

Analyzing the Performance of Pakistan Equity Mutual Funds Using Multifactor Models: Pre-COVID Analysis

Muhammad Danial, Nadia Iftikhar

Institute of Management Sciences, Peshawar, Pakistan

Syed Quaid Ali Shah

Department of Management and Humanities, Universiti Teknologi PETRONAS, Malaysia

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Abstract

Previous literature has primarily focused on examining the determinants that impact mutual fund returns in developed and emerging economies. However, there is a dearth of empirical research on how multifactor models are associated with mutual fund returns in underdeveloped economies. The inconsistent literature regarding the efficiency of the literature posed a question of whether the fund managers can generate extra returns for the investors. To address this research gap, this study aims to analyze mutual fund returns using multifactor models, specifically the Capital Asset Pricing Model (CAPM), Fama-French three-factor model, Carhart four-factor model, Treynor-Mazuy and Fama Net-Selectivity. The first three models analyze the funds with four factors: market factor, growth factor, value factor and momentum factor. The results of the study indicate that the risk premium factor plays a crucial role in understanding mutual fund returns, as it exhibits significant value across all three models. However, the value and size factors were found to be insignificant in both the Fama-French and Carhart models. Additionally, the momentum factor was not significant in the Carhart model. Notably, the significant alpha observed in all multifactor models suggests the skill of mutual fund managers, which was further confirmed using the Treynor-Mazuy and Fama Net-Selectivity models to assess their timing and selectivity abilities in actively managed funds. Furthermore, the finding of the study suggests the inefficiency of the market. The investors could earn extra return from their investments. However, the managers play important role in generating the abnormal returns as suggested by Treynor-Mazuy and Fama Net-selectivity model significance. In addition to that, investors

should consider the market risk premium in their investment returns.

Keywords: mutual fund, capital asset pricing model, fama-french model, carhart model

1. Introduction

Given the scarcity of resources in the modern world, investors must make prudent use of them (Bosman, Hartman & Sutherland, 2020; Aranda et al., 2019; Kazemargi & Spagnoletti, 2020). Investors' behavior theory asserts that rational investors actively seek out diverse investment options for their financial resources (Arnott & Gao, 2019; Soofi, Najafi & Karami, 2020), which has led to the emergence of various investment alternatives (Ali et al., 2021; Lai et al., 2021; Shah et al., 2022a). These financial investment alternatives can be traded in secondary markets through stock exchanges or over-the-counter platforms (Jain, Walia & Gupta, 2020; Mayo, 2020). Stock exchanges offer investments such as stocks, Exchange Traded Funds (ETFs), futures, tradable bonds, closed-end funds, and options, while the over-the-counter market facilitates the trading of open-end mutual funds, non-listed company stocks, and debt securities (Agrawal & Hockerts, 2021; Akhtar & Das, 2019; Mayo, 2020). Investors carefully analyze the returns and associated risks of these investment alternatives (Shah et al., 2022b; Tahir et al., 2023; Hamad et al., 2020), selecting the most suitable options based on their risk attitudes (Arnott & Gao, 2019). Among the various financial alternatives available, open-end mutual funds have exhibited significant growth (Qureshi et al., 2019).

A mutual fund functions as an asset management corporation, pooling money from numerous small investors and investing it across various portfolios (Akhtar & Das, 2019; Qureshi et al., 2019). Developed countries have witnessed remarkable growth in the mutual fund industry due to investors' inclination towards investing in mutual funds (Ji, Chen, Mirza, & Umer, 2021). Pástor & Vorsatz (2020) highlight that this significant growth fosters investor confidence in mutual fund investments. Conversely, the mutual fund sector in developing countries is still in the process of growth (Faff, 2004). The substantial expansion of the mutual fund sector has led to the introduction of various categories of mutual funds. These include open-end funds, which provide flexibility to investors, and closed-end funds, which are traded as secondary investment instruments on stock exchanges (Griffin & Lemmon, 2002). Open-end mutual funds are operated in the over-the-counter market, while closed-end funds are traded on stock exchanges (PSX, 2019). The advantage of open-end mutual funds is that they give investors the flexibility to liquidate their investments at any point considering the present value of the investment. This gives the open-end funds a greater liquidity power to their investors making it more popular in the market. Given the non-expertise of many investors, the open-end mutual fund industry plays a vital role by providing expert management for investing in securities. Moreover, small investors who are unable to invest in diversified securities benefit from mutual funds, which collect small amounts of money from many investors and invest in customized portfolios that balance risk and return (Liu et al., 2020). This characteristic of mutual funds helps reduce overall investment risk for investors, although returns may vary across different open-end mutual

funds based on the risk factors associated with each portfolio. However, the active funds industry is greatly affected by the COVID-19 crisis. Pástor & Vorsatz, (2020) explained the active funds behavior due to the COVID-19 crisis in the U.S. market. They suggested the significant view of the investors to consider the sustainability factors of the investment funds. In overall market decline conditions, the investors prefer to invest in such funds that essentially comply with the future persistence of their investments.

It was posited that including risk-free security in a portfolio alongside the risky market assets could reduce overall portfolio risk without proportionately reducing portfolio returns (Shahzad et al., 2023; Shah et al., 2021; Shah et al., 2022c; Nurwulandari, 2021). This led to the development of the Capital Asset Pricing Model (CAPM), which incorporates the market risk factor of the portfolio (Iqbal & Brooks, 2007). Subsequently, the market theory of investment emerged, based on the assumption that investing in a market portfolio consisting of all market securities minimizes overall investment risk to the maximum extent. In Pakistan, a volatile economy, open-end mutual funds gained significant prominence due to their redemption characteristics and their remarkable growth compared to closed-end mutual funds (Agarwal et al., 2022). Researchers have dedicated their efforts to reviewing the performance of open-end mutual funds over different periods (Tripathi & Japee, 2020; Nafees et al., 2011; Asad & Siddiqui, 2019).

The preceding discussion highlights several crucial issues that require resolution. These key issues give rise to pertinent questions, which in turn align with specific objectives. Considering the aforementioned discourse, the first question that arises is: what are the primary determinants influencing the risk and return performance of equity mutual funds? The second question is: do mutual fund managers possess the requisite skills to effectively manage funds' performance? To address these questions and fill the gaps in the existing literature, corresponding objectives have been formulated. The first objective aims to investigate mutual fund performance utilizing multifactor models. The second objective focuses on examining the managerial skills of mutual fund managers through the utilization of multifactor models. COVID-19 pandemic adversely affects the local and global market. This causes significance difference in the return before and after the pandemic. Considering the fact, this study chosen timeframe for data collection predates the COVID-19 pandemic. This selection is based on the rationale that the market experienced a significant and abrupt decline during and after the pandemic, resulting in substantial differences in the data before and after this period. Therefore, aggregating such data in a single analysis would yield inconclusive findings about the research objectives.

This research significantly contributes valuable insights for mutual fund experts and investors, encompassing both small individual and large institutional investors. The current study makes notable contributions to the prevailing body of facts in several ways. Firstly, previous researchers primarily analyzed mutual fund performance using metrics such as the quick ratio and Treynor ratio to assess risk-adjusted performance. Moreover, most earlier studies relied

on the Capital Asset Pricing Model (CAPM) and the Fama-French three-factor model for mutual fund performance analysis. In contrast, this study investigates mutual fund performance using the Fama French three-factor model while incorporating the fourth factor, momentum, within the specific context of Pakistan. Secondly, this research unveils the capabilities of skilled managers in terms of timely market investments and the selection of profitable investment instruments, which significantly contribute to mutual fund performance.

2. Literature Review

The finance literature has extensively studied the performance of mutual funds, utilizing two prominent models: the Fama-French three-factor model and the Carhart four-factor model. These models aim to elucidate the factors contributing to risk-adjusted returns, or alpha, in mutual funds. The Fama-French model, developed by Fama and French in 1993, proposes that mutual fund performance can be explicated by three factors: market risk, size risk, and value risk. Market risk reflects exposure to overall market movements, while size risk and value risk pertain to exposure to small-cap and value stocks, respectively. Research has demonstrated that mutual funds with experience with these factors' conditions are inclined to outperform funds without such exposure (Fama and French, 1993; Mohrschladt, 2021). Alternatively, the Carhart model, introduced by Mark Carhart in 1997, builds upon the Fama-French model by incorporating a fourth factor: momentum. Momentum suggested the tendency of investment instruments that showed either better performance or poorly in the recent past to continue such performance. Mutual funds with exposure to momentum have shown a tendency to outperform those without such exposure (Carhart, 1997; Mohrschladt, 2021). In addition to these models, various other factors have been identified as impacting mutual funds' performance. Some of the most cited determinants include:

Expense ratio: The expense ratio pertains to the percentage portion of assets that are utilized to cover the operational expenses of a fund. Considering the active management of the money that has been pooled from many small investors, a relatively high expense ratio is intact with open-end funds. Lower expense ratios are found to be linked with higher returns and improved performance (Arora & Raman, 2020; Jan et al., 2021a; Mohrschladt, 2021).

Manager tenure: Manager tenure refers to the duration of time that a fund manager with relevant skills has been supervising a mutual fund. Research has consistently demonstrated that funds led by more experienced managers tend to outperform those led by less experienced managers (Busse, 2001; Arora & Raman, 2020).

Investment style: Investment style refers to the approach adopted by a mutual fund in allocating its resources, whether it be focusing on growth stocks or value stocks. Extensive research has consistently demonstrated that funds that maintain a consistent investment style tend to outperform those that frequently switch styles (Fama and French, 1993; Chan, Chen, & Lakonishok, 2002).

Asset size: The size of a mutual fund can significantly affect its performance. Several studies have indicated that smaller mutual funds tend to exhibit better performance compared to larger funds. This is attributed to the fact that larger funds may encounter limitations in terms of available investment opportunities and may also face higher administrative costs (Busse, 2001).

