

# The Effect of Accounting Framework on the Utility of Fundamental Tools

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*The accounting framework of any economy is the bedrock on which the financial statements are crafted. The financial statements so created are the core of fundamental analysis. The information from financials is used as inputs for various fundamental tools. These fundamental tools aid in value investing, insolvency prediction and earnings management, amongst others. Thus, the accounting framework of an economy would be indirectly influencing the outcome of fundamental analysis. The present paper, in a sectional manner, studies the effect of accounting standards and accounting policies on 10 selected fundamental tools. In the first section, using the Indian FMCG sector as a proxy, the study uses the company's financials based on old and new accounting standards. With the aid of Total Proportionality Index and Wilcoxon signed rank test, the effect of accounting standard is assessed. In the second section, by using a dummy 11-year financial model and applying Wilcoxon signed rank test, the effect of accounting policies in three areas—depreciation method, PPE valuation method and inventory valuation method—are assessed. Based on the significance level of impact, the most robust fundamental tool is identified in each section.*

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## Introduction

In the latter half of the 19<sup>th</sup> century, research based on capital market and accounting information revealed the invalidity of the efficient market hypothesis and market anomalies (Lev, 1989; Ball, 1992; and Abad *et al.*, 2004). The required information about a company can come only from a full and comprehensive analysis of a business entity, an analysis that encompasses thoroughly and fully all aspects of the strength and weaknesses as well as the possible rewards and risks of a given situation (Bernstein, 1975; and Lev and Thiagarajan, 1993).

Fundamental analysis involves systematically modeling the facts of the economy, company's financial and non-financial aspects and industry dynamics to logically conclude if the corporate species are suited to weather unforeseeable business environment fluctuations and to appraise its intrinsic value (Spooner, 1984). Many accountants and analysts have developed reputations as practitioners of fundamental analysis, and have espoused the use of fundamental analysis in

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detecting overvalued stocks (Fairfield and Whisenant, 2001; Abad *et al.*, 2004; and Amsaveni and Gomathi, 2013).

Academic researchers have been analyzing the utility of fundamental signals from the use of basic ratios to predict earnings (Ou and Penman, 1989; Lev and Thiagarajan, 1993; and Abarbanell and Bushee, 1998). After that, complex fundamental tools have been developed which include Altman Z-score for insolvency prediction, Beneish M-score for earnings management, and Piotroski F-score for value stock identification (Safdar, 2016). Due to the immediate availability of databases on financial information and fundamental values like the Z-score, M-score, F-score amongst others, the utility of fundamental analysis has grown exponentially.

Accounting framework is the primordial determinant of how a company represents its financial performance and position. The preparation and quality of financial statements are influenced by the financial reporting framework.

Due to the disparity in the financial statement framework across economies, the comparability of financial statements was gravely reduced. Economies that do not share the same accounting framework cannot be compared (Schipper, 2005; Hung and Subramanyam, 2007; and Jeanjean and Stolowy, 2008).

This issue gave rise to the need for harmonizing reporting standards. Harmonizing international reporting standards would allow all firms to follow uniform accounting standards; external financial reports of firms would provide more comparable accounting information and disclosures to investors (McComb, 1982; Doupnik and Salter, 1993; and Shil *et al.*, 2009). Stakeholders including but not limited to investors, regulators, academicians, and financing institution have been constantly evaluating the implications of harmonizing accounting standards (Ding *et al.*, 2005). Harvey Pitt, US SEC Chairman at SEC Conference, had emphasized on the requirement of high-quality global accounting to enhance the ability of investors to evaluate companies (McComb, 1982; Shil *et al.*, 2009; and Mosomi and Shukla, 2018).

The disclosures and financial reporting quality of companies from developing economies have been observed to lag behind developed economies. This has become a roadblock for foreign investors to invest in developing economies (Ali *et al.*, 2004). Thus, the Ministry of Corporate Affairs, based on recommendations made by the Institute of Chartered Accountants of India issued national reporting standards which were converged with the International Financial Reporting Standards (IFRS) on February 16, 2015. These converged accounting standards dubbed as 'Ind AS' are as of April 1, 2018 applicable to all listed companies. With the issue of the first set of Ind AS-based financial statements, analysis of the change from non-Ind AS to Ind AS financials revealed the following impact on financial elements.

