



## Factors affecting mutual fund performance in Pakistan

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### Abstract

The crux of this research is to critically evaluate the potential mutual fund performance drivers. This research will benefit the stakeholders in terms of smart investment decisions. The study is based on convenient sampling method covering 16 out of 19 asset management companies (AMCs) that comprise 114 outstanding funds in the Mutual Fund Association of Pakistan (MUFAP). The data were collected quarterly from March 2013 to March 2018. The findings reveal that the asset under management, fund risk, KSE-100 returns, total income, total expense, age of the fund and lagged returns have a significant positive impact. Management quality rating has an insignificant positive impact on returns. In contrast, risk-free instruments have a significant negative impact on fund returns (FRs). A multiple regression model was used to extract results, and the results further suggested that the roles of fund risk and market return have a significant impact on FRs. Furthermore, we could not avail data for more than 5 years due to unavailability on independent platforms like MUFAP and the official websites of the respective AMCs, which is the central gap of this research. Moreover, it is highly suggested to use different statistical tools to make more meaningful results in future research.

**Keywords:** Asset under management, fund returns, fund risk, KSE-100 return, mutual funds.

## 1. Introduction

Mutual funds are investment schemes managed by a professional expert and knowledgeable firms called asset management companies (AMCs) to create a pool of investments and assign investments according to the different instruments and sectors using a portfolio. As compared to an individual investor, AMCs can generate lucrative returns through the stock market as they are professionally skilled and have excellent knowledge of the market. There is a service fee for managing the professional investments known as frontend and backend load. AMCs divide portfolio in the units' investors can purchase one unit or more than one and quickly sell at the present net assets value, which changes daily as the daily NAV available on the Mutual Fund Association of Pakistan (MUFAP). Since the last two decades, mutual funds have played an essential role in the economy of Pakistan; the growth rate of the mutual fund industry has been 13.4% since the last 10 years (MUFAP, 2019). The mutual fund industry has many sectors and AMUs hold the largest market share with 168 billion Pakistan rupees which is 31% of the total industry; the second largest share is 30% which is held by money market funds amounting to 162 billion; the third largest market sharing is income funds which hold 94 billion PKR which is 17% of the total market share. As compared to equity and sub-equity funds, the money market and income funds segments are increasing, especially in well-managed asset management firms. Credit rating companies, magazines and the news play a vital role in attracting investors to inject investment in mutual funds. One of the best ways to minimise the risk is to invest more in equity (Gompers & Metrick, 2001; Grinblatt & Titman, 1995); there are many companies in Pakistan that mostly invest in equity, i.e., 'UBL Fund Manager limited', 'Al Meezan Investment Management' and 'NBP Fullerton Assets Management'.

There are several established measures to evaluate mutual fund performance in regard to fund's management quality and stability. Hence, the measure may be classified, such as dividend adjusted returns, risk associated with fund returns (FRs), excess return (FR minus risk-free rate or FR minus benchmark return) and risk-adjusted returns, such as Sharpe ratio, Treynor ratio, information ratio, and Sortino ratio. These ratios are being broadly used in the mutual fund universe to evaluate mutual funds' performance, individually, and credit rating entities that employ their developed financial models to rank mutual funds based on the variables mentioned earlier.

On the one hand, they have discussed the above-mentioned scales by which performance can be measured. On the other hand, several internal and external technical variables may have a significant and robust impact on an individual fund's performance. As an external factor, investor's behaviour is the highest influential factor that may affect the mutual fund industry profoundly and it is unpredictable because there are several further factors which bring a change in the stock market, such as herding effect, heuristic effect, prospective, and market effect, as mutual funds have indirect exposure to the debt and equity market; therefore, a hit to the capital market brutally hits the universe of a mutual fund; moreover, there are further external influential factors, such as country risk, sovereign risk and catastrophic risk in investment. Being a democratic nation, political stability, rules and regulation and monetary policies play a vital role in terms of stock market growth and excellent policies for the exchange rate, interest rate, relax criteria for local and foreign investment gives significant room for an investor to elevate stock market; furthermore, some other factors may affect the stock market as well, such as the global pandemic COVID-19 which badly ruined the stock market and still investors are insecure to make a good investment into the market, nevertheless, mentioning all of the external factors have a significant direct impact on the stock market; hence, an impact on the stock market means a hit to the mutual funds too.

Coming towards the factors which are internally associated with the fund or an AMC, in Pakistan, it is believed that AMCs having well-established IT infrastructure (easy access to investors by portals and smartphone), broad range of distribution channels, skilled research team, and professional qualified fund managers are preferred by the investor. Many AMCs are not enriched with good IT infrastructure, and investors have to face several problems while making a real-time transaction. Even their funds are ranked as five stars, but there is no significant increment in the asset under

management of these AMC's just because of their weak IT infrastructure. Fund classification as in Islamic and conventional buckets make a significant increment in a boost to asset under management (AUMs) for the AMC's, as mentioned earlier that investors' behaviour makes such a massive impact on the stock market even in the mutual fund industry; therefore, being an Islamic Ummah now many investors tend to invest in Islamic mutual funds, as mentioned in Appendix 2 in comparison to AUMs that are Islamic to Conventional; so the right strategy on the right time to classify funds make a valuable contribution in the fund; the classification bucket can further be classified into more categories such as equity, asset allocation, balanced, income and money market fund for both Islamic and conventional; furthermore, recent studies are suggesting that the listed firms now tend to be Sharia compliant because of the set trend of Islamic finance.

Quality fund management plays a pivotal role in availing health investment, enjoyable and experience governance to take a position in an investor's mind. They feel free to invest with the AMC's, which are being rated highest in management quality by any of the autonomous body (rating agency). Last but not least, every AMC employs very different investment strategies, and they consider market timing, norms of the stock market, opportunity and threats to market; but the factor which is somewhat complicated compared to the rest of them is the construction of portfolios, wherein every individual AMC has a different set of parameters, rules and method to construct a portfolio or to maximise their investment. This the highest rated internal threat to the mutual fund industry.

