A positive association of the fund performance to faith factor, unlike in Adams & Ahmed (2012), indicates that Islamic funds rely in part on Sharia compliant investments and strategies to improve their performances. Finally, historical returns appear to contribute to the Islamic funds' performance, same as in Talat and Ali (2009), Fulkerson et al. (2013), Damayanti and Cintyawati (2015). This relationship with the lag return is shared with the conventional funds. Conventional funds' excess return is positively related to fund's growth and historical performance with statistical significance. These findings are in line with the results of Wisudanto et al. (2014) and Abramov and Akshentseva (2015).

Next, we regressed Islamic and conventional funds selectivity and timing over the funds attributes using equation (4), as shown in table 8, based on T&M model. The  $R^2$  vary from 65% to 91%, indicative of an overall high explanatory power.

Table 8. Attributes Effects on T&M Selectivity and Timing

Attributes	Selectivity		Timing	
	Islamic	Conventional	Islamic	Conventional
Constant	0.00503*	-0.00551	-6.8603**	-2.62426
Size	-0.00001	-0.00002	-0.01142	0.01065
Growth	0.00018	0.00479**	-0.19608	-0.53166
Turnover	-0.00007	-0.00200	0.53402*	1.85096***
Sys. Risk	-0.05506***	-0.04255	-3.54377	32.09342
Unsys. Risk	0.12016***	0.07188**	-12.43549***	-19.10169***
Mgt Fees	0.00223	0.10392	3.41633	36.,98171
Expense R.	-0.00405	-0.16320	14.71295	-32.6588
Age	-0.00426***	-0.00258	4.87804***	4.36743***
Target	-0.00098	0.00248	-0.98459	-1.66516***
Objective	-0.00013	0.00266*	0.75801	-0.80549
Faith	0.00058	0.00000	0.06573	0.00000
Lag Return	0.93054***	0.58875***	-19.36482***	2.3112
Cash	0.00146	0.00524	-2.16930	-2.59207
Tenure	0.00037***	0.00014	-0.40293***	-0.27841**
PER	0.00000	0.00000	0.00051	-0.00013
CF/BV	0.00047*	-0.00015	-0.44375	2.95529***
P/B	-0.00018***	0.00813***	0.16603**	-4.86835***
ADJ R <sup>2</sup>	%90.70	%82.74	%65.04	%74.67

Statistical significance of 1%: \*\*\*, 5%: \*\*, 10%: \* Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Sys. Risk: Fund systematic risk, Unsys. Risk: Fund unsystematic risk, Mgt Fees: Fund management fees, Expense R. Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio.

Source: Compiled by authors.

**Selectivity Sensitivity to Attributes under T&M Model.** Islamic fund selectivity shows a statistically significant negative relation with market risk, like the findings in Soo-Wah (2012), Das and Rao (2015), Maroof Et Al (2020), and Surang (2022). However, it seems to thrive with a high unsystematic risk from a more concentrated portfolio. A negative age coefficient indicates younger funds enjoy better stock picking skills, joining the findings of Lubos Et Al (2014) and Surang (2022). Results also show a statistically significant positive relation with Lag returns. Islamic fund managers seem to show positive selectivity performance with funds enjoying good past performance. These findings are in line with the results of Lobão and Gomes (2015), and Bessler Et Al (2016). In addition, long tenured management exhibits better stock picking results based on the positive coefficient at 1% level, like the findings shared by Golec (1996). The positive cash flow-to-book coefficient means higher selectivity performance is associated with a more operating cash flow available for investment. A negative price-to-book coefficient on the other hand means that overpriced funds hurt selectivity performance, opposite to the findings in Kiymaz (2015). Finally, Islamic fund selectivity return seems to depend on other non-defined factors as indicated by the statistically significant constant coefficient. Conventional selectivity coefficient is statistically positively associated with the fund's growth, joining the findings of Maroof Et Al (2020). A positive objective coefficient at 10% level indicates that conventional funds with growth investment style enjoy better selectivity. The results are in line with Soo-Wah (2012) and Kiymaz (2015) work. Finally, results also showed positive association of conventional selectivity performance to unsystematic risk and lag return, same as Islamic funds' selectivity returns. However, conventional funds' selectivity is positively associated to price-to-book ratio, indicating a preference for a higher NAV (Net Asset Value) for better selectivity results, same as in Kiymaz (2015).