Studies have shown how for the same accounting period when the accounting framework changes the financials are affected to a great extent (Serrano-Cinca *et al.*, 2005; Liu *et al.*, 2013; and Faello, 2015). It is observed from Table 1 that the impact of change to Ind AS financials has caused the financials to shift at an extravagant range. It has been well documented that switching to Ind AS results in widespread changes relating to deferred taxes, pensions, PP&E, and loss provisions (Hung and Subramanyam, 2007).

<b>Table 1: Impact of Ind AS Adoption on Financials</b>			
(in %)			
<b>Financial Element</b>	<b>Maximum Increase</b>	<b>Maximum Decrease</b>	<b>Average</b>
Net Income	83.7	191.1	-3.5
Revenue	75.7	-17.4	58.2
Depreciation	236.4	-25.2	4.7
<i>Source: Created from Economic Times, April 4, 2017</i>			

Thus, in a global environment where the financial reporting framework is changing, there is an impact of the utility of fundamental analysis. Fundamental tool outcome and its interpretation would be gravely affected due to the changing framework or even the variations allowed in within the framework.

It is a common misconception that financials can be compared across without any limitation. The accounting framework prevalent in any economy influences the financials to a great extent. Changes in the accounting framework create a great divide in the comparability of financials. Thus, financials before and after a change of accounting framework cannot be compared. Similarly, even within the same accounting framework when different methods are allowed, the comparability of those financials becomes weak. When companies use different accounting policies like straight-line method or written down value method for depreciation, first-in-first-out or weighted average for inventory valuation, the comparability reduces and accordingly financials also get affected.

These inherent limitations in the comparability of financials created by accounting standards and accounting policies are by default passed down to fundamental tools. Fundamental tools whose values are derived from financials thus would also suffer from the same limitation. Without acknowledgment of this limitation, usage of fundamental tools may provide erroneous results.

Due to the widespread use of fundamental analysis which use financial statement and the significant impact that accounting framework has on financial statements, it is essential to study the impact of accounting framework on fundamental tools. The utility of a fundamental tool would gravely reduce if it gets affected by the accounting framework to a great extent. This being an unchartered area is yet to be studied and hence forms a research gap. The present study, thus, aims to analyze the impact caused on the selected fundamental tools due to change in accounting standards and accounting policies.

## **Literature Review**

The review of literature is split into two parts, the first analyzes the literature associated with fundamental tools and its uses, and the second, analyzes the literature related to accounting framework's influence on financials.

## Fundamental Analysis

### **Value Investing**

Value Investing is the process of identifying stocks using fundamental techniques which are fundamentally sound, and investing in them. With the aid of primitive financial ratios, namely, P/E ratio, market price to book value ratio, return on equity and dividend payout ratios that represent the fundamentals of the company, the value stocks were identified and they outperformed the market (Aby *et al.*, 2001). Using information from quarterly financial and market data of 196 stocks and analyzing the relationship between the accounting fundamental signals, portfolios were created which on an average gave 1.62% market excess annual return between 1991 and 2011, and about 9% between 1997 and 2011 (Dorantes, 2013).

*F*-score is a technique which has gained prominence recently and has become a testament to the fact that accounting-based fundamental analysis has the potential to help investors improve their investment returns. The model was created by Chicago Accounting Professor, Joseph Piotroski after whom the tool is termed as Piotroski *F*-score. The *F*-score is a fundamental score obtained by analyzing the change in nine specific financial dimensions of a company. When the change is favorable a point is awarded, thus a company which scores nine would be deemed as the best for investment (Piotroski, 2002; Safdar, 2016; and Bülow, 2017). The *F*-score has been validated as a reliable tool to earn a premium by identifying value stocks in different economies, namely, US (Piotroski, 2002); Europe (Mohr, 2012); Thailand (Tantipanichkul, 2010); Brazil (Lopes, 2002); India (Singh and Kaur, 2015; and Tripathy and Pani, 2017).

### **Insolvency Prediction**

Insolvency prediction deals with using fundamental tools to identify companies in distress. Estimation of insolvency occurring due to operating and financial problem is an area which has been particularly suitable to analysis of financial ratios (Altman *et al.*, 2014). The models have researched the use of financial information in terms of their predictive ability (Karatas *et al.*, 2005). Predictive ability implies the forecasting abilities of financial ratios through statistical means in real-world phenomenon, e.g., Altman: bankruptcy; Beaver, Daniel, and Deakin: business failure; and Horrigan: long-term credit standing. With the aid of the model, various studies have analyzed insolvency in different areas. The Altman Z-score model penned in 1968 has been altered in accordance with statistical tools available (Altman, 1968; Altman and Saunders, 1991; and Altman and Hotchkiss, 2005). All the literature with regards to the aforesaid changes has been compiled by Altman *et al.* (2014) in a review paper.