Overall, multiple factors are responsible for the returns on mutual funds, and investors should carefully consider these factors when selecting funds for investment. While past performance may not necessarily guarantee future returns, understanding the determining factor of mutual funds' performance can help investors make more rational and planned investment decisions.

2.1 Theoretical Framework

The persistence of higher returns in mutual funds is limited, and it has been consistently observed that previous performance is not a reliable predictor of future performance across different periods and types of funds (Kacperczyk, Sialm, & Zheng, 2015). There exists an indirect link between mutual fund fees and performance, indicating that investors should opt for funds with lower fees to maximize their returns (Bhattacharya, Galpin, & Ray, 2015). Value stocks have demonstrated a tendency to outperform growth stocks over the long term, making them an attractive investment option for mutual funds (Fama & French, 2015). Similarly, mutual funds with significant investments in small-cap stocks have shown a tendency to outperform large-cap stocks over extended periods (Fama & French, 2015). The education level of the managers responsible for managing the firms has a substantial insight into the performance of the mutual funds. However, this level of education must be coupled with experience in the related field. Those mutual fund managers who have a significant level of expertise in the investment and have a high level of relevant education are better at managing the funds than those who are not experts and have a low education level (Gottesman & Morey, 2006). Furthermore, mutual fund managers, who have a substantial ownership stake in the fund they manage, tend to achieve better performance compared to those with lower ownership levels (Jan et al., 2021b; Jiang, Yao, & Yu, 2015).

In Pakistan, the first Asset Management Company, known as NIT (National Investment Trust), was introduced in 1962 through a public offering. Subsequently, in 1966, the ICP (Investment Corporation of Pakistan) was established, introducing a variety of closed-end funds (Raza et al., 2011). Raza et al. (2011) conducted a study on Pakistan's mutual funds, analyzing the profitability ratios of 12 investment companies and their correlation with the returns of different mutual funds from 1999 to 2009. The study's findings revealed a significant association between market portfolios and investment bonds with mutual fund returns while showing an inverse relationship with dividends. Zulfiqar et al. (2011) examined the comparative performance of 22 closed-end mutual funds listed on the Pakistan Stock Exchange, alongside open-end mutual funds. Their analysis questioned managers regarding the efficiency in generating returns, as the results indicated the underperformance of closed-end mutual funds during various economic states from 1999 to 2009. Performance

ratios were utilized to assess the mutual funds in conjunction with risk and returns. Aziz and Feroz (2019) investigated the performance of equity and income mutual funds in Pakistan, categorizing them into institutional and broker-backed funds. The findings of their study highlighted that broker-backed equity funds outperformed institutional-backed funds.

Tremendous growth has been evident in the literature from 1999 to 2005, where the net asset value of mutual funds showed a remarkable increase from 16 to 137 billion (Iqbal et al., 2007). Although the market share of the mutual funds industry in Pakistan has increased significantly, it still constitutes a relatively small portion, contributing only 1.33% to the total global net asset value. This observation specifies the possibilities for further growth in the Pakistani mutual fund industry (Aziz and Feroz, 2019). Given such remarkable growth in this studied investment industry, researchers have become concerned with investigating the factors that influence it. While the literature suggests that a variety of factors exist subject to the market, showing a consensus on certain common factors that have varying levels of significance across global markets (Durack et al., 2004). One of the most prominent factors considered to influence the returns of any mutual fund is the market risk premium factor. This factor has been studied using the Capital Asset Pricing Model (CAPM), which originated from the significant work of Sharp and emerged because of market portfolio theory (Jagannathan & Wang, 1996). The CAPM captures the higher return that exceeds the risk-free dimension and signifies the reward demanded by investors for the risk associated with a given security or portfolio.

The mutual fund offers investors an opportunity to diversify their investments. The diversification effect of portfolios increases investor demand for investing in mutual funds, as it reduces the overall investment risk without significantly decreasing the overall investment return (Pástor & Vorsatz, 2020). However, the Capital Asset Pricing Model (CAPM) has a limitation as it only describes a single factor in explaining mutual fund performance. To address this limitation, the Fama-French three-factor model was developed (Fama & French, 1996). This model introduced two additional factors, namely the size and value factors, alongside the market risk factor (Faff, 2001). The size factor categorizes companies based on their market capitalization, which is calculated by multiplying the number of shares floating in the market by the market value per share. On the other hand, the value factor distinguishes firms as either value firms or growth firms based on their market-to-book ratio, with value firms having a higher market-to-book ratio and growth firms having a lower market-to-book ratio (Faff, 2004).

2.2 Theoretical Framework

2.2.1 Portfolio Theory

This research is based on portfolio theory, which is widely used in the framework of mutual funds (Pástor & Vorsatz, 2020). The fundamental aspect of portfolio theory is diversification (Liu et al., 2020). The underlying idea is that investors can reduce their investment risk by

diversifying their portfolio across different assets, rather than investing solely in a single asset. By spreading their investments across various assets, investors effectively distribute their risk and minimize the impact of any single investment on their overall portfolio.

According to portfolio theory, the measurement of portfolio risk is determined by calculating its variance or standard deviation, which reflects the volatility of returns in the investment portfolio. The primary objective of this theory is to construct a combination of assets that maximizes investment returns while minimizing risk (Mainik, Mitov, & Rüschenndorf, 2015). A key concept in portfolio theory is the efficient frontier, which illustrates those investors can earn more returns while making the risk of the investment constant. Furthermore, an efficient frontier can be represented graphically as a curve that allows investors to make decisions based on their preferred level of return or risk tolerance (Routledge, 2019).

Another important dimension in portfolio theory is the correlation among different investments, which quantifies the degree to which their returns are related. Investors can reduce their investment risk by considering investments that are negatively correlated. For instance, if stocks and bonds exhibit a negative correlation, investing in both assets can help mitigate portfolio risk (Al, 2022; Al-Yahyaee et al., 2020).

2.2.2 Efficient Market Hypothesis

Efficient Market Hypothesis (EMH) explains that it is challenging for investors to steadily outperform the market index by selecting highly profitable individual stocks or timing the market. Instead, investors are advised to focus on diversifying their portfolios and investing in low-cost index funds, which have demonstrated a strong association with the overall market (Malini, 2019). The EMH consists of three levels of efficiency: weak-form efficiency, semi-strong-form efficiency, and strong-form efficiency. It encompasses multiple aspects for investors.

First, the EMH suggests that it is difficult for investors to achieve significantly higher returns than the market index by selecting profitable stocks or attempting to time the market. As an alternative, investors should prioritize diversification of their portfolios and invest in low-cost index funds that closely track the market. Second, the EMH discourages investors from wasting time and resources on gathering and analyzing the available information for the public related to the market prices of securities. Lastly, the EMH advises against relying on insider information or non-public information for making investment decisions (Okorie & Lin, 2021; Woo et al., 2020).

Critics of the EMH argue the imperfectness of market regarding the efficiency and contains inefficiencies that offer opportunities for investors to outperform the market by identifying undervalued securities (Tao et al., 2022). Some investors employ various strategies, such as value investing, momentum investing, and growth investing, to identify undervalued securities that are expected to outperform the market (Moradi, Jabbari & Rounaghi, 2021). However, proponents of the EMH argue that these strategies do not consistently outperform

the market and may simply expose investors to additional risk without generating higher returns (Choi, 2021).

2.2.3 Growth Investing Theory (GIT)

The theory of growth investing focuses on investing in companies that are expected to experience significant future growth rates compared to the overall market or their industry peers. These growth-oriented firms typically exhibit high earning growth rates, robust revenue growth, and above-average price-to-earnings ratios. Investors who adhere to this theory believe that companies with strong growth potential will outperform the market in the long run and are willing to pay a premium for their shares (Pástor & Vorsatz, 2020).

Growth investors typically target companies that reinvest their earnings back into the business to fuel future expansion (Tahir et al., 2020). These companies may not be profitable in the present but are projected to generate substantial profits in the future. Growth investors often seek opportunities in emerging industries, such as technology, biotechnology, or renewable energy, where significant growth prospects exist (Ma, Tang, & Gomez, 2019).

However, growth investment also carries risks. High-growth companies often command lofty valuations, making them susceptible to market corrections (Jan et al., 2023; Shah et al., 2022d; Tahir et al., 2018; Shah et al., 2018). If market sentiment turns negative, investors may be more inclined to sell their high-growth stocks, leading to significant declines in share prices (Rizvi et al., 2020).

2.2.4 Value Investing Theory (VIT)

The value investing theory revolves around identifying companies that are perceived to be undervalued by the market, with their stock prices trading below their intrinsic or fundamental value. Value investors hold the belief that the market often overreacts to short-term news and events, creating opportunities for investors with a longer-term perspective (Blitz, Hanauer, & van, 2021).

Value investors typically seek out companies with relatively low price-to-earnings ratios, low price-to-book ratios, and high dividend yields. They focus on companies that have a strong historical track record of earnings and revenue growth but are currently undervalued by the market. These companies may be facing temporary setbacks, such as industry declines or unfavorable regulatory environments, but are expected to recover over a longer time horizon (Asness, Moskowitz, & Pedersen, 2013).

Value investors often target companies in established industries, such as consumer goods, healthcare, or financial services, where there is less uncertainty surrounding future growth prospects (Asness, Moskowitz, & Pedersen, 2013). However, one of the risks related to value investing explains that undervalued companies may take longer than expected to recover, or they may not recover at all. Investors in value stocks may need to maintain a longer-term investment horizon and exercise patience as they wait for the market to recognize the true value of the company (Gormsen & Kojien, 2020).

2.3 Conceptual Framework

The conceptual framework is a graphical illustration of the expected relationships between variables under study. As the mutual fund industry experiences rapid growth, it has become increasingly important to develop an efficient market portfolio and explore investment alternatives that can generate higher sustainable returns. Previous literature has analyzed the mutual fund industry in Pakistan, considering factors such as interest rates, inflation, currency fluctuations, and the Sharpe ratio. However, there has been relatively little investigation into the open mutual fund industry using multifactor models like the Fama-French and Carhart models. Additionally, the competence of skilled managers in generating sustainable returns for investors has been questioned in the literature (Jan et al., 2022).