The mutual fund industry of Pakistan has two broad segments of investors: (1) individual and (2) corporates. AMC's that are more funded by the corporates tend to be riskier because the switch of corporate from the fund will collapse the fund completely, and the AMC's that have less corporate and more individual investors are identified as a less risky investment scheme as per the criteria of many rating companies.

### **1.1. Problem statement**

'Considerable performance drivers for stakeholder of mutual fund industry to make an intelligent investment decision-making.'

Smart investment strategies, good market timing, diversified portfolios and prudent investment planning play a vital role in making a healthy profit in the stock/mutual fund market, and to achieve this optimisable level, an individual or a corporate has some pre and post-determinations which consider investment as a profitable scheme; these determinations are perhaps a combination of investment skills, pre and post stock market analysis, technical and fundamental analysis, financial analysis and sovereign analysis before investing in mutual fund scheme or whether into the equity base mutual funds or risk-free instrument-based mutual funds (Bajracharya & Rauniyar, 2016; Gitagia, 2012).

### **1.2. Research question and objectives**

Nevertheless, the mutual fund industry has a rapid pace in quantum to create a significant market share in the capital market of Pakistan. The industry has many dynamics to gauge lucrative investment compared to the stock market. The industry is being kindly welcomed by the potential investors in Pakistan to create more investment avenues not only in Pakistan, but the mutual fund industry has also reported rapid growth into the developed, emerging and pre-emerging markets. Therefore, it is essential to make some studies which can figure out the variables that are capable of exhibiting mutual performance and the aim of this article is to find out some of the basic but most essential parameters that are directly or indirectly associated with fund performance; the following are the research questions and objectives, collectively.

- The purpose is to find out the association amid AUM and FRs.
- The purpose is to find out the association amid fund risk and FRs.
- The purpose is to find out the association amid KSE-100 index returns (KSE-100), market return and FRs.
- The purpose is to find out the association amid management quality rating (MQR) and FRs.
- The purpose is to find out the association amid debt investment and FRs.
- The purpose is to find out the association amid total fund expense and FRs.
- The purpose is to find out the association amid total income (TI) and FRs.
- The purpose is to find out association amid the age of fund (AoF) and FRs.
- The purpose is to find out association amid lagged returns of fund (LFR) and FRs.

## **2. Literature review**

### **2.1. Efficient market hypothesis (EMH)**

Fama (1970) is the Nobel laureate who dedicatedly worked on the portfolio of management theory; he was a famous economist and well known for the empirical work; he also introduced the EMH theory. The theory is about the role of available market information impact the price of assets, and the market returns, as well as an investor will have more information and can be in a position to make wise decisions to have better returns. Today, in Pakistan and all over the world, EHM plays an essential role in the innovation of financial instruments.

The underlying three assumptions of EMH deal with investment dynamics such as the very first assumption proclaims the role of information is uniform amongst each investor means all investors have the same information, other deals none of the investors can make more profit compare to the peer group and the third the market return is unbeatable by the investor means none investor can beat market return. There are three major versions of the hypothesis: 'weak,' 'semi-strong' and 'strong.'

EMH holds three assumptions. The first one is that every investor has equal information on the market; second is that every investor will receive an equal level of profit for their investment in the same security/instruments. The third is that no investor will receive more return than the market return. Furthermore, EMH has a hypothesis which is weak-strong and semi-strong.

### **2.2. Risk and returns**

Gaumnitz (1970) studied that through portfolio management it is possible to minimise the risk and maximise the return it will also maximise shareholder equity. Jensen, Black and Scholes (1972) studied the capital asset pricing model (CAPM). They used Beta in the model, which was tested on the portfolio instead of individual equity. Jensen's (1968) research evaluates the Beta while using the time series data. The results show that the Beta predicts the expected return, which was near to the actual return. Taylor and Yoder's (1994) research found that the investors are satisfied with those who invest in the highly riskier funds and which managed by the professional fund managers.

Grinblatt and Titman (1989) evaluated mutual fund effectiveness while using 10 years of sample size, which started from 1975 to 1985. They found the abnormal performance of mutual funds but examined by the gross returns.

The comparison has been conducted between the CAPM and French three factors model for the performance determination of mutual funds by Rehman and Baloch (2016) results shows that mutual fund performance explains well through CAPM as compared to the French three-factor model in the Pakistan mutual funds market.

### **2.3. Stock market timings**

Henriksson and Merton (1981) developed a parametric and non-parametric statistical framework to test the market timing ability. He suggested that only a non-parametric test is recommended for security returns when forecasts of the manager are observable. In the case where the manager's forecasts are not observable, he recommended a parametric test for security return while using CAPM or multi-factor return structure. These are entirely different from the previous work because the main focus of these methods is to allow identification and separation to returns of market timing skill from the return of stock selection skills. The results show that there is no consistency in the stock-picking ability for the winning funds. Further, the regression's probability of the picking stock timing is the same for winning and the other funds (Fu & Hai-Ching, 2017). The timing ability define the action of the fund's manager during the stock market increase fund manager will increase the Beta of the portfolio, during the bear market fund managers have timing ability hold a fewer riskier position as they hold riskier during the bull market (Kacperczyk, Nieuwerburgh & Veldkamp, 2014). Busse, Ding, Jiang and Tang (2020) researched to check the relationship between stock selection and the time they found that the market timing is negatively associated with the stock selection.

### **2.4. Stock picking ability of funds**

Researches have differences of opinion about the stock selection ability in mutual funds managers. Malkiel (1995) and Elton, Gruber and Blake (1996) studied that which is witnessed that mutual funds have no skills to select the stock. The research was conducted in the US mutual funds market by Ferruz, Munoz and Vargas (2012) and Munoz, Vicente and Ferruz (2015). The research compares conventional and socially responsible fund managers. The results show that stock picking has negatively associated with the timing skills in both types of managers. The research shows that the USA's mutual funds, which are related to the religious, are negative stock-picking skills (Ferruz et al., 2012). The results show that there is no consistency in the stock-picking ability for the winning funds. Furthermore, the regression's probability of the picking stock ability is the same for winning and the other fund's (Fu & Hai-Ching 2017).