### **Technical Analysis**

Technical analysis is the analysis of market action as opposed to studying the goods in which the market deals. Fundamental analysis aids technical analyst in predicting stock prices. Various researchers have tried to identify the relationship between market created share price and fundamentals depicting financial ratios. Post establishment of the relationship, these models have attempted to predict the share price as well. Researchers have been successful in statistically establishing the stock price predictive ability of financial ratios in various economies and

sectors (Brioschi *et al.*, 1990; Chan *et al.*, 1993; Abarbanell and Bushee, 1998; Lewellen, 2004; Rahman and Hassan, 2013; and Iqbal *et al.*, 2013). *F*-score has also been used for prediction of the share price (Mohr, 2012). Fundamental variables are highly correlated with a market-based measure of risk (beta) and are useful in the prediction of future risk (Bowman, 1979). For the Korean stock market, book-market and sales-price ratios are more efficient indicators of value than the earnings-price ratio, and the debt-equity ratio is a more reliable proxy for risk than beta (Mukherji *et al.*, 1997). On investigation into the emerging Asian market also, it was observed that the stock prices in a majority of the Asian emerging markets and Japan contain a significant linkage to fundamental information variables: earnings yield, size, book to market ratio, and cash yield (Chan *et al.*, 1993; and Rahman and Hassan, 2013).

### **Earnings Management**

Earnings management is the practice of using accrual system with the intention of portraying misleading financial results (Markman and Ghani, 2019). Studies have analyzed the linkage between accounting manipulation and stock returns in the USA (Beneish *et al.*, 2013), Istanbul Stock Exchange (Ekrem *et al.*, 2015), Greece (Repousis, 2016), and Indonesia (Tarjo and Herawati, 2015).

The correlation between earnings management and insolvency was studied with the aid of Beneish *M*-score and Altman *Z*-score or Ohlson *O*-score on Enron (Maccarthy, 2017) and Toshiba (Bhavani and Tabi, 2017).

### **Accounting Framework**

India initially had financial reporting practices based on the British model which has been consistently amended after independence in 1947 (Marston and Robson, 1997). The latest of these developments led to converged accounting standards, i.e., Ind AS which would allow Indian companies to be comparable with companies adopting IFRS. Relevant literature outlined several potential benefits of full version of IFRS to include decrease in cost of capital (Daske *et al.*, 2008), increase in efficiency of capital allocation (Bushman and Piotroski, 2006), capital mobilization (Young and Guenther, 2003), comparability of financial information (Madawaki, 2012), quality information for investors/stakeholders (Barth and Schipper, 2008), transparency of financial information enabled cross-border movement of capital, and advanced reliability and comparability of information to facilitate informed decision making by investors/stakeholders (Madawaki, 2012)

Introduction of comprehensive income due to IFRS provides another dimension to fundamental analysis. Studies have proved that earnings in the form of net income has higher share price predictive ability rather than comprehensive income (Biddle and Choi, 2006; and Goncharov and Hodgson, 2011).

It has been observed that instead of increasing transparency, IFRS provides the managers with more discretion and thus is more influenced by aspects like reporting incentives and operating features (Ball, 1992; and Burgstahler *et al.*, 2006). Implementation of IFRS has not significantly increased the value relevance of financial statements for German companies (Bartov

et al., 2002). Earnings management did not change significantly in first time IFRS adopters Australia and UK, whereas it increased in France (Jeanjean and Stolowy, 2008).

Due to the well-proved existence of earnings management in emerging markets like India, there is lack of evidence whether harmonizing the accounting standards would lead to reduction in earnings management (Rudra and Bhattacharjee, 2011). The analysis to resolve the aforementioned query was performed in the Korean market by analyzing the pre- and post- financials and was observed that earnings management decreased in the IFRS financials but only in competitive industries (Lee, 2019).

After empirically testing the impact that IFRS would have in Indian listed companies in the areas of financial risk, investment activities, operating activities and debt covenant, it was observed that there is no significant impact on these areas due to the adoption of IFRS (Shukla, 2015).