This study aims to examine the influence of market risk premium, the Fama-French three factors (market risk premium, size factor, and value factor), and the Carhart momentum factor in explaining mutual fund returns. The framework is designed to illustrate the relationships between mutual fund performance and the proposed factors, drawing on relevant theories that contribute to the framework. The proposed research framework consists of two types of variables: dependent and independent. The dependent variable is represented by mutual fund returns, which serve as a proxy for mutual fund performance. The explanatory variables include market risk premium, size factor, value factor, and momentum factor, as shown in Figure 1.

Furthermore, the conceptual framework incorporates the contributing theories, namely portfolio theory, efficient market hypothesis (EMH), growth investment theory, and value investment theory, in the development of the study's framework. A detailed analysis will help to formulate hypotheses within the framework of the proposed study.

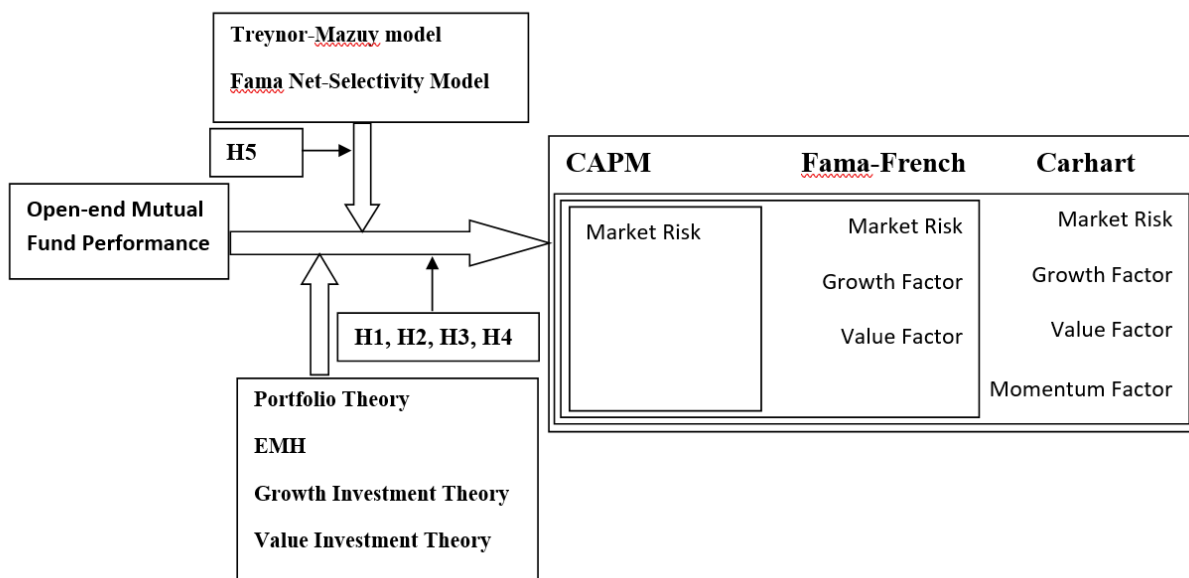


Figure 1. Conceptual Framework of the study

3. Hypotheses Development

Mutual funds literature acknowledges the continuous evolution of investments. Understanding a fund's investment strategy, including the types of assets it invests in and its risk management approach. Consideration of these factors is crucial for investors in making informed decisions aligned with their investment goals and risk tolerance (Asad & Siddiqui, 2019; Bhattacharya, Galpin, & Ray, 2015). Diversification plays a key role in reducing risk and maximizing returns. It is advisable to consider investing in a mix of mutual funds that encompass diverse asset classes such as stocks, bonds, and real estate (Iqbal et al., 2007; Jan, Lai, & Tahir, 2021). The fees charged by active mutual funds can erode overall returns over time. Therefore, investors should look for funds with lower expense ratios, which indicate the fund's operating expenses as a percentage of its assets under management. Over time, the composition of an investment portfolio may become imbalanced as some funds outperform others. To address this, periodic portfolio rebalancing can help investors maintain their desired asset allocation and reduce risk (Routledge, 2019).

In this study, four variables were assessed to determine the performance of mutual funds: market risk factor, value factor, growth factor, and momentum factor. Additionally, the study analyzed the competencies of mutual fund managers in the context of Pakistan.

3.1 Mutual Fund Performance and Market Risk

Market risk plays an important role in explaining the performance of mutual funds. The impact of market risk on mutual fund performance has been a significant aspect of interest among researchers for a considerable period. When markets are bullish, with rising prices and positive investor sentiment, mutual funds tend to perform well. The value of the fund's underlying securities increases, leading to capital appreciation and higher returns for investors. However, during market downturns or bearish periods, market risk can pose significant challenges. Stock prices may decline, bond yields may rise, and overall market volatility can increase. These factors can negatively impact the performance of mutual funds, leading to potential losses or reduced returns for investors (Salisu & Obiora, 2021). To mitigate market risk, mutual fund managers employ various strategies. They diversify their portfolios by investing in different asset classes, industries, and regions. Diversification helps spread risk across multiple investments, reducing the impact of a single security's poor performance on the overall fund (Jan, Lai, & Tahir, 2021). Recently, there has been an expansion in studies exploring an association between market risk with mutual fund performance. Several studies have discovered a substantial influence of market risk on mutual fund performance. Ji et al. (2021) observed a negative effect of market risk on mutual fund performance. Similarly, Pal (2021) found that market risk is inversely associated with the performance of Indian mutual funds. However, contrasting findings have also emerged, with some studies indicating that market risk does not significantly affect mutual fund performance. For instance, Chakraborty et al. (2021) found no significant impact of market risk on mutual fund performance in the Indian context. Moreover, certain studies have delved

into the influence of other factors on the relationship between market risk and mutual fund performance. Perez and Szymczyk (2022) revealed that the impact of market risk on mutual fund performance is moderated by factors such as fund size and investment style. Given the debates, this research proposes a significant association between mutual fund performance and the market risk factor.

H1: Market risk has a significant impact on the open-end mutual fund performance.

3.2 Mutual Fund Performance and Value Factor

The relationship between the value factor and mutual fund performance is a subject of interest for investors and researchers. The value factor can have an impact on the performance of mutual funds, especially those that follow a value-oriented investment strategy (Blitz, Hanauer & van 2021). However, it's important to note that the relationship can vary depending on various factors, including market conditions, fund management style, and the specific holdings within the mutual fund (Ji et al., 2021; Routledge, 2019). Value-oriented mutual funds typically focus on investing in stocks or securities that are considered undervalued by the market. These funds aim to identify companies with strong fundamentals but are marketable at a lower price relative to their intrinsic value (Asness, Moskowitz & Pedersen, 2013). By investing in such undervalued securities, these funds seek to capture potential price appreciation as the market recognizes and corrects the undervaluation. The performance of value-oriented mutual funds can be influenced by the overall performance of the value factor in the market (Dirkx & Peter, 2020). When the value factor is performing well and value stocks are outperforming growth stocks, value-oriented mutual funds may experience positive performance. This is because their investment strategy aligns with the market conditions, and the undervalued stocks they hold may see price increases. Investors considering value-oriented mutual funds should carefully evaluate the fund's historical performance, investment approach, and track record of the fund manager (Cornell, Hsu & Nanigian, 2017). It's also important to assess the fund's suitability within the context of one's investment goals, risk tolerance, and overall portfolio diversification.

The value variable considered in this study is based on the principle that stocks with lower price-to-book ratios (i.e., value stocks) tend to outperform stocks with higher price-to-book ratios (i.e., growth stocks) over the long term. Miralles, Miralles, and Nogueira (2020) conducted a study and found that the value factor remains a significant predictor of stock returns even when controlling for other important factors such as momentum and profitability. They also observed that the value factor is particularly effective in predicting returns for small and mid-cap stocks rather than large-cap stocks. Another study by Gormsen and Koijen (2020) analyzed the performance of the value variable in the Fama-French model during the COVID-19 pandemic. They discovered that the value dimension of investment initially underperformed but experienced a rebound later in the year. The authors suggested that the underperformance of the value factor could be attributed to the uncertainty caused by the pandemic. In a more recent study, Blitz, Hanauer, and van (2021) examined the efficacy of

the Fama-French model in predicting stock returns in emerging markets. They found that the value dimension of investment is an imperative predictor of stock returns in developing markets, although with lower effectiveness compared to developed markets. The authors proposed that the lower effectiveness of the value variable in emerging markets may be due to differences in accounting standards and market efficiency.

Fama and French (2015) introduced the five-factor asset pricing model, which includes the profitability variable and investment factor in addition to the original model. They found that the five-factor model offers a better fit for the data than original model, with the value variable remaining an important driver of stock returns. Dirks and Peter (2020) also emphasized the significance of the value factor as a driver of stock returns. Blitz, Hanauer, and van (2021) investigated the use of factor investing with the Fama-French factors, including the value factor. They concluded that factor investing offers diversification benefits and improved risk-adjusted returns, with the value factor playing a particularly important role. Additionally, Asness, Moskowitz, and Pedersen (2013) examined the impact of value and momentum variables across various asset classes, such as stocks, bonds, commodities, and currencies. They found that the value factor is consistently and reliably effective across asset classes, delivering strong long-term returns. Cornell, Hsu, and Nanigian (2017) focused on actively managed mutual funds and their association with the value factor. They discovered performance persistence among these funds, indicating that funds that outperform in the present period are likely to continue outperforming in subsequent periods. The study also revealed that funds with higher active shares, meaning they deviate more from their benchmark, tend to generate higher risk-adjusted returns. Considering the discussions, the second hypothesis can be formulated as follows.

H2: There is a significant relationship between value factor and open-end mutual fund performance.