The research conducted by Fulkerson (2013) compared the benchmark return and particular stocks. He found that the fund managers were able to stock-picking and selected winning performance stocks. Fama and French (2010) researched that stock-picking ability to highlight the fund managers' weak skills in stock-picking. Furthermore, they found that some funds can beat the return benchmark. The research shows that 25% of top funds due to timing ability during the recession, whereas stock-picking good in booms significantly.

### **2.5. Expense ratio**

Ge and Zheng (2006) researched about the operating expense ratio in the mutual funds, and their research showed that there is a negative and significant expense on the mutual funds' performance. Similar research conducted by Carhart (1997) checks the effect of expense ratio on the profit of the mutual funds. His study found that mutual funds returns are negatively correlated with the expense. Ippolito (1993) compared the studies conducted on the relationship between adjusted risk performance and Expense, and he found a mixture of conclusions.

### **2.6. Mutual fund rating impacts**

Blake, Morey and Analysis (2000), Jones and Smythe (2003) and Gerrans (2004) inquired about the level investors know mutual fund ratings as a forecaster for forthcoming performance with research from Damato (1996), Guercio, Tkac and Analysis (2008) and Khorana and Servaes (2012). The third one is a prediction of mutual fund ratings, which is further distributed into 03 streams: the first one examines the forecasting of upcoming performance through the usage of rating of mutual fund (Blake

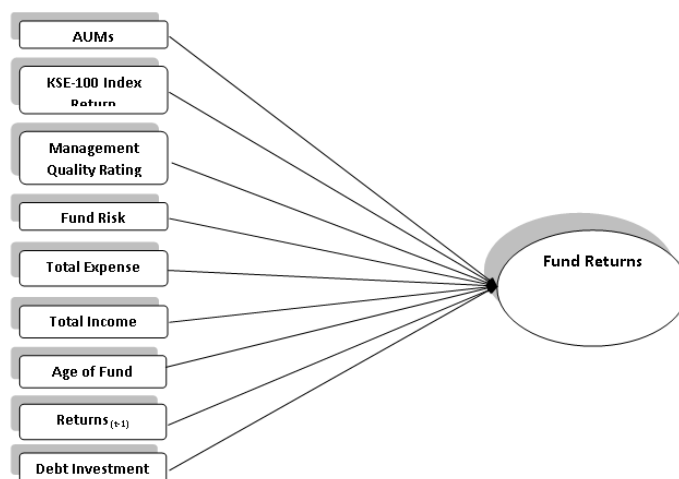
et al., 2000; Fuss, Hille, Rindler, Schmidt & Schmidt, 2010; Gerrans & Finance, 2006; Gottesman & Morey, 2006; Khorana & Nelling, 1998; Kraussl & Sandelowsky, 2007). The second one examines the performance consistently of ratings through research (Duret, Hereil, Mitaine, Moussavi & Roncalli, 2008; Hereil, Mitaine, Moussavi & Roncalli, 2010).

## 2.7. Historical performance forecast future returns

Multiple types of research have been done about the consistent return of mutual funds. Still, the problems are that they are not illustrated in the right manners (Hendricks, Patel & Zeckhauser, 1993). Fund performance did well in the first year but in the next year the return declined persistently until funds had been closed (Elton, Gruber, Brown & Goetzmann, 2009; Goetzmann & Ibbotson, 1994). Ahmed et al. (2020) researched the forecasting model by using a technique which was suggested by Cuddington and Khindanova (2011). The model was based on the method of Monte Carlo simulation, proposed to combine effect scenarios are the indications that dictate to the presence of the effect of momentum in all category of mutual funds apart from the other fund. Therefore, the research will be assessing the mutual fund classifications through providing the policy of investment to the associations and fund managers.

## 2.8. Conceptual framework

Bajracharya and Rauniyar's (2016), 'Performance Evaluation of Nepalese Mutual Funds', unpublished research thesis to Kathmandu University.



## Hypothesis

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- H1: AUMs have a significant impact on FRs
  - H2: Fund risk has a significant impact on FRs
  - H3: KSE-100 have a significant impact on FRs
  - H4: Management quality rating has a significant impact on FRs
  - H5: Risk-free instrument investment has a significant positive impact on FRs
  - H6: Total expenses (TEs) have a significant impact on FRs
  - H7: TI has a significant impact on und returns
  - H8 AoF has a significant impact on FRs
  - H9 Lagged Returns of the mutual fund have a significant impact on FRs
-

### **3. Research methodology**

Efficient procedures play a pivotal role in researches. Therefore, a suitable working methodology leads to reliable findings. In this research, the methodology will dictate the procedure, roadmap and steps and methods used in each section; the following sections describe the steps of research.

#### **3.1. Research philosophy**

The work is solely founded on logical reasoning and authentic causes of testifying the impact and causes of some variables; therefore, this leads to research on the positivism approach.

#### **3.2. Research approach**

In the research universe, there are several approaches, but the most common are deductive and inductive. Inductive deals with the qualitative type of research that is always concerned with primary research, but unlike inductive, there is a deductive approach that is genuinely used to confirm already constructed hypotheses, meaning the tests are already done. The deductive approach deals with secondary data (quantitative data). Hence, the deductive approach is used in this research article.

#### **3.3. Research strategy**

The strategy used in this research is quite simple. Data were collected from archival databases, publically available magazines, data research portal and the most relevant and authentic official websites.

#### **3.4. Choice**

In such researches, secondary data are suggested to use the mono method of research.

#### **3.5. Time horizon**

Data accumulation, data pre-processing and data analysis always consume significant time; moreover research is driven from logical reasoning, facts and figures. Therefore, these elements were received from different media of information that consumed around a year in the entire research process.

