

## Fintech-Driven Risk and Return Analysis of Shariah-Compliant Mutual Funds: Evidence from Oman

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# Fintech-Driven Risk and Return Analysis of Shariah-Compliant Mutual Funds: Evidence from Oman

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**Abstract**— Shariah-compliant mutual funds widen the scope of ethical investing avenues available in Islamic finance. The enhancement of portfolio performance in these funds becomes increasingly more important with the application of new age fintech and its considerations to risk-return relationships. Moreover, there are limited studies on the risk-return configuration of Shariah mutual funds in Oman, particularly the effect of year-to-date (YTD) volatility. This study analyzes the impact of fintech-driven risk measures on the performance of the Al Kawthar Shariah-compliant mutual fund in Oman using regression analysis of monthly data from 2017 to 2024. It applies fintech techniques to determine how YTD volatility is associated with key financial parameters like Standard deviation, Sharpe ratio, and Beta, Information Ratio, and Annualized Alpha in case of Al Kawthar fund. Using regression analysis, we assess the effect of these parameters on YTD returns and risk-adjusted performance using monthly data from December 2017 to March 2024. The analysis demonstrates that the scope of prediction of these indicators accounts for 27.1% of variability in the YTD return with higher Annualized Alpha and Sharpe Ratio contributing positively to fund outcomes while YTD Volatility undermines it. The report forwards understanding of Oman's Shariah-compliant mutual funds as well as demonstrates the efficacy fintech can have in advancing risk management frameworks and assisting fund managers towards optimized risk-return configurations.

## I. INTRODUCTION

In the era of increasing globalization, the stock markets of the Gulf Cooperation Council (GCC) are particularly important for investors hoping to capitalize on lucrative opportunities amid the perceived risks. According to the Arab Monetary Fund (2017), GCC markets stand out in the Arab world because they have high market capitalization, considerable transaction activity, and a broad range of companies listed on them. For instance, Saudi Arabia dominantly led the region in market capitalization in 2017, with US\$451.15 billion, while Bahrain lagged substantially with US\$21.603 billion. Though transaction volumes also varied markedly from Saudi Arabia's US\$3,590.5 million to Bahrain's US\$130 million, the aggregate figure for the GCC economies was US\$173.74 billion. This average market capitalization firmly cements their status as the premier stock exchanges of not only the Arab world but also emerging markets [1]. The stringent ethical and compliance guides create unique risks for Shariah-compliant businesses. Fintech, particularly through its powerful risk management

and analysis tools, offers new solutions for meeting these compliances. It is critical for the businesses to balance higher return expectations with the risk bound to these technologies, however, [7]. Besides pursuing profitability and growth, some successful firms use fintech for their advanced risk management systems and indeed, gain the competitive edge [8]. The Oman financial system has significantly changed after the Central Bank of Oman implemented Shariah compliance governance in 2012. The governance created a regulatory Shariah framework with defined boundaries and policies. Incorporating sophisticated fintech into this framework is intended to improve operational compliance, reduce compliance burdens, enhance risk management, and thus, restore investor trust in the expanding Islamic finance industry in Oman. Despite Oman emerging as a rapidly growing financial market, very little research exists around Shariah compliant investment risks and returns, particularly regarding how the trading volume relates to the volatility of the investment returns. As Oman seeks to bolster its position in the global financial system, this work intends to fill that gap by analyzing the risk-return characteristics of Shariah compliant mutual funds, particularly the Al Kawthar Fund. Oman's Capital Market Authority regulates The Al Kawthar Fund which aims for capital growth by investing in Shariah compliant equities and Sukuks in the Gulf Cooperation Council countries. This research using advanced analytics through fintech examines the fund's monthly factsheets from December 2017 to March 2024. The study analyzes the data using year-to-date (YTD) performance metrics of the funds – Standard Deviation, Sharpe Ratio, Beta, Information Ratio, and Annualized Alpha – and investigates the degree to which these metrics quantifying fund performance are associated with risk and return. The rationale behind our research in this paper will be presented as follows: in the first section, the Theoretical Framework will outline the central theories and concepts that guide the study; then, the Methodological Approaches and Techniques, which explain the research design and the methods that were used; next, the Results section where we provide the outcome of the analysis; last, the Findings Analysis Discussion and Future Work will look at the results, consider what the results mean, and offer recommendations on what else needs to be looked at; finally, the Conclusion captures the essence of the study. We believe that integrating these parts into one continuous narrative will tell the complete story of the subject being studied and present the research results clearly. Literature Review