3.3 Mutual Fund Performance and Growth Factor

The growth factor represents an investment strategy that involves acquiring stocks of companies with high growth potential, typically characterized by high revenue or earnings growth rates. The reliability of this investment strategy has been extensively examined in the context of mutual fund performance (Pástor & Vorsatz, 2020). The literature has conducted numerous studies analyzing the impact of the growth factor on mutual fund performance. Ferrat, Daty, and Burlacu (2022) found that mutual funds focusing on growth stocks tend to generate higher returns than those investing in value stocks, particularly during periods of economic growth. Another study, titled "Growth and Value Investing," explored the influence of the growth factor on mutual fund performance and revealed that growth investing has outperformed value investing in the past decade, with expectations of this trend continuing in the future due to the growth potential of technology companies (Lev & Srivastava, 2019). However, it is essential to consider that the performance of the growth factor can be volatile, especially during economic downturns. Pástor and Vorsatz (2020) discovered that while

growth funds tend to outperform value funds during economic expansions, they also tend to underperform during recessions.

Ma, Tang, and Gomez (2019) conducted a study that demonstrated mutual funds with a tilt toward the growth factor, tend to outperform those with a tilt toward the value factor, consistent with the previously mentioned literature. However, in "Growth versus Value Investing," it was observed that while growth funds exhibit significantly higher average returns than value funds, this difference diminishes when considering risk-adjusted returns. This suggests that growth funds may be riskier investments compared to value funds (Gorman & Fabozzi, 2021). Cremers, Fulkerson, and Riley (2019) argued that actively managed growth funds tend to outperform passively managed growth funds, but this is not the case for value funds. This implies that there may be greater opportunities for skilled active management in the growth space. Rizvi et al. (2020) found that although the growth factor performed well during the initial stages of the pandemic, it underperformed in the latter stages of 2020. Based on these discussions, the formulation of the third hypothesis can be derived as follows:

H3: There is a significant relationship between growth factors and mutual fund performance.

3.4 Mutual Fund Performance and Momentum Factor

The momentum variable measures the tendency of stocks with strong historical performance to continue performing well in the future. The literature has consistently shown that mutual funds with a tilt toward the momentum factor tend to outperform those that do not (Burkhanov, 2020). This finding aligns with previous research on momentum and mutual fund performance. Alam and Ansari (2022) also found that mutual funds focusing on stocks with strong momentum tend to outperform those that do not, specifically in emerging markets. This suggests that the momentum factor may be a globally applicable strategy for mutual funds. Spulbar et al. (2019) found that mutual funds with a tilt toward the momentum factor tend to have higher risk-adjusted returns in emerging markets, indicating that momentum investing can be profitable in high-growth regions. Hanauer and Windmüller (2023) observed that mutual funds employing momentum strategies tend to outperform those that do not in the Australian equity market, suggesting the success of the momentum factor across different markets. Ham et al. (2019) discovered that mutual funds with high levels of both active shares (a measure of how different a fund's portfolio is from its benchmark) and momentum exposure tend to outperform those that do not in the Chinese market, highlighting the potential of combining active management with momentum investing.

However, Kong et al. (2019) found that while mutual funds using momentum investing tend to outperform their benchmarks and other mutual funds, this outperformance tends to be short-lived in the U.S. market. They also suggested that funds with higher fees tend to have lower momentum exposure, indicating that high fees may hinder mutual funds' ability to pursue momentum strategies. In contrast, Berggrun, Cardona, and Lizarzaburu (2023) examined the performance of U.S. equity mutual funds and found no evidence that

momentum significantly explains fund returns. They argued that factors such as size, value, and profitability may have greater explanatory power. Efremidze, Stanley, and Kownatzki (2021) found that mutual funds with a tilt toward the momentum factor tend to outperform those that do not in the Japanese equity market. They also noted that funds with higher fees tend to have lower momentum exposure, suggesting that fees may impact the success of momentum investing in mutual funds. Finally, Vukovic, Ingenito, and Maiti (2023) discovered that mutual funds using momentum strategies tend to outperform their benchmarks and other mutual funds in European markets. However, they also found that momentum investing is more effective in markets with high levels of liquidity, implying that market conditions may influence the success of momentum strategies. Singh et al. (2022) studied the momentum factor in the Indian market and found no significant effect on fund performance. They suggested that the weak momentum effect may be attributed to market inefficiencies and information asymmetry in the region. Based on the above discussions, it is evident that the findings regarding momentum's impact on mutual fund performance are inconsistent. However, much of the literature demonstrates a significant influence of momentum on mutual funds. This forms the basis for the formulation of the fourth hypothesis:

H4: There is a significant relationship between momentum investment and mutual fund performance.

3.5 Mutual Fund Performance and Managers' Skills

The relationship between managers' skills and mutual funds' performance is a crucial aspect to consider when evaluating the potential success of a mutual fund. The skill and expertise of the fund manager can significantly impact the fund's performance and its ability to generate returns for investors (Božović 2021). However, it's important to note that manager skill is just one of many factors that can influence mutual fund performance. A skilled fund manager possesses in-depth knowledge of financial markets, strong analytical abilities, and the experience to make informed investment decisions (Kooli & Stetsyuk, 2021). They are responsible for setting the fund's investment strategy, selecting the securities within the portfolio, and managing the fund's assets continually. The manager's skill is particularly relevant for actively managed funds where investment decisions are made based on the manager's discretion rather than passively tracking an index (Atta & Marzuki, 2020). The performance of a mutual fund is often evaluated by comparing its returns to a benchmark index or similar funds in the same category. If a fund consistently outperforms its benchmark or peers over a sustained period, it suggests the presence of manager skill. Skilled managers may have the ability to identify undervalued securities, time the market effectively, manage risk, and adjust the fund's portfolio to capitalize on market opportunities (Moradi, Jabbari & Rounaghi, 2021).

According to Zouaoui (2019), a study was conducted on the stock selection and investment timing ability of fund managers in Islamic and conventional mutual funds offered by HSBC

Saudi Arabia Limited in Saudi Arabia. The authors examined the funds' performance using various procedures and found that the selection of appropriate stock and investment timing aptitude of Islamic investment funds were higher compared to conventional funds. Cornell et al. (2020) argued that, on average, managed funds in China underperform their passive counterparts, indicating that fund managers are generally unable to consistently generate higher returns than the market. This underperformance is particularly pronounced for small-cap funds and funds with high expense ratios. However, Kooli and Stetsyuk (2021) found that, on average, hedge fund managers possess skills and can generate excess returns for their investors after accounting for fees and expenses. The authors also observed that the level of skill among hedge fund managers has remained relatively stable over time, suggesting that the industry is not becoming more efficient.

Furthermore, Barras, Scaillet, and Wermers (2019) found that various funds with statistically significant explanation power were smaller in comparison to be achieved by chance alone. This indicate a large portion of the funds that appeared to have skill were benefiting from luck. They also discovered that the distribution of fund alphas was consistent with a mixture of skill and luck but with a greater emphasis on luck. However, Pilbeam and Preston (2019) suggested that while a small number of funds exhibit skill, most funds do not appear to possess skill, and their performance can be attributed to luck. The authors further explained that the predictability of fund performance is weak, indicating that historical performance is not a reliable predictor of future performance. Božović (2021) found that mutual fund managers with higher levels of skill tend to outperform their benchmarks and other mutual funds in the UK market. However, they also found that luck plays an important role in mutual fund performance, and the relative importance of skill and luck can vary over time. Atta and Marzuki (2020), on the other hand, argued that Islamic funds outperform conventional funds in terms of selectivity skills, suggesting that Islamic fund managers are better at selecting individual stocks that outperform their benchmarks. However, the study found no significant difference in market timing ability between Islamic and conventional funds.

Overall, the debate on mutual fund managers' skills regarding timing and selectivity in investment is inconsistent. However, much of the literature suggests a significant impact of managers' skills on mutual fund performance. Therefore, based on the literature, the fifth hypothesis can be formulated:

H5: There is a significant relationship between mutual funds managers' skills (selectivity and timing) and mutual funds' performance.

4. Methodology

Data for the construction of size and value variables was collected from the annual reports available on the companies' official websites and the Pakistan Stock Exchange (PSX). The State Bank of Pakistan and PSX served as sources of information for the risk premium factor and momentum factor. The data for the dependent variable was obtained from the Mutual Fund Association of Pakistan. The study focused on the period from 2008 to 2018 for the

collection of sample data. Rationale behind the selection of the specific periods is the market crises above and below the date. Global financial crises 2008 and COVID-19 pandemic adversely affect the market condition (Dao, 2017; Ji, Zhang, & Zhao, 2020). A sample was taken from 57 mutual funds listed on the Mutual Fund Association of Pakistan, including four types: shariah-compliant equity funds, conventional equity funds, Fund of Funds, and balanced funds. When constructing the independent variables, a sample of 147 listed companies on the Pakistan Stock Exchange was randomly selected, excluding closed-end mutual funds and financial firms. The management structures and operations of the financial and manufacturing firms are significantly different. Considering the fact, data for the factor's construction were based on the manufacturing firms excluding the financial firms.

4.1 Analysis Techniques

Three techniques were used on the sample data set. Factors under each model were analyzed and explained.

CAPM

To investigate the response of investors toward the market risk premium only, CAPM was applied. CAPM presents the excess return the investors demanded on account of the risk they undertake. This excess market return could be estimated using the market risk premium.

Fama-French Three Factor and Carhart Four Factor Model

Considering the objectives of the study, three models were applied to the data sample. After that, size and value variables were controlled using the Fama-French three-factor model. Furthermore, to check the momentum effect in the stock market the Carhart four factors were applied to the sample data set.

Treynor-Mazuy Model

After analyzing the alphas obtained from the above-discussed three models, the Treynor-Mazuy model was applied to confirm the managers' efficiency in earning the returns of the mutual funds. Treynor- Mazuy model explains the selectivity of the mutual funds to invest in mutual funds.

Fama Net Selectivity Model

The second aspect of the manager's ability is the time investment ability. The Fama Net Selectivity model was used to confirm the timely investment ability of the funds' managers.