#### **3.6. Population**

There are 19 AMCs registered with the MUFAP employing more than 150 additional funds. Further, as mentioned earlier, data were collected from various authentic, reliable and official mediums of information, such as Fund Manager Report (FMRs) of each fund, funds data from MUFAP, benchmark data from Pakistan Stock Exchange (PSX) and rest of data from relevant, authentic websites.

#### **3.7. Sample size**

We have accumulated a data set of 114 funds in different categories, further we have covered 16 AMCs funds rest of three AMCs (Dawood Fund Management, BMA Fund, and First Capital Investment) we could not encounter because of non-availability of the data. Data is collected every quarter from March 2013 to March 2018; we found many difficulties to extract data more than 5 years, but unfortunately, there is no independent source which has complete data more than 5 years, so we have collected entire available data for entire Industry to make our models.

### 3.8. Procedures, techniques and data sources

In any of the regression models, there are some pre-conditional and post-conditional assumptions. Pre-conditional such as (1) population should be normally distributed and (2) Parameters should be unbiased, Post-Conditional (1) No Multicollinearity, (2) No Autocorrelation, (3) No Heteroscedasticity, (4) No Error of Specification, (5) Parameters should be significant and efficient and (6) Parameters should be sufficient.

The research procedure refers to calibrate these assumptions for making results reliable and authentic, in the research process first table is for data stationery, the second table exhibits descriptive statistic, third correlation matrix, and forth regression table.

### 3.9. Techniques

To be set on a benchmark of the regression model, we are to comply with given guidance of model, in the first interface, we have to make data stationery for further data pre-processing. Afterwards, we did descriptive to show population structure. In the third table, which illustrates the multicollinearity effect in model and forth, we testify entire parameters sufficiency, significant, and error specification. To do that, we employed financial modelling software EVIEWS 10.

### 3.10. Data source

Entire data were collected from independent sources, such as data for TI, and TE is collected from quarterly financial statements of every respective fund. Asset under Management data is collected from every third FMRs, Management Quality Rating data is collected from official website of 'VIS Credit Rating Company' and 'Pakistan Credit Rating Company', KSE-100 Index data have been collected from the official website of PSX, Fund Risk, AoF, and TFCs Investment data is collected from 'MUFAP', Lagged Returns of the Fund is self-calculated numbers by using Lagged Formula.

### 3.11. Multiple regression model

$$FR = C + AUMs + KSE-100 + MQR + FR + TE + TI + AoF + LFR + TFCsl + Er$$

Model tests based on segregated variables for each of the variables, as aforementioned in the literature reviews.

Below are the abbreviations and sources of each variable.

Variables	Abbreviation	Source
FR	Fund Return	Shamim, Mumtaz and Ali (2020). An empirical study to explore the risk-adjusted performance of mutual funds: A case of Pakistan. <i>International Journal of Financial Engineering</i> , 7(01), 2050001.
AUM	Asset under Management	Tuzcu and Ertugay (2020). Is size input in the mutual fund performance evaluation with Data Envelopment Analysis (DEA)? <i>Eurasian Economic Review</i> , 1–25.
KSE-100	KSE-100 Index Returns	Noor and Economies (2020). The Flow-Performance Relationship: Evidence from Pakistani Mutual Funds. <i>Journal of Accounting and Finance in Emerging Economies</i> , 6(1), 145–154.
MQR	Management Quality Rating	Noor and Economies (2020). The Flow-Performance Relationship: Evidence from Pakistani Mutual Funds. <i>Journal of Accounting and Finance in Emerging Economies</i> , 6(1), 145–154.
FR	Fund Risk	Shamim et al. (2020). An empirical study to explore the risk-adjusted performance of mutual funds: A case of Pakistan. <i>International Journal of Financial Engineering</i> , 7(01), 2050001.



TE	Total Expense	Tsolas and Management (2020). Precious Metal Mutual Fund Performance Evaluation: A Series Two-Stage DEA Modeling Approach. <i>Journal of Risk and Financial Management</i> , 13(5), 87.
TI	Total Income	Bajracharya and Rauniyar (2016). Performance Evaluation of Nepalese Mutual Funds, unpublished research thesis to Kathmandu University.
AoF	Age of Fund	Bajracharya and Rauniyar (2016). Performance Evaluation of Nepalese Mutual Funds, unpublished research thesis to Kathmandu University.
LFR	Lagged Returns of Fund	Bajracharya and Rauniyar (2016). Performance Evaluation of Nepalese Mutual Funds, unpublished research thesis to Kathmandu University.
TFCsl	TFCs Investment	Expert advice taken in the mutual fund industry.
Er	Error Terms	

MPF	Mutual Fund Performance
AUMs	Asset under Management
KSE-100	KSE-100 Index Returns
MQR	Management Quality Rating
FR	Fund Risk
TE	Total Expense
TI	Total Income
AoF	Age of Fund
LFR	Lagged Returns of Fund
TFCsl	TFCs Investment

Details of the calculation of every individual variable are the following.

We have calculated returns of sampled funds (114) on Excel and confirmed them with the absolute number issued by a respective entity (AMC); further return calculation employs the following steps:

1. NAV Data from MUFAP for each fund
2. Dividend pay-out history of each fund
3. Dividend adjustment in NAV (Dividend divided by Ex-NAV (A day earlier NAV on dividend date) and several units).
4. Return => (Beginning Dividend Adjusted NAV/Ending Dividend Adjusted NAV)—1

Management Quality Rating Scorecard is used to convert strings into stringer (conversion of Alphabets into a number).

**Table 1. Management quality rating**

Number assigned	Rating scale	Definition
1	AM1	Asset manager exhibit excellent management characteristics
2	AM2++	Asset manager exhibit very good management characteristics
3	AM2+	Asset manager exhibit very good management characteristics
4	AM2	Asset manager exhibit very good management characteristics
5	AM3++	Asset manager exhibit good management characteristics
6	AM3+	Asset manager exhibit good management characteristics
7	AM3	Asset manager exhibit good management characteristics
8	AM4++	Asset manager exhibit adequate management characteristics
9	AM4+	Asset manager exhibit adequate management characteristics
10	AM4	Asset manager exhibit adequate management characteristics
11	AM5	Asset manager exhibit weak management characteristics

- KSE-100 index return was calculated as per below formulae mentioned.
- Stock market return = (New Price/Old Price) – 1.