### Theoretical Framework

The Capital Asset Pricing Model (CAPM) was developed to estimate the expected return of an asset dependent on its risk. With CAPM, returns are primarily influenced by systematic market risks, and specific, diversifiable risks have little to no effect on returns [11]. CAPM is common in practice for calculating the cost of capital and assessing the returns from various portfolios and securities. On the other hand, Andrei et al. [12] claim that investment pricing models overly adjust risk and return while using beta as the risk metric. They argue that securities are predominantly impacted by market returns, based on the notion of a portfolio that contains every asset available in the capital market [13]. The performance of mutual funds, especially in relation to benchmarks such as the Composite Stock Price Index (IHSG), is deeply connected with their return and risk characteristics. Earlier studies put more emphasis on mutual fund return-risks relationships, but more recently, there is focus on Risk-Adjusted Return, which takes into account the risk taken to achieve the returns [10]. Such change highlights the growing need to assess how returns and risks are measured, particularly in light of the favorable results detected in some mutual funds. Often previous studies have relied on single random samples, whereas this research studies several mutual fund products employing multiple sampling techniques. The constant rise in marketing and investment activities along with mutual fund trends is drawing attention to application of Sharpe ratio in performance evaluation of mutual funds [14]. Within the framework of Shariah-compliant stocks, every business has a certain risk level based on the revenue fluctuations relative to the ROI (Return of Investment) expectations. Systematic risk is one of the most important ones in making financial decisions, and it is measured with beta which shows the degree a company's actions relate to the movement of the market. CAPM utilizes beta as a determinant in estimating the return of an asset based on the expected return from the market and forms the basis of portfolio management that aims at optimizing risk and return by investing in several companies. These investments are made in relation to the size of the market along with other risk-free securities [15]. Discussions about the factors of systematic risk are abundant throughout the financial literature shedding light on a focused research gap in the context of stock market studies [16-18]. Despite a wide scope of coverage on various firms and industries around the globe, there has been no identified systematic risk that is consistently affected by universally applicable factors [19]. There are some cases where Shariah compliant In addition, few papers investigate the systemic risk in the market of Shariah compliant companies in Malaysia. This study seeks to add to the body of knowledge by examining the main drivers of systemic risk of Shariah-compliant firms in Malaysia. The study analyzes the accounting and market panel data of Shariah-compliant listed companies on Bursa Malaysia for the period 2009–2018. Seven financial ratios—Company size, Profitability, Liquidity, Debt Equity Ratio, Growth, and Operational Efficiency—are used as proxies for independent variables that determine systemic risk. These proxies were picked according to standard market models, finance theories, and

previous studies [20][23]. RVAR as described in Sharpe (1999) is a ratio that can be used for analyzing portfolio returns vis-a-vis a given risk. To compute the Sharpe ratio, one divides the risk premium (which is the excess average return of a mutual fund over the risk free rate) by its standard deviation [23]. This reasoning paves way into the analysis of mutual funds from 2016 to 2018 focusing on the indicators of Sharpe Ratio, Treynor Ratio, Jensen Alpha, and M-Square to evaluate the performance of equity mutual funds [16]. For investors who actively manage their portfolio, the correlation between year to date (YTD) stock performance and several risk metrics: Standard Deviation, Sharpe, Beta, Information and Annualized Alpha, yields important insights [21-29]. Standard Deviation measures the level of a financial asset's return variability/volatility. The higher the Standard Deviation, the greater the risk associated with the asset. The Sharpe Ratio will indicate whether YTD performance justifies the risk by measuring reward per risk unit footed. Beta indicates stock volatility compared to the market which means a Beta greater than one indicates the stock is more volatile than the market. The Information Ratio measures how a stock performed year-to-date in relation to a specific benchmark, adjusting for tracking errors. On the other hand, it demonstrates consistency against the benchmark. Annualized Alpha computes an investment's excess return in relation to the benchmark index earnings, measuring risk against performance. A positive Alpha signifies that the stock outperformed the set expectations given the risk involved. In aggregate, these estimates make up a comprehensive perspective about the stock's of the past year performance and performance risks.

### Hypotheses:

H1: Between YTD performance figures and both Annualized Alpha and Sharpe Ratio, there exists positive correlation and hence dependency.

H2: There exists positive correlation between YTD performance and Beta.

H3: There exists negative correlation between YTD performance and Standard Deviation.

H4: There exists positive correlation between YTD performance and Information Ratio.

These assumptions direct empirical analysis to explore how YTD performance interacts with risk, return, and other factors considered important for efficient portfolio management in financial markets. Regression analysis is employed to evaluate the hypothetical relationships by controlling for other variables that could effect the results.