4.2 Factors Construction

Risk Premium

When constructing the market risk premium factor, two types of data were considered: the risk-free rate in the Pakistani market and the market rate. The T-bills rate was identified as the

best proxy to represent the market risk-free rate (Barroso, Boons, & Karehnke, 2021). For the specified period, spanning from 2008 to 2018, the three-month T-bills rate was chosen as the risk-free rate. As for the market rate, the daily returns of the KSE-100 index were utilized (Iqbal & Brooks, 2007). Subsequently, both the T-bills rate and the market rate were converted into annualized rates.

$$\text{Market Risk Premium} = (\text{Market rate} - \text{Risk free rate})$$

Size and Value Factors

When constructing the size and value factors, the data for 147 listed companies on the Pakistan Stock Exchange, excluding closed-end mutual funds, was utilized. The total outstanding shares of these companies were multiplied by their respective market prices within the time range of 2008 to 2018. This calculation resulted in the market capitalization for each company. Subsequently, based on the market capitalization, the companies were ranked, with half of them classified as big companies (representing firms with high market capitalization) and the remaining as small companies. The share prices of the companies were then arranged according to their ranking based on market capitalization. A diagram illustrating this arrangement is presented below.

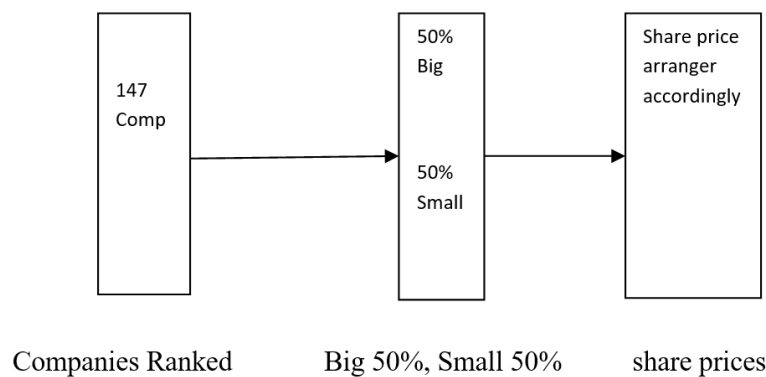


Figure 2. Diagram for Size Factor

Next, the book value per share was calculated by dividing the book value of total equity for each company by its number of outstanding shares, following the approach outlined by Fama and French (1996). Additionally, the market value per share was divided by the book value per share of each respective company, resulting in the calculation of the Market-to-book ratio (M/B ratio). To further classify the returns of the companies, they were divided into three equal-sized groups based on their M/B ratios. The first group consisted of companies with higher M/B ratios and was labeled as high-value firms, while the second and third groups were referred to as medium-value firms and low-value firms, respectively. With the market

capitalization and M/B ratio classification in mind, a total of six portfolios were constructed. Each year, on December 31st, the portfolios were rebalanced accordingly:

BL: Combination of Big (B) and Low (L) companies

BM: Combination of Big (B) and Medium (M) companies

BH: Combination of Big (B) and High (H) companies

SL: Combination of Small (S) and Low (L) companies

SM: Combination of Small (S) and Medium (M) companies

SH: Combination of Small (S) and High (H) companies

Table 1. Constructed Portfolios

	Low	Medium	High
Big	BL	BM	BH
Small	SL	SM	SH

After constructing the portfolios, the size (SMB) and value (HML) factors were constructed using the Fama-French formula.

$$SMB = \frac{SL + SM + SH}{3} - \frac{BL + BM + BH}{3}$$

$$HML = \frac{SH + BH}{2} - \frac{SL + BL}{2}$$

Momentum Factor

While constructing the momentum factor companies are arranged in descending order considering the market value per share of the companies. After that the returns of the lower thirty companies were subtracted from the returns of the top thirty companies. The same procedure was applied for each year as the arrangement was rebalanced for each year after December 31.

5. Results and Discussion

5.1 Descriptive Statistics

Table 2. Descriptive Statistics

<i>Variable</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>S.D</i>	<i>Skewness</i>	<i>Kurtosis</i>
<i>Return</i>	-0.0002	-0.0130	0.0093	0.0021	-2.63	12.38
<i>Risk_premium</i>	0.3129	-0.3939	0.9244	0.3546	-0.2556	-0.2402
<i>SMB</i>	0.0020	0.0003	0.0066	0.0013	1.77	3.66
<i>HML</i>	-0.0013	-0.0046	0.0001	0.0011	-1.19	1.38
<i>Momentum</i>	0.0169	0.0087	0.0327	0.0064	0.9539	0.0508

Table 2 presents the statistical information for the four independent variables and one dependent variable utilized in the analysis. The mean value for fund return is recorded as -0.0002, accompanied by a standard deviation of 0.0021. The market risk premium demonstrates an average value of 0.3129, ranging from -0.3939 to 0.9244. This significant range indicates that the market risk premium factor holds substantial importance in the Pakistani market. Regarding the SMB factor, its minimum and maximum values are 0.0003 and 0.0066, respectively, while displaying an average value of 0.0020. As for the HML and momentum factors, their mean values are -0.0013 and 0.0169, with corresponding standard deviations of 0.0011 and 0.0064. Notably, the average values for the SMB, HML, and momentum factors are relatively smaller compared to the market risk premium factor.

5.2 CAPM

The applied model yields a significant value for the risk premium factor, indicating that investors are willing to assume risk in pursuit of appropriate returns. However, the relatively lower value of the R-squared suggests that while the risk premium is a significant factor considered by investors in their investments, other unidentified factors explain the returns of mutual funds. The significant but negative alpha value in the model implies that even in a scenario where the risk premium is zero, investors would still demand a certain level of return. This supports the economic theory of global increase in the inflation rate (Friedman, 1989). The condition where the risk premium is zero, investors would still demand certain level of return to cope with the increase in the inflation. The magnitude of the negative alpha value in this study indicates that investors would expect a negative return in the absence of a risk premium, possibly due to the predominantly negative return pattern observed in Pakistani mutual funds during the selected period.

The findings of this study align with the significant risk premium factor reported by Pal (2021) and supported by Ji et al. (2021). However, the result regarding the market risk premium contradicts the finding of Chakraborty et al. (2021), who reported an insignificant effect of the market risk.

Table 3. CAPM Dependent variable: Return

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const	-0.0004	0.0001	-3.24	0.0012	***
Risk_premium	0.0005	0.0002	2.03	0.0427	**
R-squared	0.0077				

*** significance at 99%, ** significance at 95%, * significance at 90%

5.3 Fama-French Three Factor Model

The model indicates that the risk premium factor and alpha are statistically significant, while the size and value factors are not. Investing in stocks based on the assumption of information flow and symmetric knowledge in the market suggests that the size and value factors should be significant. However, in the context of the Pakistani market, the model's findings align with the literature highlighting the weak form of efficiency, where the size and value factors may not have a significant impact. By incorporating these additional factors, the model's R-squared value increases from 0.0078 to 0.0746, indicating a higher percentage of the mutual fund return being explained compared to the CAPM model. Additionally, the significant alpha value suggests that managers can generate above-market returns, potentially due to the market's weak form of efficiency, which allows for the exploitation of information asymmetry.

Furthermore, the 7.46% of the variation explained by the explanatory variables, as indicated by the R-squared value in Table 4, further supports the notion of the market's weak form of efficiency and the efficiency of mutual fund managers. However, it is important to note that the FF three-factor model only finds the risk premium factor to be significant in the Pakistani equity market, while the size and value factors are not significant. This finding contradicts studies conducted in developed countries where the size and value factors have shown significance. This discrepancy suggests an inclination towards the efficient market hypotheses in those markets. In contrast, the Pakistani equity market, being an emerging market with characteristics of a weak form of efficiency and information asymmetry, offers opportunities for certain investors to generate abnormal returns.

Table 4. Fama-French Three Factor Model Dependent variable: Mutual Fund Return

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
<i>Const</i>	-0.0011	0.0002	-4.91	<0.0001	***
<i>Risk premium</i>	0.0006	0.0002	2.52	0.0119	**
<i>SMB</i>	0.1194	0.3270	0.3651	0.7152	
<i>HML</i>	-0.3488	0.3944	-0.8844	0.3769	
<i>R-squared</i>	0.0746				

*** significance at 99%, ** significance at 95%, * significance at 90%

5.4 Carhart Model

The results of the Carhart model indicate that the alpha is significant, further supporting the notion of weak market efficiency and manager efficiency. However, like the size and value factors, the momentum factor is found to be insignificant. This implies that investors and managers are not simply following the strategy of investing in lagged winners, as assumed by the momentum factor. It suggests that investors are not passively following indices or previous period winners, but instead may be using information and analysis tools to effectively predict outcomes and generate abnormal returns.

The findings of this study contradict the results regarding the momentum factor observed in developed markets. Studies conducted in Australia, China, the US, and Europe have shown significant roles for the momentum factor, which is not aligned with the findings of this study. However, there are also studies conducted in the US and India that support the insignificance of the momentum factor, like the current study. Overall, the inconsistency in the momentum factor results can be attributed to market inefficiency in Pakistan, where investors rely on investment tools, such as technical analysis, to predict higher returns compared to market indices.

The addition of the fourth factor in the Carhart model and the second and third factors in the FF model leads to a decrease in the alpha value. Although the beta values for these factors may be insignificant, they contribute to explaining the mutual fund return. Based on the model's results, the expenses associated with actively managed mutual funds can be justified, highlighting the efficiency of the managers. Furthermore, the insignificant role of the momentum factor suggests that investors lack sufficient information regarding lagging winners and losers, which may contribute to its lack of significance in the model.