**Timing Sensitivity to Attributes under T&M.** Both Islamic and conventional timing performances appear to improve with fund's age, similar to the findings in Cao Et Al (2013). In addition, both seem to show better return with faster turnover, as in Cao Et Al (2013) and Maroof Et Al (2020), and with higher price-to-book value, indicating a preference for larger NAV to successfully time the market. On the other hand, both exhibited a negative relation with unsystematic risk and tenure, showing a preference for a diversified portfolio, handled by a younger management team for better timing. On a different note, Islamic and conventional timing exhibited opposite relation with the price-to-book ratio. Islamic funds enjoy better timing with a high ratio, whereas conventional funds seem to be better off with a smaller underpriced ratio. Islamic funds' timing seems to improve with a contrarian strategy, as shown by the negative lag return coefficient at 1% level. In addition, the intercept suggests that there is strong evidence that Islamic funds'

timing return portion depends on attributes beyond the ones in our list. Conventional funds, however, appear to enjoy better timing performance associated with internationally oriented investment targets, and by a high level of available operating cash flow, as indicated by the statistically significant negative target coefficient, and the positive high cash flow-to-book ratio coefficient, respectively.

Next, we show selectivity and timing coefficients derived from the H&M model, for both Islamic and conventional portfolios. Results are displayed in table 9. The R<sup>2</sup> vary from 68% to 89%, indicative of an overall high explanatory power as well.

Table 9. Attributes effects on H&M Selectivity and Timing

Attributes	Selectivity		Timing	
	Islamic	Conventional	Islamic	Conventional
Constant	0.00931**	0.00077	-0.85834**	-0.75085
Size	-0.00039	-0.00003	0.027000	0.00066
Growth	0.00036	0.00509*	-0.02978	-0.07059
Turnover	-0.00078*	-0.00409**	0.09636**	0.33375***
Sys. Risk	-0.04823	-0.09315	-0.18467	6.84374
Unsys. Risk	0.09921***	0.14906***	-4.00921***	-10.3771***
Mgt Fees	0.02753	0.04148	-1.24659	7.82342
Expense R.	-0.01767	-0.11327	1.98182	-6.47903
Age	-0.00226	-0.00666	0.23390*	0.72965**
Target	0.00222**	0.00482**	-0.31873***	-0.32385***
Objective	0.00099	0.00279	-0.03307	-0.08202
Faith	0.00113	0.00000	0.04213	0.00000
Lag Return	1.43237***	0.68461***	-23.48328***	-6.44044
Cash	0.00058	0.01117	-0.11313	-0.65747
Tenure	0.00025*	0.00040	-0.02335*	-0.04651**
PER	0.00000	0.00000	0.00000	0.00013
CF/BV	0.00035	-0.00077	-0.02734	0.31322*
P/B	-0.00022**	0.00936**	0.01707*	-0.53141**
ADJ R <sup>2</sup>	88.96 %	85.07 %	68.28 %	77.20 %

Notes: Statistical significance of 1%: \*\*\*, 5%: \*\*, 10%: \* Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Sys. Risk: Fund systematic risk, Unsys. Risk: Fund unsystematic risk, Mgt Fees: Fund management fees, Expense R. Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio.

Source: Compiled by authors.

**Selectivity Sensitivity to Attributes under H&M Model.** Same as in Wei (2003), Islamic and conventional funds' selectivity performance seem to improve with a slower turnover, based on the negative turnover coefficient. In addition, selectivity is positively related to unsystematic risk in both funds, indicating a preference for a concentrated portfolio. Moreover, both funds showed positive target coefficients signaling a home investment bias for an improved stock selection return, opposite to Turtle and Zhang (2012) findings. Furthermore, the positive relation of the selectivity with lag return in both funds favors a momentum strategy for better results, similar to the findings in Lobão and Gomes (2015), and Bessler et al. (2016). On the other hand, same as in the previous results under T&M, Islamic funds enjoy better stock picking performance with a low price-to-book ratio, based on the negative coefficient, whereas conventional funds selectivity improves with a higher ratio, like Kiymaz (2015). Results also show a preference for longer management tenure by Islamic funds for better selectivity results, as in Golec (1996). In addition, it appears that Islamic fund selectivity return depends on other non-defined factors represented by the statistically significant constant coefficient. Finally, conventional funds selectivity has a positive link with growth at 10%, suggesting a preference for growth oriented investment style, same as in Maroof Et Al (2020).