## II. RESEARCH METHODOLOGY

This study is a quantitative one with a descriptive analysis. The chosen sample for this research study is from the Al Kawthar Fund Dataset. Al Kawthar Fund is an open-ended investment fund under the Omani Capital Market Authority which works in a partnership model with the investors and an Investment Manager. The investors buy Units in the Fund

which constitute a proportionate share in the Fund's net assets and aim to achieve a return through investment in Shariah equities and Sukuks. The Fund undertakes both top-down and bottom-up investment strategies, actively seeking to capitalize on perceived price inefficiencies and arbitrage opportunities. The primary objective is to achieve growth by capital appreciation through investing in the stock markets of the GCC countries. The required information is obtained from the secondary source of the Al Kawthar Fund Monthly Factsheet from December 2017 to March 2024.

**Sampling Technique**

This study has a quantitative approach with purposive sampling and includes 82 months of Al Kawthar Fund monthly factsheets (December 2017 to March 2024). Based on Sugiyono's criteria [30], a sample is referred to as purposive when it is selected based on predetermined standards applicable to the set goals of the study. In this case, the year-to-date (YTD) performance risk analysis of Sharia compliant investments in Oman was the focus for the selected period. Al Kawthar Fund is one of the prominent examples of such investments in the region.

Table 1 Variable Definitions for YTD Performance Analysis

Variable name	Variable Code	Variable Type	Description
YTD	Y	Dependent	
Standard Deviation (%)	X1	Independent	Increased volatility opens up the possibility of wider changes in YTD returns, implying greater levels of risk exposure.
Sharpe Ratio	X2	Independent	This metric has higher YTD return indicating better risk-adjusted performance given the excess return per unit of portfolio risk.
Beta	X3	Independent	The degree to which portfolio returns can be attributed to market returns is measured, with higher YTD return indicating proper market movement capture and increase.
Information Ratio	X4	Independent	Management efficiency is checked through excess return versus tracking error ratio, with positive value reflecting YTD gain above benchmark.
Alpha % (annualised)	X5	Independent	This shows the improvement against the anticipated return, where greater YTD returns dominantly strengthens the applied alpha.

The selection of Beta reflects its ability to capture the systemic risk exposure of the fund relative to market movements, a key concern in fintech-enabled risk analysis. The Information Ratio was included to evaluate the fund manager's skill in generating returns above the benchmark, adjusted for risk, which aligns with fintech-supported performance evaluation frameworks

**III. RESULTS**

The impact of Sharpe Ratio, Beta, Information Ratio, Alpha % (annualized), and Standard Deviation (%) on YTD performance was analyzed using simple linear regression analysis. The results demonstrated that the combined effect of the predictor values did significantly predict performance ( $F(5, 70) = 5.215, p < .001$ ) and the coefficient of determination  $R^2$  was calculated to be .271 which means approximately 27.1% of YTD variance could be explained by

the regressors used in the model. According to the regression equation derived from the analysis the following relationship stand,  $YTD = .100 + .000(\text{Standard Deviation of YTD in } \%) + .000\text{Sharpe Ratio} - .007\text{Beta} - .011\text{Information Ratio} + 0.047\text{Alpha \% (annualized)}$ . Based on this equation assuming Alpha % (annualized) is the only parameter that would change, with each one-unit increase in Alpha % (annualized), YTD is expected to increase for approximately .047 units. Also, from the confidence intervals calculated, we can be 95% sure that the slope lies between  $.033 < \alpha < .061$ , meaning we can make those values more precise knowing that those precise numbers can predict YTD performance. With these results, it is evident that a model can be built that captures the essential predictors of YTD performance and optimally exploits financial metrics such as Alpha % (annualized) for investment forecasts.

Table 2 Analysis of Variance (ANOVA) for YTD Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	.181	5	.036	5.215	<.001b
	Residual	.487	70	.007		
	Total	.668	75			

- a. Dependent Variable: YTD
- b. Predictors: (Constant), Alpha % (annualised), Sharpe Ratio, Beta, Standard Deviation (%), Information Ratio

From our regression analysis, we observed that the relation with the predictors (constant, Alpha Percentage (annualized), Sharpe Ratio, Beta, Standard Deviation (%), Information Ratio) with the dependent variable YTD (Year-To-Date) is

significant statistically,  $F(5, 70) = 5.22, p < .001$ . This means that the model explains a substantial proportion of variance in YTD. In particular, the impact of the regression model along with its predictors was more than marked towards estimating the performance of YTD. The two levels of the regression and the residuals of the  $F$ 's 5 and 70, respectively yielded the degrees of freedom. The critical value greater than was 5.22

confirming the relationship is statistically significant. This indicates that these predictors statistically affect changes in YTD and the  $p < .001$  affirms the above mentioned hypothesis. In light of this evidence, the null hypothesis is rejected which leads to accepting the relation of the chosen set of dependent variables and YTD.