Table 5. Carhart Four Factor Model Dependent variable: Mutual Fund Return

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const	-0.0007	0.0003	-1.77	0.0756	*
Risk_premium	0.0006	0.0002	2.31	0.0209	**
SMB	-0.0412	0.3361	-0.1227	0.9023	
HML	-0.6807	0.4505	-1.51	0.1314	
Momentum	-0.0321	0.0236	-1.36	0.1741	
R-squared	0.0778				

*** significance at 99%, ** significance at 95%, * significance at 90%

5.5 Treynor-Mazuy and Fama Net-Selectivity Model

The Treynor-Mazuy model was tested to confirm the efficiency of fund managers, and the Fama Net-Selectivity model was employed to assess the timing ability of the managers (Table 6 and Table 7). The results indicate significant beta and alpha values, suggesting that the managers possess the ability to earn returns for the mutual funds. In strong efficient markets, the efficient market hypothesis implies that generating extra returns compared to the market index is insignificant. However, the findings of this study suggest a weak form of efficiency in the Pakistani market, which is inconsistent with the results suggested by Choi (2021). On the other hand, it aligns with the findings of Moradi, Jabbari, and Rounaghi (2021), who suggest that investors can earn extra returns by employing different strategies such as value, growth, or momentum investing. However, this study found insignificant results for value, growth, and momentum investing strategies. The contradictions in the study's findings may be attributed to managers utilizing insider or non-public information in their investment decisions (Okorie & Lin, 2021; Woo et al., 2020).

Furthermore, when comparing the research results with the existing literature, they contradict the findings of Cornell et al. (2020), who observed underperformance of actively managed funds compared to passively managed funds in the China market. This study also contradicts the results of Barras, Scaillet, and Wermers (2019), who suggest insignificant performance by managers and emphasize the role of luck. However, the results of this study support the findings of Božović (2021), who identified a significant role for mutual fund managers but also acknowledged the presence of luck as a contributing factor in mutual fund performance. Additionally, this study's findings align with those of Atta and Marzuki (2020), who found a

significant skill in manager selectivity while the timing investment ability factor was insignificant.

Table 6. Treynor-Mazuy Model

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const	-0.00052709	0.000132496	-3.978	<0.0001	***
Risk premium	0.000674587	0.000279569	2.413	0.0162	**
(Risk premium) ²	-4.92035e-05	2.24803e-05	-2.189	0.0291	**

*** significance at 99%, ** significance at 95%, * significance at 90%

Table 7. Fama Net Selectivity Model

Date	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Net-Selectivity	-0.0789	-0.0613	-0.059	-0.0719	-0.0996	-0.0933	-0.1104	-0.1320	-0.1261	-0.1253	-0.1150

5.7 Conclusion

Various investment strategies, such as value investing, growth investing, and momentum investing, are employed by investors to generate extra returns. These strategies are closely tied to market efficiency. Moreover, the role of mutual funds managers in generating additional returns lacks consistency in the literature discussed in this paper. This study examined the significance of these prominent strategies and assessed the efficiency of mutual funds managers. The results indicated that the Pakistani equity market exhibits a relatively weak form of efficiency, which influences the performance of the studied factors. The size, value, and momentum factors showed insignificant performance in the models, while the market risk premium demonstrated a significant effect on market returns. Each of the three models explained variations to a different extent, with all models showing significant explained variations represented by alpha values. The study's findings suggest a weak form of efficiency. However, in actively managed mutual funds, the results of the Treynor-Mazuy model suggested that the expenses incurred due to skilled management can be justified by the excess returns earned. Additionally, the Fama Net selectivity model revealed the significant timing ability of actively managed mutual funds, implying that managers may utilize insider or non-public information to generate extra returns for investors (Okorie & Lin, 2021; Woo et al., 2020).

The implications of this research for both mutual fund managers and individual investors are noteworthy as it aids in making informed investment decisions. Managers should carefully

analyze market risks associated with investments and evaluate the returns derived from those investments when investing mutual fund money. Furthermore, the study's findings suggest that managers play a crucial role in managing investor investments, as evidenced by the insignificant momentum factor results, indicating that managers do not simply follow the returns of previously successful companies. The findings of the Fama-French three-factor model applied separately to conventional and Shariah equity funds imply that when investing in conventional equity funds, the value factor should not be underestimated.

The research findings highlight the insignificance of the three factors - size, value, and momentum consistently emphasized by the literature as important factors in analyzing mutual fund performance. This creates an opportunity for researchers to further examine the investment behavior of individuals and mutual funds managers. The study concludes with a recommendation for practitioners, highlighting the weak form of efficiency observed in the Pakistani equity market, which allows investors to earn abnormal returns.

References

Agarwal, V., Ren, H., Shen, K., & Zhao, H. (2023). Redemption in kind and mutual fund liquidity management. *The Review of Financial Studies*, 36(6), 2274-2318. <https://doi.org/10.1093/rfs/hhac080>

Agrawal, A., & Hockerts, K. (2021). Impact investing: Review and research agenda. *Journal of Small Business & Entrepreneurship*, 33(2), 153-181. <https://doi.org/10.1080/08276331.2018.1551457>

Akhtar, F., & Das, N. (2019). Predictors of investment intention in Indian stock markets: Extending the theory of planned behavior. *International journal of bank marketing*, 37(1), 97-119. <https://doi.org/10.1108/IJBM-08-2017-0167>

Al Janabi, M. A. (2022). Optimization algorithms and investment portfolio analytics with machine learning techniques under time-varying liquidity constraints. *Journal of Modelling in Management*, 17(3), 864-895. <https://doi.org/10.1108/JM2-10-2020-0259>

Alam, M., & Ansari, V. A. (2022). Do mutual fund managers possess style liquidity timing abilities? *International Journal of Emerging Markets*, 17(3), 747-765. <https://doi.org/10.1108/IJOEM-02-2020-0195>

Ali, S. E. A., Rizvi, S. S. H., Fong-Woon, L., Rao, F. A., & Jan, A. A. (2021). Predicting delinquency on Mortgage loans: an exhaustive parametric comparison of machine learning techniques. *International Journal of Industrial Engineering and Management*, 12(1), 1. <https://doi.org/10.24867/IJIEM-2021-1-272>

Al-Yahyaee, K. H., Mensi, W., Rehman, M. U., Vo, X. V., & Kang, S. H. (2020). Do Islamic stocks outperform conventional stock sectors during normal and crisis periods? Extreme co-movements and portfolio management analysis. *Pacific-Basin Finance Journal*, 62,

101385. <https://doi.org/10.1016/j.pacfin.2020.101385>

Aranda-Usón, A., Portillo-Tarragona, P., Marín-Vinuesa, L. M., & Scarpellini, S. (2019). Financial resources for the circular economy: A perspective from businesses. *Sustainability*, *11*(3), 888. <https://doi.org/10.3390/su11030888>

Arnott, D., & Gao, S. (2019). Behavioral economics for decision support systems researchers. *Decision Support Systems*, *122*, 113063. <https://doi.org/10.1016/j.dss.2019.05.003>

Arora, R., & Raman, T. V. (2020). A study on performance evaluation of equity mutual funds schemes in India. *International Journal of Financial Engineering*, *7*(02), 2050017. <https://doi.org/10.1142/S2424786320500176>

Asad, M., & Siddiqui, D. A. (2019). Determinants of mutual funds performance in Pakistan. *International Journal of Social and Administrative Sciences*, *4*(2), 85-107. <https://doi.org/10.18488/journal.136.2019.42.85.107>

Asness, C. S., Moskowitz, T. J., & Pedersen, L. H. (2013). Value and momentum everywhere. *The journal of finance*, *68*(3), 929-985. <https://doi.org/10.1111/jofi.12021>

Atta, A. A. B., & Marzuki, A. (2020). Islamic vs conventional funds within the family: Selectivity skills and market timing ability. *Journal of Islamic Monetary Economics and Finance*, *6*(2), 439-462. <https://doi.org/10.21098/jimf.v6i2.1091>

Aziz, S. F. (2019). Performance of mutual funds and mutual fund managers in Pakistan. *South Asian Journal of Social Studies and Economics*, *4*(2), 1-9. <https://doi.org/10.9734/sajsse/2019/v4i230122>

Barras, L., Scaillet, O., & Wermers, R. (2019). Reassessing false discoveries in mutual fund performance: Skill, luck, or lack of power? A reply. *Journal of Finance*, *Forthcoming*, *Swiss Finance Institute Research Paper*, (19-61). <https://doi.org/10.2139/ssrn.3439231>

Barroso, P., Boons, M., & Karehnke, P. (2021). Time-varying state variable risk premia in the ICAPM. *Journal of Financial Economics*, *139*(2), 428-451. <https://doi.org/10.1016/j.jfineco.2020.07.016>

Berggrun, L., Cardona, E., & Lizarzaburu, E. (2023). Industry momentum in Latin America. *Journal of Business Research*, *158*, 113711. <https://doi.org/10.1016/j.jbusres.2023.113711>

Bhattacharya, U., Galpin, N., & Ray, R. (2015). Performance of mutual funds in India: An empirical study. *Journal of Investment Management*, *13*(2), 1-21.