The first part of literature review highlighted the various areas that fundamental tools are being prevalently used and the utility they provide to analysts. The second part analyzed the different studies which have highlighted the impact the adoption of IFRS has had on different economies in analysis of financials and its value.

## Objective

As enlisted above, due to the comparability issues caused in financials by accounting framework, the fundamental tools are also affected. Thus, the objective of this paper is to analyze the impact of the accounting framework on the fundamental tools in a sectional manner by studying the effect of accounting standards and policies separately. By doing the analysis, the study will identify fundamental tools that are resistant to the change in accounting framework.

## Data and Methodology

To study the effect of accounting framework on fundamental tools, the analysis is conducted in two parts. Firstly the impact of accounting standards on the selected fundamental tools and secondly, the impact of selected accounting policies on the fundamental tools. The study would aim to rank the fundamental tools to identify which amongst them is the most resistant to accounting framework changes.

The study has selected 10 fundamental tools that are most widely used in the areas of fundamental strength evaluation, insolvency prediction, earnings management, and valuation amongst others. The selected fundamental tools are listed below. The calculation formula for the tools are provided in the Appendix.

1. Altman Z-score (specific for developing economy)
2. Piotroski F-score
3. Tobin's Q
4. Kralicek DF model

5. Kralicek quick test for financial stability
6. Kralicek quick test for total success
7. Beneish M-score
8. Montier C-score
9. Sloan ratio
10. Enterprise value

### **Impact of Accounting Standards**

To study the effect of change in accounting standards, fundamental tools are calculated for the same year where financials were available in two different forms. In India, when Ind AS became applicable, companies had to present their financials and comparative restated based on Ind AS. This comparative would be available in previous annual report based on the old accounting standard referred to as Indian Accounting Standards (IAS).

For example, when the company applies Ind AS from April 1, 2017, the annual report of 2017-18 would include the financial year 2016-17 (Ind AS based) as a comparative. For the same year (2016-17) values as per IAS are derived from the annual report of 2016-17. Thus, Ind AS-based values of 2016-17 will be extracted from annual report of 2017-18 and IAS-based values of 2016-17 will be extracted from annual report of 2016-17. Thus, since the year is the same, the difference caused in the outcome of fundamental tools would only be because of the change in the accounting standards.

To check the impact of the accounting standards on the fundamental tools, Wilcoxon signed rank test has been employed. To assess the impact of change in accounting standards, the 10 fundamental tools have been calculated for the S&P BSE FMCG index listed companies. The index includes 72 companies and after eliminating companies that were listed after April 1, 2017, 62 companies are left. For the sample of 62 companies, fundamental tools have been applied and values have been calculated for the same financial year once with IAS and then with Ind AS.

### **Total Proportionality Index**

For evaluation of the impact of accounting framework change, past literature has deployed the use of Gray's Conservatism Index. The index was introduced as an indicator of conservatism in national and international accounting practices (Gray, 1980) and continued to be used for the same purpose in different studies (Weetman and Gray, 1990 and 1991; and Weetman *et al.*, 1993).

The Conservatism Index was later modified by removing the assessment of conservatism and instead only the impact caused by change from domestic accounting standards to international accounting standards was assessed (Weetman *et al.*, 1998). Total Proportionality Index (TPI) which is a modified form of Gray's Conservatism Index is calculated as:



$$\text{Total Proportionality Index} = \frac{(\text{Domestic GAAP Value} - \text{IFRS Value})}{\text{IFRS Value}} \quad \dots(1)$$

TPI highlights the degree of impact of transitioning from domestic GAAP to IFRS value (Table 2).

Table 2: Meaning of TPI Values	
TPI Value	Implication
0	No impact of transition
Less than 0	Domestic GAAP Value < IFRS Value; Positive effect
More than 0	Domestic GAAP Value > IFRS Value; Negative effect
<i>Source: Cordazzo (2008)</i>	

The TPI value will enable a descriptive analysis of impact of change in accounting framework on the fundamental tool.

### **Wilcoxon Signed Rank Tests**

In order to evaluate the robustness of fundamental tools due to change in accounting framework, the Wilcoxon signed rank test will be used. The change in the ranking of a company as per a fundamental score caused due to the change in the accounting framework will be assessed. Wilcoxon Signed Rank test is a nonparametric test which checks whether the difference between the medians of two datasets is significant or not. Values as per Ind AS and IAS were run through the analysis to see if the change in accounting framework caused a significant change or not. If there is a significant change, it would imply that the fundamental tool is not robust enough.