- Management expense and operating income numbers are used in absolute terms; this was collected from each fund’s financial statement.
- Net of fund of funds AUM were used and calculated manually on an excel sheet every quarter.
- The risk associated with each fund is calculated through the returns, which we have already calculated by applying the standard deviation formula in excel.
- Its natural formula calculates returns lagged, and the fund’s inception dates calculate the AoF, and debt investment data was given by MUFAP and used in absolute terms.

#### 4. Results and discussion

Descriptive statistics were divided into two significant segments, one individual asset management company’s performance given in Appendix 1 in term of its size (Graph 1), asset allocation in sharia funds and conventional funds (Graph 2), historical performance (Graph 3) and category wise distribution of fund (Graph 4), note that this descriptive statistic was developed with only information of each AMC so an investor quickly himself can compare their performance, further critical essential information is provided in sheets like brief AMC profile, names of funds under management, their types and an inception date of each fund. Appendix 2 illustrates AMCs and their number of the fund in each category like income fund, money market fund, asset allocation fund, and equity funds. In Appendix 3, the amount invested in each of fund in each category management by AMCs is illustrated. In the second segment, we have cumulatively shown descriptive statistics of each variable, and analyse population structure as shown below in the results and discussion section.

**Table 2. Descriptive results and analysis**

Descriptions	TI	TE	AOF	AUMs in 'Million'	Risk	MQR	KSE-100	DI in 'Million'	Returns	AoF
Mean	0.259	-0.048	94	3.547	2.13%	3	5.06%	19.86	2.74%	94
Median	0.073	-0.019	84	1.452	0.74%	3	5.62%	17.75	1.83%	85
Mode	0.531	-0.014	96	0.100	0.56%	4	12.57%	33.32	1.36%	97
Standard Deviation	1.636	0.115	68.62	7.508	2.68%	1	8.17%	5.59	5.00%	69
Kurtosis	1,416	172	34.66	0.056	2.854	-1	-1.245	0.00	3.825	35
Skewness	33.958	-10.476	4.74	0.007	1.621	0	-0.047	0.00	0.825	5
Range	77.453	2.737	673	89.318	21.70%	3	26.85%	21.93	52.42%	674
Minimum	-7.886	-2.737	1	0.048	0.00%	1	-8.93%	11.39	-24.84%	1
Maximum	69.567	0.10	674	89.366	21.71%	7	17.92%	33.32	27.57%	674
Sum	590	-108	21,463 7	8,088	49	6,532	115	45,287	62	NA
Count	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280

Analysis:

Table 2 exhibits the population structure of research. In descriptive statistics, the key observable measure is the median. The standard deviation of each variable; hence, in Table 2 on an average TI reports around 0.073 m for each fund (max. 69.56 m, min. -7.88 m) compared to on average TE of each fund stagnate at 0.014 m (max. 0.10, min. 2,737) in preceding last 5 years. In light of Table 2, we can conclude that funds have less expensive compare to income not only in term of mean difference in TI and TE but also significant volatility difference is measure as TI STDVP rests at 1.63 and TE STDVP rests 0.115 (TI is more volatile rather TE), and these values indicate that expense is very well monitored and mitigate in fund; however, management keeps making hard efforts to make more profit compare to past and difference in both variables is quite considerable.

AoF plays a viable role in attracting investment and getting investor confidence on the fund; therefore, on average, the AoF is 84 months (5.65 years). It was our first assumptions that fund taken

into data set should have at least 5-year history, further minimum AoFs shows very near inception of the fund when we collect data which is around 1 month that means if we have taken data from March 2013 than that fund got itself incepted on Feb 2013. The maximum AoF is 674 months (45 years). AUMs represents the size of an individual fund; the average size of a single fund is 1,452 m (Max. 89,366 m and Min. 0.048 m). Moving forward, not only fund managers get investor confidence by the AoF but also by their external credit rating, management quality rating and fund stability rating; therefore, we have also accounted for AMCs rating, on an average rating of entire AMCs is 3 (AM2+) that means mutual fund industry is having health growth in term of managing funds; furthermore, the table illustrates the highest and lowest rating as highest 1 (AM1) and lowest 7 (AM3).

In the last segment of descriptive statistic, we will be discussing the essential factors of the research, in the light of above-mentioned theories of risk and return, return and benchmarking, few evident reports risk, returns and benchmark movement concerning each other, whereas this also has been observed that AMCs manage fund so well and have excellent performance compared to the benchmark (KSE-100), further graph witnesses risk of funds is entirely controllable and manageable even returns of funds do not show any unexpected anomalies. Table 3 and the graph illustrate it so well.

**Table 3. Comparison of average basis**

Date	Risk	KSE-100	Returns
30-Mar-18	2.01%	12.57%	4.53%
29-Dec-17	2.90%	-4.57%	-1.49%
29-Sep-17	2.29%	-8.93%	-3.47%
30-Jun-17	2.87%	-3.30%	0.16%
31-Mar-17	2.62%	0.73%	2.32%
30-Dec-16	2.50%	17.92%	6.92%
30-Sep-16	1.26%	7.30%	4.00%
30-Jun-16	0.72%	14.02%	4.07%
31-Mar-16	0.87%	0.98%	1.07%
31-Dec-15	2.29%	1.64%	2.28%
30-Sep-15	2.02%	-6.14%	-0.51%
30-Jun-15	3.48%	13.78%	6.22%
31-Mar-15	3.52%	-5.91%	0.22%
31-Dec-14	0.79%	8.09%	5.86%
30-Sep-14	2.50%	0.25%	1.80%
30-Jun-14	1.14%	9.18%	3.56%

**Table 4. Data stationery**

Descriptions Variables	At level Statistic	At first difference Statistic
Fund returns	-4.38**	
Assets under management	-4.21**	
Fund risk	-104.71**	
KSE-100	18.23**	-4.36**
TE	-18.69**	
Management quality rating	-6.39**	
Debt investment	-13.31**	
TI	-20.10**	
AoF	16.92**	-33.41**
LFR	-4.23**	

\*Less than 0.10 but greater than 0.05.