**Timing Sensitivity to Attributes under H&M Model.** Results indicate that both Islamic and conventional funds market timing abilities are better with faster trade turnover, like Cao et al. (2013) and Maroof et al. (2020). In addition, they seem to prefer diversified holdings for better timing as suggested by the statistically significant negative unsystematic risk coefficients. Furthermore, similar to Cao et al. (2013) and Atta and Marzuki (2019), under H&M model, both funds timing performance improve with fund's age. Moreover, both share negative relations with target, lag return and tenure with statistical significance, suggesting a preference for international investments, a contrarian strategy, handled by a fresh, young management team, respectively. Similar to T&M based results, Islamic and conventional timing displayed opposite relation with the price-to-book. Islamic timing appears to depend on other non-mentioned attributes, as indicated by the statically significant intercept. Finally, conventional timing shows a preference for high cash flow-to-

book ratio, signaling the importance of large available operating cash flow for improved market timing performance.

Table 10 combines both T&M and H&M models-based results for a more comprehensive outlook, and overall comparison to our initial list of hypotheses per attribute, per each performance measure, for both Islamic and conventional funds.

Table 10. Summary of Combined Models' Findings vs. Initial Hypothesis

Attributes	Excess Return		Selectivity*		Timing*		Accept / Reject Hypothesis
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	
Size	ns	ns	ns	ns	ns	ns	H1 rejected overall
Growth	ns	+	ns	+	ns	ns	H2 accepted for conventional ER & S, rejected otherwise
Turnover	+	ns	-	-	+	+	H3 accepted for both Islamic & conventional S, rejected otherwise
Sys. Risk	-	ns	-	ns	ns	ns	H4 rejected overall
Unsys. Risk	+	ns	+	+	-	-	H5 accepted for Islamic ER and both Islamic & conventional S, rejected otherwise
Mgt Fees	ns	ns	ns	ns	ns	ns	H6 rejected overall
Expense R.	ns	ns	ns	ns	ns	ns	H7 rejected overall
Age	ns	ns	-	ns	+	+	H8 accepted for Islamic S, rejected otherwise
Target	-	ns	+	+	-	-	H9 accepted for Islamic ER and both Islamic & Conventional T, rejected otherwise
Objective	ns	ns	ns	+	ns	ns	H10 accepted for conventional S, rejected otherwise
Faith	+	ns	ns	ns	ns	ns	H11 accepted for Islamic ER, rejected otherwise
Lag Return	+	+	+	+	-	ns	H12 accepted for Islamic T, rejected otherwise
Cash	ns	ns	ns	ns	ns	ns	H13 rejected overall
Tenure	ns	ns	+	ns	-	-	H14 accepted for Islamic S, rejected otherwise
PER	ns	ns	ns	ns	ns	ns	H15 rejected overall
CF/B	ns	ns	+	ns	ns	+	H16 accepted for Islamic S and conventional T, rejected otherwise
P/B	ns	ns	-	+	+	-	H17 accepted for conventional S and Islamic T, rejected otherwise

Notes: Combined T&M and H&M results, ns: Not significant, +: Statistically significant positive association with performance measure, -: Statistically significant negative association with performance measure, ER: Excess Return, S: Selectivity, T: Timing. Size: fund size, Growth: Fund growth rate, Turnover: Sales / purchases by the fund, Sys. Risk: Fund systematic risk, Unsys. Risk: Fund unsystematic risk, Mgt Fees: Fund management fees, Expense R. Fund overall expense ratio, Age: Fund age, Target: Fund local / international investment target, Objective: Growth style investment or otherwise, Faith: Islamic / Conventional, Lag Return: Fun historical 12-month return, Cash: Fund liquidity position, Tenure: Management experience, PER: Fund Price-Earning-Ratio, CF/B: Fund operating Cash Flow-to-Book ratio, P/B: Fund Price-to-Book ratio.

Source: Compiled by authors.

**Comparative of Attributes Effects on Islamic vs Conventional Funds' Performance Measures.** Based On the combined findings in table 10, we first notice that five attributes, size, management fees, expense ratio, cash, and price-earning-ratio appear to have no statistically significant effect on any of the performance measures for both fund types. These findings are in line with the results shared in Yong and Ruzita (2012), Mohammad (2013), Das and Rao (2015), Asad and Siddiqui (2019), and Surang (2022) for size, Ippolito (1989) and Kiyamaz (2015) for management fees, Bialkowski and Otten (2011), Soo-Wah (2012), Ferreira Et Al (2013), Abramov and Akshentseva (2015), Das and Rao (2015), Babbar and Sehgal (2018), and Asad and Siddiqui (2019) for expense ratio, Babalos Et Al (2009) for cash, and Kiyamaz (2015) for price-earning-ratio.