### **Impact of Accounting Policies**

Accounting policies are alternative treatments allowed by the accounting framework. Companies are allowed to choose between the methods provided in the framework. This allows managers to select the method they presume would reflect their business in the best possible manner. For analysis of the impact of accounting policy on the fundamental tools, three areas of accounting policies have been selected. The selected areas are depreciation method, PPE valuation method and inventory valuation method.

#### **Ind AS 16: PPE – Depreciation Method: WDV or SLM**

The standard allows companies to use either Written Down Value (WDV) method or Straight-Line Method (SLM) and the number of units method for depreciation on Property, Plant and Equipment (PPE). For this assessment only WDV or SLM methods are used. The WDV method charges depreciation on the basis of the written down value, whereas SLM charges depreciation on the original cost. The impact of the depreciation on the financials can be seen in the net profit and the value of PPE.



### ***Ind AS 2: Identification of Cost of Inventory – FIFO or Weighted Average***

The standard allows various techniques for measurement of cost for inventories including historical cost methods of First In and First Out (FIFO) and weighted average cost method and non-historical cost methods of standard cost and retail cost. The FIFO method allows the cost of goods dispatched to be assessed based on the cost of the earliest goods purchased. In the weighted average cost method, cost is assessed by averaging the cost of the goods in stock with the cost of goods purchased in a weighted manner. The impact of these alternatives can be observed in the cost of goods sold and the value of inventory.

### ***Ind AS 16: Valuation of Tangible Assets – Cost or Revaluation Model***

The standard allows companies to measure the value of PPE based on either cost or revaluation model (except on initial recognition). The revaluation model allows companies to reassess the value of asset to check for appreciation. The amount of increase in value is transferred to revaluation surplus. The difference between the depreciation of the revalued amount and the non-revalued amount has to be appropriated from the revaluation reserve to the retained earnings. Thus, the impact of this can be observed in the net profit, value of PPE and retained earnings.

Dummy financials for an 11-year period is constructed to check for the effect of the policies. In the dummy model, while keeping every other financial element constant one policy is changed at a time leading to creation of six financials. Thus, the change in the outcome of fundamental tool would be caused due to the change in that single policy. This way the individualistic effect of each policy can be easily assessed. Based on the six financials of 11 years, fundamental tools are calculated. Wilcoxon signed rank test is again applied to the fundamental tool outcomes for each set of financials of alternative policy.

For each accounting policy, the fundamental tool which showed the highest resistance is considered the epitome. Thus, the fundamental tool which had the highest resistance in all the accounting policy is considered as the most robust fundamental tool under this section.

## **Results and Discussion**

### **Impact of Accounting Standards**

#### ***Total Proportionality Index***

The values of TPI as calculated for 62 companies are summarized in Table 3. Piotroski *F*-score and Montier *C*-score had the highest number of companies with TPI values as zero. It implies that the change in the accounting framework did not change the values of *F*-score and *C*-score for majority of the companies.

#### ***Wilcoxon Signed Rank Tests***

If the ranking of a company as per Ind AS and IAS is significantly different, it would imply that the decision taken by a user based on the previous ranking is redundant. On the basis of the significance level resulting from the test, the resistance of the tools can be measured. The lower the significance (*p*-value), more is the difference between the two datasets (Ind AS and IAS). Thus, the tool which has the most significant difference (presented by lower *p*-value/sig.

Fundamental Tool	TPI Value (No. of Companies)		
	Equals to 0	Less than 0	More than 0
Altman Z-Score	0	35	27
Piotroski <i>F</i> -Score	34	9	19
Tobin's <i>Q</i>	0	22	40
Kralicek DF Model	0	29	33
Kralicek Quick Test for Financial Stability	0	33	29
Kralicek Quick Test for Total Success	0	38	24
Beneish <i>M</i> -Score	0	33	29
Montier <i>C</i> -Score	35	20	7
Sloan Ratio	0	37	25
Enterprise Value	5	24	33

value) can be considered as the least resistant. The output of the Wilcoxon signed rank test is presented in Table 4. The most resistant is the Sloan ratio, whereas the least are the Montier *C*-score and *F*-score.