\*\*Less than 0.05 but greater than 0.01.

\*\*\*Less than 0.01.

**Analysis:**

Pre-requisite of regression that data should be stationary, data should not have unit root problem; therefore, in panel data, we have employed the Levin–Lin–Chu test to check data stationery. In Table 4, KSE-100 and AoFs are stationary on first difference as  $p$ -values are less than 0.05, so we claim that data is stationary; furthermore, rest of the variables FRs, AUM, fund risk TE, management quality rating, debt investment, TI and lagged returns of the fund are stationary on a level as  $p$ -value is less than 0.05.

**Table 5. Correlation of independent variables**

Variables	LFR	AoF	AUMs	MQR	FR	DI	TE	TI	KSE-100
LFR	1.00								
AoF	0.04	1.00							
AUMs	0.01	0.30	1.00						
MQR	0.04	-0.30	-0.10	1.00					
FR	0.15	0.23	0.10	0.02	1.00				
DI	-0.14	0.24	0.03	-0.36	0.02	1.00			
TE	0.03	-0.29	-0.69	0.21	-0.10	-0.03	1.00		
TI	-0.02	0.16	0.44	-0.04	0.06	-0.03	-0.76	1.00	
KSE-100	-0.34	-0.05	0.01	0.06	-0.05	0.08	-0.07	0.06	1.00

**Analysis:**

Another second post-conditional assumption of the regression model is no multicollinearity. Therefore, we have developed a correlation matrix to evaluate multicollinearity impact in independent of the independent variable. Multicollinearity refers to the problem of explaining the same, which is explained by another variable, an equation. We have two options, whether drop variable or make indexing by (PCA Factor). Considering these conditions, in Table 5 there no individual variables which are having an multicollinearity impact, but there is a significantly strong negative relationship between TI and TE and this is because both are opposite to each other, and rest of the variables have a relationship which can cause a multicollinearity impact, thereby concluding these data are fit to be used in the regression model.

**Table 6. Multiple regression model (OLSs)**

Variables	Coefficient	Std. Error	t-Statistic
Asset under management	0.000	0.000	2.680721***
KSE-100	0.215	0.009	24.61245***
Management quality rating	0.003	0.002	1.517796
Fund risk	0.197	0.036	5.453113***
TE	0.000	0.000	3.859342***
Debt investment	(0.000)	0.000	-4.98395***
TI	0.000	0.000	3.401082***
Lagged FR	0.168	0.021	8.053147***
AoF	0.004	0.002	2.756009**
C	0.019	0.007	2.762134**

\*Less than 0.10 but greater than 0.05.

\*\*Less than 0.05 but greater than 0.01.

\*\*\*Less than 0.01.

**4.1. Asset under managements to returns**

Portfolio management theory advocates the role of fund size while measuring fund performance. Management of small funds considerably secures enough rather than managing significant funds. AMCs having a vast pool of investment can drive lucrative returns from the market, but small players

remain in pressure to drive returns. It is the flip side of investment management. However this study will also advocate the role of fund size or economies of scale in term of FRs; therefore, Table 6 illustrates the significant relationship between AUMs and FRs, but the relationship is weak enough shown by Beta on the equation; moreover, if the beta sign is positive that means if we increase fund size that will produce more returns. Preliminary studies are supporting the result as Bajracharya and Rauniyar (2016), Ingrid, p. Amunga (2015), Indro, Jiang, Hu and Lee (1999), Elton et al. (1996) and Berk and Green (2004).

#### **4.2. KSE-100 to returns**

The investor always loves to go with an investment management firm that delivers excellent performance. Hence, word performance has various measures to evaluate management efficiency and utilisation of fund avail from investors. Therefore, we set the benchmark as KSE-100 returns to evaluate relationship and effect of a unit change in the benchmark to return of the fund, in the table mentioned above describes the role of benchmark in term of FRs, KSE-100 Returns has a significant and positive relationship with FRs, which means that funds and benchmark have the same movement in the capital market, coefficient indicates that a unit change in KSE-100 Returns will bring change around 0.214 unit change in return of the fund. Meaning mutual funds are less adequate from the stock market. However, funds have good exposure to the stock market. Still, even though it is less affected by fluctuation in the stock market, mutual fund managers are professional, experienced, intuitive, and intellectual in investment decision-making, composition of portfolio and allocation of funds. These findings are in agreement with previous studies like Grinblatt and Titman (1995), Hendricks et al. (1993) and Goetzmann and Ibbotson (1994).

#### **4.3. Management quality rating to returns**

One of the most concerning areas should be considered by both of the parties, (1) asset management company and (2) credit rating firms who professionally conduct management quality rating assignment. In light of Table 6, management quality rating does not have any impact on FRs, infect it is logically correct, but concern for AMCs is they should use these rating bands to gauge investment, as rating companies are the autonomous opinion companies investor trust more rather firm internal report, AMC should convert this rating bands to avail investment. This would be reflected in fund AUMs, and this will impact FR, meaning ratings prominently do not have a direct relationship with the fund but could have an indirect impact on FRs. Further, rating companies should consider returns and prepared some robust models based on track records of return, which ultimately give an edge to fund managers. By findings, this is being viewed that fund managers do not cash their ratings to get investment.