Blitz, D., Hanauer, M. X., & van Vliet, P. (2021). The volatility effect in China. *Journal of Asset Management*, *22*(5), 338-349. <https://doi.org/10.1057/s41260-021-00218-0>

- Bosman, L., Hartman, N., & Sutherland, J. (2020). How manufacturing firm characteristics can influence decision-making for investing in Industry 4.0 technologies. *Journal of Manufacturing Technology Management*, 31(5), 1117-1141. <https://doi.org/10.1108/JMTM-09-2018-0283>
- Božović, M. (2021). Mutual fund performance: some recent evidence from European equity funds. *Economic Annals*, 66(230), 7-33. <https://doi.org/10.2298/EKA2130007B>
- Burkhanov, A. (2020). Practice of investment funds development in developed countries. *Архив научных исследований*, (23).
- Busse, J. A. (2001). Another look at mutual fund tournaments. *The Journal of Finance*, 56(1), 67-86. <https://doi.org/10.2307/2676197>
- Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of finance*, 52(1), 57-82. <https://doi.org/10.1111/j.1540-6261.1997.tb03808.x>
- Chakraborty, G., Chandrashekhar, G. R., & Balasubramanian, G. (2021). Measurement of extreme market risk: Insights from a comprehensive literature review. *Cogent Economics & Finance*, 9(1), 1920150. <https://doi.org/10.1080/23322039.2021.1920150>
- Chan, L. K., Chen, H. L., & Lakonishok, J. (2002). On mutual fund investment styles. *The Review of Financial Studies*, 15(5), 1407-1437. <https://doi.org/10.1093/rfs/15.5.1407>
- Choi, S. Y. (2021). Analysis of stock market efficiency during crisis periods in the US stock market: Differences between the global financial crisis and COVID-19 pandemic. *Physica A: Statistical Mechanics and Its Applications*, 574, 125988. <https://doi.org/10.1016/j.physa.2021.125988>
- Cornell, B., Hsu, J., & Nanigian, D. (2017). Does Past Performance Matter in Investment Manager Selection? *The Journal of Portfolio Management*, 43(4), 33-43. <https://doi.org/10.3905/jpm.2017.43.4.033>
- Cornell, B., Hsu, J., Kiefer, P., & Wool, P. (2020). Assessing mutual fund performance in China. *The Journal of Portfolio Management*, 46(5), 118-127. <https://doi.org/10.3905/jpm.2020.1.140>
- Cremers, K. M., Fulkerson, J. A., & Riley, T. B. (2019). Challenging the conventional wisdom on active management: A review of the past 20 years of academic literature on actively managed mutual funds. *Financial Analysts Journal*, 75(4), 8-35. <https://doi.org/10.1080/0015198X.2019.1628555>
- Dao, M. Q. (2017). Determinants of the global financial crisis recovery: an empirical assessment. *Journal of Economic Studies*, 44(1), 36-46. <https://doi.org/10.1108/JES-09-2015-0160>
- Dirkx, P., & Peter, F. J. (2020). The Fama-French five-factor model plus momentum:

Evidence for the German market. *Schmalenbach Business Review*, 72, 661-684. <https://doi.org/10.1007/s41464-020-00105-y>

Durack, N.R., Durand, R.B. and Maller, A. (2004), 'The best choice among asset pricing models? The conditional CAPM in Australia', *Accounting and Finance*, vol. 44, pp. 139-62. <https://doi.org/10.1111/j.1467-629X.2004.00107.x>

Efremidze, L., Stanley, D. J., & Kownatzki, C. (2021). Entropy trading strategies reveal inefficiencies in the Japanese stock market. *International Review of Economics & Finance*, 75, 464-477. <https://doi.org/10.1016/j.iref.2021.04.021>

Faff, R. (2001), 'An examination of the Fama and French three-factor model using commercially available factors', *Australian Journal of Management*, 26, 1-17. <https://doi.org/10.1177/031289620102600101>

Faff, R. (2004), 'A simple test of the Fama and French model using daily data: Australian evidence', *Applied Financial Economics*, 14, 83-92. <https://doi.org/10.1080/0960310042000176353>

Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56.

Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116(1), 1-22. <https://doi.org/10.1016/j.jfineco.2014.10.010>

Fama, E.F. & French, K.R. (1996), 'Multifactor explanations of asset pricing anomalies', *Journal of Finance*, 51, 55-84. <https://doi.org/10.1111/j.1540-6261.1996.tb05202.x>

Ferrat, Y., Daty, F., & Burlacu, R. (2022). Short-and long-term effects of responsible investment growth on equity returns. *The Journal of Risk Finance*, 23(1), 1-13. <https://doi.org/10.1108/JRF-07-2021-0107>

Friedman, M. (1989). Quantity theory of money. In Money (pp. 1-40). London: Palgrave Macmillan UK. https://doi.org/10.1007/978-1-349-19804-7_1

Gorman, S. A., & Fabozzi, F. J. (2021). The ABCs of the alternative risk premium: academic roots. *Journal of Asset Management*, 22, 405-436.

Gormsen, N. J., & Kojen, R. S. (2020). Coronavirus: Impact on stock prices and growth expectations. *The Review of Asset Pricing Studies*, 10(4), 574-597. <https://doi.org/10.1093/rapstu/raaa013>

Gottesman, A. A., & Morey, M. R. (2006). Manager education and mutual fund performance. *Journal of Empirical Finance*, 13(2), 145-182. <https://doi.org/10.1016/j.jempfin.2005.10.001>

Griffin, J. and Lemmon, M. (2002), 'Book-to-market equity, distress risk, and stock returns'.

Journal of Finance, 57, 2317-36. <https://doi.org/10.1111/1540-6261.00497>

Ham, H., Cho, H., Kim, H., & Ryu, D. (2019). Time-series momentum in China's commodity futures market. *Journal of Futures Markets*, 39(12), 1515-1528. <https://doi.org/10.1002/fut.22053>

Hamad, S., Lai, F. W., & Jan, A. A. (2020). Using integrated reporting to disclose the value-based intermediation information: evidence from the Islamic banking industry. *International Journal of Advanced Science and Technology*, 29(10s), 1085-1098.

Hanauer, M. X., & Windmüller, S. (2023). Enhanced momentum strategies. *Journal of Banking & Finance*, 148, 106712. <https://doi.org/10.1016/j.jbankfin.2022.106712>

Iqbal, J., and Brooks, R. D. (2007). A test of CAPM on the Karachi Stock Exchange. *International Journal of Business* 12, 429-444.

Jagannathan, R. and Wang, Z. (1996). The conditional CAPM and the cross-section of expected returns. *Journal of Finance*, 51, 3-53. <https://doi.org/10.2307/2329301>

Jain, J., Walia, N., & Gupta, S. (2020). Evaluation of behavioral biases affecting investment decision-making of individual equity investors by fuzzy analytic hierarchy process. *Review of Behavioral Finance*, 12(3), 297-314. <https://doi.org/10.1108/RBF-03-2019-0044>

Jan, A. A., Lai, F. W., & Tahir, M. (2021b). Developing an Islamic Corporate Governance framework to examine sustainability performance in Islamic Banks and Financial Institutions. *Journal of Cleaner Production*, 315, 128099. <https://doi.org/10.1016/j.jclepro.2021.128099>

Jan, A. A., Lai, F. W., Asif, M., Akhtar, S., & Ullah, S. (2023). Embedding sustainability into bank strategy: implications for sustainable development goals reporting. *International Journal of Sustainable Development & World Ecology*, 30(3), 229-243. <https://doi.org/10.1080/13504509.2022.2134230>

Jan, A. A., Lai, F. W., Draz, M. U., Tahir, M., Ali, S. E. A., Zahid, M., & Shad, M. K. (2021a). Integrating sustainability practices into Islamic corporate governance for sustainable firm performance: From the lens of agency and stakeholder theories. *Quality & Quantity*, 1-24. <https://doi.org/10.1007/s11135-021-01261-0>

Jan, A. A., Lai, F. W., Siddique, J., Zahid, M., & Ali, S. E. A. (2022). A walk of corporate sustainability towards sustainable development: a bibliometric analysis of literature from 2005 to 2021. *Environmental Science and Pollution Research*, 1-12. <https://doi.org/10.1007/s11356-022-24842-4>

Ji, Q., Zhang, D., & Zhao, Y. (2020). Searching for safe-haven assets during the COVID-19 pandemic. *International Review of Financial Analysis*, 71, 101526. <https://doi.org/10.1016/j.irfa.2020.101526>

- Ji, X., Chen, X., Mirza, N., & Umar, M. (2021). Sustainable energy goals and investment premium: Evidence from renewable and conventional equity mutual funds in the Euro zone. *Resources Policy*, 74, 102387. <https://doi.org/10.1016/j.resourpol.2021.102387>
- Ji, X., Zhang, Y., Mirza, N., Umar, M., & Rizvi, S. K. A. (2021). The impact of carbon neutrality on the investment performance: Evidence from the equity mutual funds in BRICS. *Journal of Environmental Management*, 297, 113228. <https://doi.org/10.1016/j.jenvman.2021.113228>
- Jiang, H., Yao, T., & Yu, T. (2015). Managerial ownership and mutual fund performance: An empirical study in China. *Emerging Markets Finance & Trade*, 51(2), 380-397.
- Kacperczyk, M., Sialm, C., & Zheng, L. (2015). Unobserved actions of mutual funds. *Review of Financial Studies*, 28(10), 2885-2924.
- Kazemargi, N., & Spagnoletti, P. (2020). IT investment decisions in industry 4.0: evidence from SMEs. In *Digital Business Transformation: Organizing, Managing and Controlling in the Information Age* (pp. 77-92). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-47355-6_6
- Kong, Y., Owusu-Akomeah, M., Antwi, H. A., Hu, X., & Acheampong, P. (2019). Evaluation of the robusticity of mutual fund performance in ghana using enhanced resilient backpropagation neural network (ERBPNN) and fast adaptive neural network classifier (FANNC). *Financial Innovation*, 5, 1-12. <https://doi.org/10.1186/s40854-019-0125-5>
- Kooli, M., & Stetsyuk, I. (2021). Are hedge fund managers skilled? *Global Finance Journal*, 49, 100574. <https://doi.org/10.1016/j.gfj.2020.100574>
- Lai, F. W., Shad, M. K., & Shah, S. Q. A. (2021). Conceptualizing corporate sustainability reporting and risk management towards green growth in the Malaysian oil and gas industry. In *SHS Web of Conferences* (Vol. 124, p. 04001). EDP Sciences. <https://doi.org/10.1051/shsconf/202112404001>
- Lev, B., & Srivastava, A. (2019). Explaining the recent failure of value investing. *NYU Stern School of Business*. <https://doi.org/10.2139/ssrn.3442539>
- Liu, Y., Hu, C., Wang, L., & Yang, K. (2020). Multilayer network risk factor pricing model. *Complexity*, 2020, 1-6.
- Ma, L., Tang, Y., & Gomez, J. P. (2019). Portfolio manager compensation in the US mutual fund industry. *The Journal of Finance*, 74(2), 587-638. <https://doi.org/10.1111/jofi.12749>
- Mainik, G., Mitov, G., & Rüschenndorf, L. (2015). Portfolio optimization for heavy-tailed assets: Extreme Risk Index vs. Markowitz. *Journal of Empirical Finance*, 32, 115-134. <https://doi.org/10.1016/j.jempfin.2015.03.003>