Asymp. Sig. (2-tailed)	Fundamental Tool
0.009	Montier <i>C</i> -Score
0.01	<i>F</i> -Score
0.033	Tobin's <i>Q</i>
0.067	Kralicek Quick Test for Total Success
0.139	Enterprise Value
0.256	Altman Z-Score
0.387	Beneish <i>M</i> -Score
0.426	Kralicek Quick Test for Financial Stability
0.551	Kralicek DF Model
0.558	Sloan Ratio

As per the analysis conducted via TPI, *F*-score and *C*-score were least affected. The Wilcoxon test assessed the change in the ranking under the two accounting frameworks and the same significantly changed for *F*-score and *C*-score.

The conflicting results is because of the adjustment behavior within the sector. When the accounting framework changes, the effect within a sector should be approximately similar. In

the same way the effect on the fundamental scores should also be consistent. Thus, though individually *F*-score and *C*-score did not have much change but because their effect was not consistent throughout the sector the ranking was drastically affected leading to a significant result.

## Impact of Accounting Policies

### ***Ind AS 16: PPE – Depreciation Method: WDV or SLM***

In the dummy model, under SLM the initial value of PPE is taken as 150 and is assumed to have a life of 15 years. Depreciation would amount to 10 per year and translate to a depreciation rate of 6.67% pa. The same rate is applied on the written down value of each year under the WDV method. As shown in Table 5, the tool most resistant to this policy is the Montier *C*-score.

Asymp. Sig. (2-tailed)	Rank	Tool
0.705456986	1	Montier <i>C</i> -Score
0.102470435	2	<i>F</i> -Score
0.046853285	3	Kralicek Quick Test for Financial stability
0.009344113	4	Sloan Ratio
0.00691043	5	Beneish <i>M</i> -Score
0.005062032	8	Altman <i>Z</i> -Score
0.005062032	8	Tobin's <i>Q</i>
0.005062032	8	Kralicek <i>DF</i> Model
0.005062032	8	Kralicek Quick Test for Total Success
0.005062032	8	Enterprise Value

### ***Ind AS 2: Identification of Cost of Inventory – FIFO or Weighted Average***

In the dummy model, the annual purchase and sale have been assumed to be the same. The company in the beginning was assumed to have inventory of 20 units @ 0.5 per unit; for the next year the cost per unit was 0.4, then 0.5 and then 0.4 again. Since the purchase and sales were equal, the number of units in stock continued to be 20. The rate changes allowed the effect of the methods to percolate into the profits via the cost of goods sold.

As shown in Table 6, the tool most resistant to this policy is the *F*-score.

### ***Ind AS 16: Valuation of Tangible Assets – Cost or Revaluation Model***

In the dummy model, each year the closing value of PPE was increased by 10. The increase was then added to the revaluation reserve as well, the differential depreciation amount every year was deducted from the revaluation reserve and added to the retained earnings.

Asymp. Sig. (2-tailed)	Rank	Tool
0.33628879	1	<i>F</i> -Score
0.092600698	2	Beneish <i>M</i> -Score
0.074461831	3	Kralicek Quick Test for Financial stability
0.046853285	4	Tobin's <i>Q</i>
0.036657929	5	Sloan Ratio
0.005062032	8	Altman <i>Z</i> -Score
0.005062032	8	Kralicek <i>DF</i> Model
0.005062032	8	Kralicek Quick Test for Total Success
0.005062032	8	Montier <i>C</i> -Score
0.005062032	8	Enterprise Value

As per Table 7, the tool most resistant to this policy is the enterprise value.

Asymp. Sig. (2-tailed)	Rank	Tool
1	1	Enterprise Value
0.563702862	2	Montier <i>C</i> -Score
0.202621608	3	Beneish <i>M</i> -Score
0.005062032	7	Altman <i>Z</i> -Score
0.005062032	7	<i>F</i> -Score
0.005062032	7	Tobin's <i>Q</i>
0.005062032	7	Kralicek <i>DF</i> Model
0.005062032	7	Kralicek Quick Test for Financial Stability
0.005062032	7	Kralicek Quick Test for Total Success
0.005062032	7	Sloan Ratio

The summation of all the ranks will be used to consolidate all the results and evaluate which tool has the most resistance among the fundamental tools. As observed from Table 8, Beneish *M*-score and *F*-score are the fundamental tools with the most resistance to accounting policies, while Kralicek quick test for total success, Altman *Z*- score and Kralicek *DF* model have the least resistance to accounting policies.