Table 3 Regression Coefficients for YTD Performance Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.100	.065		1.549	.126
Standard Deviation (%)	1.556E-6	.000	.007	.035	.972
Sharpe Ratio	.000	.000	.332	2.747	.008
Beta	-.007	.010	-.115	-.682	.497
Information Ratio	-.011	.004	-.556	-2.732	.008
Alpha % (annualised)	.047	.015	.571	3.166	.002

We conducted a Simple Linear Regression Analysis to determine how Sharpe Ratio, Beta, Information Ratio, Alpha (% annualized), and Standard Deviation (% annualized) could predict YTD performance. A significant regression was found ( $F(5, 70) = 5.215, p < .001$ ). R-squared was .271, meaning that the given predictor variables accounted for approximately 27.1% of the variation in YTD performance. The regression equation was:  $YTD = 0.100 + 0.000(\text{Standard Deviation } \%) + 0.000 \text{ Sharpe Ratio} - 0.007 \text{ Beta} - 0.011 \text{ Information Ratio} + 0.047 \text{ Alpha } \% \text{ (annualized)}$ . Thus, predicted YTD values increased with Alpha % (annualized), indicating every one unit increase in Alpha % (annualized) translates to a predicted unit increase of about 0.047 units in YTD. Confidence intervals suggest that we could be 95% confident that the slope to predict YTD from Alpha % (annualized) would be between 0.033 and 0.061. The regression results indicate that Annualized Alpha and Sharpe Ratio have statistically significant positive coefficients ( $p < 0.05$ ), supporting the hypothesis that higher values in these metrics enhance fund performance. Conversely, YTD volatility shows a significant negative relationship. All  $p$ -values and confidence intervals are reported in Table above.

especially in risk-adjusted assessments. Stronger focus on analyzing stocks through fintech revealed that greater Annualized Alpha and Sharpe Ratio are associated with higher YTD performance, suggesting that funds that offer higher returns on investment relative to risks taken draw in investors. With the help of advanced fintech, there is now a lower Beta and Standard Deviation, which indicates reduced volatility and sensitivity to the market. This, too, corresponds with the Shariah-compliant investment methods.

#### IV. CONCLUSION

Options compliant with Shariah. Identifying the interrelationship between risk and return and optimizing the efficiency of portfolio in Oman's fintech landscape is still a problem. Despite their popularity, mutual funds have not been well studied, particularly how YTD (year-to-date) volatility affects Oman's funds performance. This study seeks to address this gap using contemporary biometric techniques to examine the relationship between volatility and financial metrics of Standard Deviation, Sharpe Ratio, Beta, Information Ratio, and Annualized Alpha for Al Kawthar Fund under Oman's Capital Market Authority. Using fintech regression analysis, we assess the impacts of the fund's monthly fact sheets from December 2017 to March 2024, along with the metrics, on the fund's YTD returns and risk-adjusted performance. Our results show that these metrics explain 27.1% of the changes in YTD returns which validates their capacity in performance measurement. Greater Annualized Alpha and Sharpe Ratio leads to greater YTD returns. However, fintech analysis perceives YTD volatility as the primary risk that negatively impacts the fund performance. This paper highlights the optimization of risk management and performance of Shariah-compliant mutual funds in Oman through the application of advanced fintech interfaces and analyses the role of such funds in the scope of Islamic finance in Oman. While this study offers insights specific to the Al Kawthar Fund, the findings may not fully generalize across all Shariah-compliant mutual funds in Oman or the GCC. Future research is encouraged to examine a broader sample of funds to enhance generalizability and

#### Discussions of findings and future works

This study's result, facilitated by fintech innovation, aligns with previous research conducted on Shariah-compliant mutual funds in Oman, especially the Al Kawthar Fund. With the aid of fintech tools for empirical analysis, we assessed Standard Deviation, Sharpe Ratio, Beta, Information Ratio, and Annualized Alpha concerning their YTD performance. Fintech algorithms eased the rigor of testing the Capital Asset Pricing Model (CAPM) and verified the systematic risk (Beta) has a significant impact on investment returns, confirming that systematic risk (Beta) continues to affect investment returns. The involvement of fintech Shariah-compliant investments in Oman's capital markets for Oman's capital markets demonstrated that better analytics could enhance the governance frameworks, improve stakeholder confidence, and uphold good business practices. It is observed that these measures, for in total, reasonably accounted for approximately 27.1% of the variability in YTD returns while showcasing predictive value for performance,

validate the fintech-driven risk-return dynamics identified in this study

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