- Malini, H. (2019). Efficient market hypothesis and market anomalies of LQ 45 index in Indonesia stock exchange. *Sriwijaya International Journal of Dynamic Economics and Business*, 3(2), 107-121. <https://doi.org/10.29259/sijdeb.v3i2.107-121>
- Mayo, H. B. (2020). *Investments: an introduction*. Cengage Learning.
- Miralles-Quirós, J. L., Miralles-Quirós, M. M., & Nogueira, J. M. (2020). Sustainable development goals and investment strategies: The profitability of using five-factor Fama-French alphas. *Sustainability*, 12(5), 1842. <https://doi.org/10.3390/su12051842>
- Mohrschladt, H. (2021). The ordering of historical returns and the cross-section of subsequent returns. *Journal of Banking & Finance*, 125, 106064. <https://doi.org/10.1016/j.jbankfin.2021.106064>
- Moradi, M., Jabbari Nooghabi, M., & Rounaghi, M. M. (2021). Investigation of fractal market hypothesis and forecasting time series stock returns for the Tehran Stock Exchange and London Stock Exchange. *International Journal of Finance & Economics*, 26(1), 662-678. <https://doi.org/10.1002/ijfe.1809>
- Nafees, B., Shah, S. M. A., & Khan, S. (2011). Performance evaluation of open-end and close-end mutual funds in Pakistan. *African Journal of Business Management*, 5(28), 11425. <https://doi.org/10.5897/AJBM11.305>
- Nurwulandari, A. (2021). Analysis of the relationship between risk and return using the capital asset pricing model (Capm) method at Kompas 100. *Enrichment: Journal of Management*, 11(2), 528-534.
- Okorie, D. I., & Lin, B. (2021). Adaptive market hypothesis: the story of the stock markets and the COVID-19 pandemic. *The North American Journal of Economics and Finance*, 57, 101397. <https://doi.org/10.1016/j.najef.2021.101397>
- Pakistan Stack Exchange, (2019); www.psx.com.pk
- Pal, S. (2021). Research Perspectives on Growth of Mutual Fund Industry in India. *Asian Journal of Economics, Finance and Management*, 105-126.
- Pástor, L., & Vorsatz, M. B. (2020). Mutual fund performance and flows during the COVID-19 crisis. *The Review of Asset Pricing Studies*, 10(4), 791-833. <https://doi.org/10.1093/rapstu/raaa015>
- Perez, K., & Szymczyk, Ł. (2022). Actual rate of the management fee in mutual funds of different styles. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 17(4), 969-1014. <https://doi.org/10.24136/eq.2022.033>
- Pilbeam, K., & Preston, H. (2019). An empirical investigation of the performance of Japanese mutual funds: Skill or luck? *International Journal of Financial Studies*, 7(1), 6. <https://doi.org/10.3390/ijfs7010006>

- Qureshi, F., Kutan, A. M., Ghafoor, A., Khan, H. H., & Qureshi, Z. (2019). Dynamics of mutual funds and stock markets in Asian developing economies. *Journal of Asian Economics*, *65*, 101135. <https://doi.org/10.1016/j.asieco.2019.101135>
- Raza, S. A., Raza, S. A., and Zia, A. (2011). Equity mutual funds performance in Pakistan: risk & return analysis. *American Journal of Scientific Research*. Forthcoming
- Rizvi, S. K. A., Mirza, N., Naqvi, B., & Rahat, B. (2020). COVID-19 and asset management in EU: A preliminary assessment of performance and investment styles. *Journal of Asset Management*, *21*, 281-291. <https://doi.org/10.1057/s41260-020-00172-3>
- Routledge, B. R. (2019). Machine learning and asset allocation. *Financial Management*, *48*(4), 1069-1094. <https://doi.org/10.1111/fima.12303>
- Salisu, A. A., & Obiora, K. (2021). COVID-19 pandemic and the crude oil market risk: hedging options with non-energy financial innovations. *Financial Innovation*, *7*(1), 1-19. <https://doi.org/10.1186/s40854-021-00253-1>
- Shah, S. A. A., Shah, S. Q. A., & Tahir, M. (2022d). Determinants of CO2 emissions: Exploring the unexplored in low-income countries. *Environmental Science and Pollution Research*, *29*(32), 48276-48284. <https://doi.org/10.1007/s11356-022-19319-3>
- Shah, S. Q. A., Khan, I., Shah, S. S. A., & Tahir, M. (2018). Factors affecting the liquidity of banks: Empirical evidence from the banking sector of Pakistan. *Colombo Business Journal*, *9*(1), 1-18. <https://doi.org/10.4038/cbj.v9i1.20>
- Shah, S. Q. A., Lai, F. W., & Shad, M. K. (2022a). Moderating Effect of Managerial Ownership on the Association Between Intellectual Capital and Firm Performance: A Conceptual Framework. In International Conference on Information Systems and Intelligent Applications: ICISIA 2022 (pp. 477-489). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-16865-9_38
- Shah, S. Q. A., Lai, F. W., Shad, M. K., & Jan, A. A. (2022c). Developing a green governance framework for the performance enhancement of the oil and gas industry. *Sustainability*, *14*(7), 3735. <https://doi.org/10.3390/su14073735>
- Shah, S. Q. A., Lai, F. W., Shad, M. K., Konečná, Z., Goni, F. A., Chofreh, A. G., & Klemeš, J. J. (2021). The inclusion of intellectual capital into the green board committee to enhance firm performance. *Sustainability*, *13*(19), 10849. <https://doi.org/10.3390/su131910849>
- Shah, S. Q. A., Lai, F. W., Shad, M. K., Malik, M., & Sadriwala, K. F. (2022b). Basel III and Firm Performance: A Lens of Managerial Ownership. In Eurasian Business and Economics Perspectives: Proceedings of the 36th Eurasia Business and Economics Society Conference (pp. 237-249). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-14395-3_13
- Shahzad, K., Shah, S. Q. A., Lai, F. W., Jan, A. A., Shah, S. A. A., & Shad, M. K. (2023).

Exploring the nexus of corporate governance and intellectual capital efficiency: from the lens of profitability. *Quality & Quantity*, 57(3), 2447-2468. <https://doi.org/10.1007/s11135-022-01472-z>

Singh, S., Walia, N., Panda, P., & Gupta, S. (2022). Risk-managed momentum: An evidence from Indian stock market. *FIIIB Business Review*, 11(3), 347-358. <https://doi.org/10.1177/23197145211023001>Top of Form

Soofi, M., Najafi, F., & Karami-Matin, B. (2020). Using insights from behavioral economics to mitigate the spread of COVID-19. *Applied health economics and health policy*, 18, 345-350. <https://doi.org/10.1007/s40258-020-00595-4>

Spulbar, C., Ejaz, A., Birau, R., & Trivedi, J. (2019). Sustainable investing based on momentum strategies in emerging stock markets: A case study for Bombay Stock Exchange (BSE) of India. *Scientific Annals of Economics and Business*, 66(3), 351-361. <https://doi.org/10.47743/saeb-2019-0029>

Tahir, M., Jan, A. A., Shah, S. Q. A., Alam, M. B., Afridi, M. A., Tariq, Y. B., & Bashir, M. F. (2020). Foreign inflows and economic growth in Pakistan: Some new insights. *Journal of Chinese Economic and Foreign Trade Studies*, 13(3), 97-113.653-676). <https://doi.org/10.1108/JCEFTS-01-2020-0005>

Tahir, M., Lai, F. W., Jan, A. A., & Shah, S. Q. A. (2023). Investigating Bank-Specific and Macroeconomic Factors Affecting the Liquidity Position of Islamic Banks in Pakistan. In *Islamic Accounting and Finance: A Handbook* (pp. 653-676). https://doi.org/10.1142/9781800612426_0022

Tahir, M., Shah, Q. A., Khan, M. M., & Afridi, M. A. (2018). Intellectual Capital and Financial Performance of Banks in Pakistan. *Dialogue (Pakistan)*, 13(1).

Tao, R., Su, C. W., Yaqoob, T., & Hammal, M. I. R. (2022). Do financial and non-financial stocks hedge against lockdown in Covid-19? An event study analysis. *Economic Research-Ekonomska Istraživanja*, 35(1), 2405-2426. <https://doi.org/10.1080/1331677X.2021.1948881>

Tripathi, S., & Japee, D. G. P. (2020). Performance Evaluation of Selected Equity Mutual Funds in India. *Gap Gyan-A Global Journal of Social Sciences*. <https://doi.org/10.47968/gapgyan.31009>

Vukovic, D. B., Ingenito, S., & Maiti, M. (2023). Time series momentum: Evidence from the European equity market. *Heliyon*, e12989. <https://doi.org/10.1016/j.heliyon.2023.e12989>

Woo, K. Y., Mai, C., McAleer, M., & Wong, W. K. (2020). Review on efficiency and anomalies in stock markets. *Economies*, 8(1), 20. <https://doi.org/10.3390/economies8010020>

Zouaoui, M. (2019). Selectivity and market timing ability of fund managers: Comparative analysis of Islamic and conventional HSBC Saudi mutual funds. *International Journal of*

Financial Studies, 7(3), 48. <https://doi.org/10.3390/ijfs7030048>

Zulfiqar, B., Raheman, A., Sohail, M. K., & Nasr, M. (2011). Examining the Performance of Closed-End Mutual Funds Under Different States of Pakistani Stock Market. *International Review of Business Research Papers*, 7(3), 233-249.

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