#### **4.4. Risk to returns**

The investor does consider the risk associated with any securities upon its risk appetite, as per the Henry Markowitz (1952) theory of portfolio optimisation, as much higher the risk as much will be the return of securities. As mentioned earlier, the table witnesses a positive significant relationship between Risk and Returns; the movement of risk and returns is in the same direction. Nevertheless, the critical, pivotal point, how much risk impact return this answered by the coefficient of the equation, a unit change in risk will bring around 0.19 change in return. This again advocates that risk associated with securities in the mutual fund industry in quite negligible compare to the stock market. These findings reveal the collective efficiency of fund managers that, in the last 5 years, risk of securities remains on very marginal rate and do should violent behaviour in terms of abnormal returns. Findings are being supported with tremendous work in past such as Fama (1970), Mutua (2011), Maina (2014), Ngene (2002), Grinblatt and Titman (1989), Taylor and Yoder (1994), Jensen et al. (1972) and Gaumnitz (1970).

#### **4.5. Total expense to returns**

As per the regulation of NBFCs 2015, fund managers were directed to exhibit expense ratio in FMRs, so including this variable will be useful for investors, fund managers, policymakers and rating agencies. Logically speaking, expense of fund management witness efficiency of management that how they make the most of funds with limited resources; therefore, in regression table reports that TE of firm has a significant and positive relationship with returns, this result can only direct us only relationship parameters of the equation in inefficient, moreover positive signs represent that the more Expense you have, the better will be profit, we can take this in such conditional like AMC's use its intellectual capital, and that is very expensive rather than other capital. Furthermore, results are being supported by following studies (Ge & Zheng, 2006) jointly studied AMC's expense significantly impact on the FRs, this paper named out of sight, out of mind: the effects of expenses on mutual fund flows which was published in CFA digest August 2006. Moreover, Ingrid, p. Amunga (2015) also found a significant positive relationship with AMC's TEs.

#### **4.6. Debt investment to returns**

This variable was chosen to understand the investment behavioural pattern of investor in mutual fund industry of Pakistan; therefore, we were curious to understand the shift of investment from equity to debt market; therefore, we got help from above-mentioned equation of debt investment to returns found significant and negative relationship which witnesses that whenever policy rate goes down investors feels good to invest in mutual fund, that means investor makes the most of his money and they are opportunist, further equation also support general perspective of earn having less risk when equity market reflects downside deviation so investor shifts from equity to debt, one more time we should clarify association of these variables, debt investment data is availed from in house database of MUFAP, and these numbers are those which are exhibits on FMRs in asset allocation section where every individual fund shows sum certain amount invested in debt instruments and this number is total outstanding funds on MUFAP and their total investment debt instruments, so shift can be measure, however again parameters are inefficient so we can only claim relationship but not its robustness.

#### **4.7. Total income to returns**

TI of entity plays a vital role in fund growth; therefore, in this independent variable as TI used to exhibit significant effects on FRs. The above-mentioned table proclaims association of TI of the fund and its returns, hence like TE parameters is inefficient, so rely on strongness of TI in contrast to FR will not be wise able because equation only dictating relationship sign nothing else; further, these findings are in agreement with Amunga (2015).

#### **4.8. Lagged return to returns**

Whether the past returns affect future returns was answered in equation lagged return to returns; the above-mentioned table illustrates that rest of benchmark and risk of the fund even history does affect present-day returns, it records the significant and positive relationship between lagged return and return of the fund, that means if a fund performance well so the investor will invest more with this fund and vice versa, furthermore in past unit change will affect around 0.168 unit change in immediate return there for it confirm result as Bajracharya and Rauniyar (2016).

#### **4.9. AoF to returns**

Experience speaks higher than simulation in the stock market as much experience fund is as much investor confident on it, in simple term mutual fund market is too much competition. If a fund does

not perform well, investors shift their amount from another fund of AMC; hence, funds having significant age that witness their competitive performance in the past; therefore, the above-mentioned table illustrate the relationship between the AoF and returns, association amid both of the variables is significant and positive however Beta is considerably very low, that again confirms inefficient parameter, that only can represent relation but not impact.

**Table 7. Results**

Hypothesis	Sign	0.05 or 5% Alpha	
		Do not Reject	Reject
Ho: There is no significant impact of fund size on FRs	+		Yes
H1: There is a significant impact of fund size on FRs		Yes	
Ho: There is no significant impact of KSE-100 returns on FRs	+		Yes
H2: There is a significant impact of KSE-100 return on FRs		Yes	
Ho: There is no significant impact of management quality rating on FRs	-		Yes
H3: There is a significant impact of management quality rating on FRs		Yes	
Ho: There is no significant impact of fund risk on FRs	+		Yes
H4: There is a significant impact of fund risk on FRs		Yes	
Ho: There is no significant impact of TE on FRs	+		Yes
H5: There is a significant impact of TE on FRs		Yes	
Ho: There is no significant impact of debt investment on FRs	+		Yes
H6: There is a significant impact of debt investment on FRs			Yes
Ho: There is no significant impact of TI on FRs	+		Yes
H7: There is a significant impact of TIs on FRs		Yes	
Ho: There is no significant impact of lagged return on FRs	+		Yes
H8: There is a significant impact of lagged returns on FRs		Yes	
Ho: There is no significant impact of AoF on FRs	+		Yes
H9: There is a Significant Impact of AoF on FRs		Yes	

**Table 8. Model summary**

R-squared	0.2360	Durbin–Watson stat	2.221693
Adjusted R-squared	0.2328	Hausman test (Random)	1
F-statistic	73.99604		
Prob (F-statistic)	0		

Rest of the post-conditional assumptions of the regression models are being covered in these segments, as mentioned Table 8. The Durbin–Watson value is 2.22 which indicates that there is no autocorrelation amongst the residuals, and further Huasman Test suggests us to go with random effect model which is the best fit for the model. F-Statistic = 73.99 means that in the regression model at least one variable is accepted, which can also be seen by its p-value, which is less than 0.05, which suggests our model is fit and appropriate. In the next segment, we analysed the proportional effect of an independent variable into the dependent variable. R-Square is a measure representing the proportion impact of all variables or an explanation of the independent variable for the dependent variable. All variables taken in the regression equation collectively represent a dependent variable around 0.2360% or 23.60% (returns of fund) that further defines an unknown variable that can explain returns of 0.7640% or 76.40% which is the unexplained proportion of research.