Few similarities have emerged, however. Both Islamic and conventional funds stock pickers seem to thrive under high unsystematic risk or a more concentrated portfolio, with low investment turnover, involved in domestic investments with good past performances. Market timers for both fund types on the other hand, prefer older funds, with fresh young management team, involved in international investments, holding a diversified portfolio, with faster investment turnover. Results have also shown opposite reactions to same attributes. Islamic and conventional selectivity and timing react in opposite ways to a change in price-to-book. Islamic stock pickers prefer to work with lower net asset value NAV funds, while Islamic market timers react favorably to a large NAV fund. The exact opposite is true with conventional fund management.

In addition, finding have also shown some exclusive relations to each fund type. We noticed that both growth and objective factors are exclusive to conventional funds. This indicates that growing conventional

funds with growth investment strategies realize better results, mostly from management selectivity skills. Systematic risk and cash flow-to-book ratio on the other hand, seem to be restricted to Islamic funds. Islamic funds stock pickers prefer to avoid market exposure through asset allocation and perform better with funds showing large operating cash flow for potential investment opportunities. Large operating cash flow appear to be a great option to conventional market timers as well.

The faith factor was for most part statistically insignificant in our study. There were signs of a positive relation between faith and Islamic excess return, suggesting that overall, Islamic funds can perform well through faith compliant investments, unlike the findings of Adams & Ahmed (2012) that showed no statistically significant effect of faith on performance. However, Islamic funds selectivity and timing were not sensitive to the faith factor. Therefore, management performance does not appear to depend on the investment choice based on Sharia compliance.

## Conclusion and Implications

This study examined the impacts of seventeen fund attributes on Islamic and conventional funds' performances represented by the excess return, selectivity skills and timing abilities. We worked on a sample of 200 mutual funds traded on Saudi Arabia TADAWUL exchange divided into 2 portfolios, Islamic holding 137 funds and conventional holding 63 funds, from 2011 to 2015. Findings revealed that Size, management fees, expense ratio cash and price-earnings ratio were statistically insignificant to both Islamic and conventional fund performances. In addition, Both Islamic and conventional funds with good past performance, enjoyed better excess return. Islamic and conventional stock pickers appeared to prefer slow turnover, high unsystematic risk, domestic target, with good past performances. On the other hand, Islamic and conventional market timers showed better results with faster turnover, lower unsystematic risk, older funds, run by younger, less experienced managers, with an international investment target.

Moreover, Islamic fund selectivity is best suited with lower price-to-book ratio, while conventional fund selectivity performance increases with a higher price-to-book ratio. The exact opposite is true for timing in both fund types. Furthermore, Islamic fund performance depends on a lower systematic risk (market exposure), a large cashflow-to-book ratio, and Sharia compliant investments. Conventional fund performance on the other hand, reacts favorably to a fund with growth or aggressive growth investment objective. In addition, conventional fund timing performance improves with larger cashflow-to-book ratio. Finally, Faith attribute was only relevant to Islamic funds' excess return, and selectivity and timing were mutually exclusive for both Islamic and conventional funds, suggesting skill specialization, rather than synergy.

The originality of this paper resides in a comparative study on the sensitivity to a comprehensive list of fund attributes of both Islamic and conventional funds' performances measures: Excess return, selectivity and market timing performances. It provides a better understanding of funds' performance drivers, fills out a considerable gap in the academic research on the topic, and contributes to the growing evidence that Islamic mutual funds can be viable and competitive alternatives despite a more restrained investment environment due to Sharia restrictions.

**Limitations and Recommendations.** We had a 5-year limit access to TADAWUL data during the preparation of this study. There was a lack of previous work on the topic involving Islamic fund performance sensitivity to funds' main attributes, especially management selectivity and timing. In addition, there was no precedence on any comparative work involving Islamic and conventional funds' performance sensitivity to funds' characteristics. We recommend a large sample, a longer study period, and a multi-regional comparative study for much greater implications.

## Author Contributions

**Conceptualization:** Karim Soussou, Abdelwahed Omri; **data curation:** Karim Soussou; **formal analysis:** Karim Soussou; **investigation:** Karim Soussou; **methodology:** Karim Soussou, Abdelwahed Omri; **project administration:** Karim Soussou, Abdelwahed Omri; **supervision:** Karim Soussou, Abdelwahed Omri; **validation:** Karim Soussou, Abdelwahed Omri; **visualization:** Karim Soussou, Abdelwahed Omri; **writing – original draft:** Karim Soussou; **writing – review & editing:** Karim Soussou, Abdelwahed Omri.

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