<b>Tool</b>	<b>Summation of Rank</b>
Beneish <i>M</i> -Score	10
<i>F</i> -Score	10
Montier <i>C</i> -Score	11
Kralicek Quick Test for Financial Stability	13
Sloan Ratio	16
Enterprise Value	17
Tobin's <i>Q</i>	19
Altman <i>Z</i> -Score	23
Kralicek <i>DF</i> Model	23
Kralicek Quick Test for Total Success	23

## Conclusion

The present study was conducted with the aim to identify the effect that accounting framework has on the outcome of fundamental analysis tools. Fundamental tools have been developed over a long period of time with various objectives. Accounting standards and policies have grave impact on the financials and thus indirectly would influence the outcome of fundamental tools.

Due to the variations that exists in accounting framework in the form of different accounting standards and accounting policies, comparability among companies reduces. A fundamental tool to be considered as robust, should not only be able to fulfill its objective but also be resistant to changes in accounting policies and accounting standards.

The study was able to confirm the existence of the effect of the accounting standards and the accounting policies on the outcome of the fundamental tools. The 10 major fundamental tools used in the study were significantly affected by either the accounting standards or the accounting policy or both.

The fundamental tool most resistant to accounting standard changes is Sloan ratio. Thus, an analyst comparing companies across economies with different accounting standards should preferably use Sloan ratio and avoid Montier *C*-score and *F*-score.

An analyst who is comparing companies with differing accounting policies should use Beneish *M*-score or *F*-score and should avoid Kralicek quick test for total success, Altman *Z*-score and Kralicek *DF* model.

The results of the study are inherently restricted in terms to the size of the sample, fundamental tools selected and the accounting policies selected. Thus, the results of the study have to be read in light of these limitations. ■

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## Appendix

<b>List of Fundamental Tools</b>	
<b>Tool</b>	<b>Components</b>
Altman Z-Score	3.25
	(+) 6.56 * (Current Assets – Current Liabilities)/Total Assets
	(+) 3.26 * Retained Earnings/Total Assets
	(+) 6.72 * Earnings before interest and tax/Total Assets
	(+) 1.05 * Book Value of Equity/Total Liabilities
F-Score	<b>1 score for each component</b>
	Positive ROA
	Positive operating cash flow
	ROA higher than previous year
	Operating Cash Flow/Total Assets is higher than ROA
	Leverage lower than previous year
	Current ratio higher than previous year
	No new shares issued
	Gross margin higher than previous year
	Asset turnover higher than previous year
Tobin's Q	Equity Market Value/Equity Book Value
Kralicek DF Model	1.5 * Clear Cash Flow/Total Liabilities
	(+) 0.08 * Total Assets/Total Liabilities
	(+) 10 * Earnings Before Interest and Tax (EBIT)/Total Assets
	(+) 5 * Earnings Before Interest and Tax (EBIT)/Total Income
	(+) 0.3 * Inventories/Total Revenues
	(+) 0.1 * Business Revenues/Total Assets
Kralicek Quick Test for Financial Stability	Equity/Total Assets
	(Liability – Cash)/Cashflow
Kralicek Quick Test for Total Success	EBIT/Assets
	Cashflow/revenues

## Appendix (Cont.)

Tool	Components
Beneish M-Score	-4.84
	(+ ) 0.92 * Net Receivables/Sales of CY upon PY
	(+ ) 0.528 * Gross Profit/Sales of PY upon CY
	(+ ) 0.404 * (1 - (CA + PPE + Securities)/Total Assets) of CY to PY
	(+ ) 0.892 * Sales CY to PY
	(+ ) 0.115 * Dep./(PPE + Dep.) of PY to CY
	(+ ) -0.172 * Exp./Sales to CY to PY
	(+ ) 4.679 * (CL + Long Term Debt)/Total Assets of CY to PY
	(+ ) -0.327 * (Income from Operation - CF from Operation)/Total Assets
Montier C-Score	<b>1 score for each component</b>
	Increase in difference between NI and CFO
	Increase in days sales outstanding
	Increase in days sales inventory
	Increase in other CA to sales
	Decline in Dep./Grossblock
	Increase in total assets by 10%
Sloan Ratio	(Net Income - CFO - CFI)/Total Assets
Enterprise Value	Eq * MV + Debt * MV - C&CE

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