## 5. Discussion and conclusion

### 5.1. Discussion

The crux of this research article is to evaluate drivers. In contrast to FRs, for evaluation of these factors, numerous techniques were employed, such as individual descriptive statistics, collective

descriptive statistics, tables, and graph, correlation matrix, regression equation, and model specification. Data were collected from reliable, official and authentic sources from March 2013 to March 2018 from 16 AMCs comprising 114 outstanding funds in the MUFAP. Multiple regressions were used to find out the relationship of this independent variable to the dependent variables. Furthermore, every individual variable will be discussed.

### **5.2. Asset under management**

In this study, we found that increasing the size of funds makes a lucrative return because AMCs get power to drive fund performance in Pakistan's perspective. National Investment Unit Trust, NBP Funds Limited, Al-Meezan Investment Management, HBL Asset Management, and UBL Fund Managers are key players who get the advantage of their fund size. Recently, a research was conducted to evaluate AUM impact on fund performance (Tuzcu & Ertugay 2020).

### **5.3. KSE-100 index returns**

Another parameter (KSE-100 Returns) kept a sufficient impact on FRs as industry got indirect fund exposure to the stock market. Hence, the relationship was must with it, and the study proved KSE-100 index return is a reliable driver who may have the capacity to drive fund performance. Furthermore, Noor and Economies (2020) conducted a research and had evaluated fund performance concerning the KSE-100 index.

### **5.4. Management quality rating**

Management Quality Rating Study results that management quality rating does not impact fund performance; hence, management quality is not considered a driver of returns. The same was done by Khorana and Servaes (2012).

### **5.5. Fund risk**

Of course, an investor considers not only fund size but also risk associated with securities, it has been observed parameter (Risk of Fund) is one of them who has a significant and robust impact of FRs that the variable which can drive returns as much higher the risk as much will be the return of the fund. The results are quite similar to Rehman and Baloch (2016).

### **5.6. Total expense**

TE is the expense of fund impact its returns, and the study suggests that increasing expenditure enhance fund performance, so there are many possibilities such as perhaps AMCs spends more money on distribution channels, higher professional fund managers, spending money on technological advancement, etc. This variable also matches with Ge and Zheng (2006).

### **5.7. Risk-free instruments**

The shift of investments has been observed in this study. Investor's shift their money in the risk-free instrument when they find funds are exhibiting negative returns and in flipside cases it is vice versa.



### **5.8. Total income**

TI unlike TE fund has a good TI is before investors, and study capture the role of TI in terms of FR is contribution and considerable and compare to (Bajracharya & Rauniyar, 2016) had almost the same result.

### **5.9. Age of fund**

AoF plays a pivotal and considerable role in terms of FRs, and the study proclaims that as much aged the fund is as much will be experienced and get potential to drive FRs, such as National Investment Unit Trust and precisely the same result was determined by Bajracharya and Rauniyar (2016).

### **5.10. Lagged FRs**

Lagged FRs have a history of fund impacts on present-day returns. It has been observed in the study that in lagged funds the return is one of the potential drivers that have a significant capacity to drive FR. The same result was determined by Bajracharya and Rauniyar (2016).

### **5.11. Conclusion**

Rationale, opportunist, and smart investors always analyse determinants that drive performance of securities or stock; therefore, in this research, we have encountered key pivotal, considerable, essential, and robust factors that have a substantial and significant impact on FRs. The most influential variable is found as benchmark of fund (KSE-100 returns as proxy benchmark), fund risk and fund history kept a significant and influential role in driving fund performance in term of lucrative returns. Furthermore, we could not consider all KMI shares of the KMI-30 index in this model because it has a multicollinearity effect with the KSE-100 index, so we chose only the KSE-100 index return. However, results predict the same thing for general and sharia stock funds.

TI, TE and AUM (fund size) were significant and positively associated with FRs at 0.05% or 5% alpha. Still, these variables did not have a substantial impact on FRs because the coefficient of these three equations is poor enough to predict FRs.

AoF and risk-free investment in funds are having a significant positive and negative relationship with FRs at 0.05% or 5% alpha, respectively. AoF exhibits a little impact through its coefficient, meaning that it has a little considerable capacity to drive return due to its experience (age in the market). On the other hand, risk-free investment has a relationship, but it cannot drive FRs. Only the single variable MQR was insignificant with FRs, meaning MQR does not have explanatory power to FRs.

## **6. Recommendations**

### **6.1. Recommendation for fund managers**

Fund managers consider not only other factors like diversified portfolios, customer facilities and technological advancement, but also consider other drivers that have potential to drive FRs such as fund size, fund risk, benchmark return and history of fund. The second phase which this study suggests is to employ intellectual capital and investment of IT infrastructure of AMCs, such as NBP fund managers. This is what we perceive by seeing results for TE and TI.

### **6.2. Recommendation for AMCs and credit rating companies**

AMCs and credit rating companies should jointly conduct awareness sessions, investment seminars, public blogs, sector studies, articles and so on. AMCs should convert its MQR and fund's stability rating to attract investments, which will reflect fund size and would give them the capacity to drive returns.

### **6.3. Recommendation for investors**

For investors, the most concerning area is fund's risk, market performance and fund history; these are the most influential variables which are reported earlier and potentially drive returns; being a smart, intellectual and rationale investor must go with that fund which is far best in this three-dimension, better in history, have potential to beat benchmark (market return) and have the optimisable risk of securities.

### **6.4. Recommendation**

Pakistan is considered an underdeveloped country. Hence, we have minimal documented information; therefore, due to unavailability of data, we could only cover data of 5 years every quarter from 16 AMCs having 114 outstanding funds with the MUFAP. It is strongly suggested that through these variables, by using logistic regression model, rating companies can drive PD models and researcher can stretch the data and use the DEA technique like Grinblatt and Titman's model and test this is Pakistan's perspective or any other country's perspective.

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