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## **DU PONT Ratio: A comprehensive measure of business performance**

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### **Abstract**

*In this paper we present and compare various financial measures of business performance which are becoming progressively more comprehensive culminated with the HOB model which is the expanded form of DU PONT ratio.*

*We allege that DU PONT - ROE model can be used as a measure of strategy success. We also consider it is a superior indicator in the long run. It merges all necessary and meaningful information of financial statements reflecting supply and demand factors which are largely determined by industry and firm specific factors.*

*Further decomposition of ROE according to HOB model make more clear the internal and external environment assessment and explains more fully the value creation process contributing considerably to strategic management process.*

**Keywords:** *Du Pont ratio, Profitability analysis, competitiveness measurement*

**JEL Codes:** *G 33*

### **1. Introduction**

"Measure-managed companies" perform better since perceived as being industrial leaders, providing higher financial returns and being adept to change. (Boume et al. 2000)

These results are achieved because the good measurement system help companies to:

- establish the current position
- communicate direction
- simulate action in important areas of business
- facilitate learning
- influence behavior

The appropriate performance measurement must quantify the effectiveness with which an organization meets the needs of its customers, in other words it does the "right thing". In order the organization to survive and prosper must serve its customer

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with profit which means that it has to use its resources efficiently and operate economically i.e. "it does things right" (At this level employee competencies and motivation and are prerequisites).

A suitable performance must encompass effectiveness and efficiency in organization operation since both are necessary for long term survival a prerequisite for keeping investors happy level and capital inflows for investments secured inflow capital. External and internal operation proficiencies both express customer satisfaction (market share) investors employees (productivity) which are the main stakeholders. Profitability (Porter 2001 p.66) is the result of successful matching of firms internal and external (industry) environment.

The industry structure and the five forces in it (Hussey et al 2000) determine the attractiveness and the average performance of the companies involved.

The out performers are characterized by operational effectiveness and appropriate strategic positioning. The combined result of which is sustained competitive advantage (Porter 1996). The industry structure and sustained competitive advantage are the main drivers of profitability which is the manifestation of strategy success.

Operational effectiveness through continuous improvement it entails is a necessary but not sufficient condition of success since it is easily imitated. A unique and valuable position by choosing specific activities to perform based on firm's internal strengths, requires trade offs and the creation of synergies across all company's operations in order invigorate competitive advantage and attain sustainability.

## **2. Competitive advantage and performance**

Competitive advantage over rivals results in greater profitability, which in turn boosts further competitive advantage. Financial measures of performance have been criticized, especially in the last decade, as suffering from accounting distortions (associated with profit and asset determination) and as being backward looking, given that they are based on historical data. Despite criticism "if strategies are not eventually directed towards an acceptable financial performance", as happened with many companies of the new economy, i.e. Amazon, Yahoo, Alta vista etc., "they must be reexamined" (Blaine).

The ultimate criterion of success is superior financial performance. Strategy aims at achieving a competitive advantage, which will be translated into positive value creation at a later stage.

Such measures of strategic superiority include market share advancement, profit and return increase and value creation over and above the opportunity cost of equity capital used.

## **3. Market share and profitability**

Revenue and market share expansion is a quite legitimate goal for any business entity. Growing market shares must be acceptable only as a consequence of or a remuneration to a well founded competitive advantage and not the result of an undue decrease in prices or increase in costs, which are detrimental to long term profitability, value creation and finally to the firm's survival. Market orientation is in general positively related to several performance measures (Matsuno et al.2000).

Management though should not espouse strategies of revenue maximization at any cost (Porter 2001). The argument using revenue expansion models for business success evaluation, with the reasoning that enough revenue increase today will bring about profits tomorrow must be opposed if it is not adequately justified. It is not the magnitude of the revenue increase that matters most, it is the way it is achieved. Unwise expansion today, may lead to demise tomorrow in case the value is progressively eroded.

Many companies continue to pursue a market share and volume rate growth strategy. This type of policy must only be pursued with cautiously and temporarily only; otherwise it may lead to a trap. By "trying to get a bigger share of the market the firm may destroy value by moving to no-profit zones which represent the black holes of its business universe" (Slywotzky A. et al.1998). That is why it must be absolutely clear that although growth is desirable, the **quality of growth is vital** especially in the era of the new economy. Long-term sustainable market shares can be secured only if the profits are protected and value is created at an acceptable level. Sustained revenues and net income growth is the only reliable way to create value.

"Growth rates are more variable than profitability across the firms and over time" (Geroski 1994). This observation indicates that companies protect their profitability much more effectively than growth and that any differences in it among firms, persist over time. "Growth rates differ more over time than across the firms at any point of time", which seems to suggest that industry factors play a greater role in that direction.

Industry changes through patterns which create risk and sources of profits. Value migrates across different dimensions of business activities i.e. value chain, customer, channels of distribution, products knowledge, forms of organization etc. Patterns "hint at the future explain the past and describe the present" (Slywotzky et.al 1999). Patterns are pertaining to strategy. The knowledge and the exploitation of them lead toward attaining competitive advantage.

Competitive advantage, according to R.Grant, obtains the firm which achieves higher profitability.

Profit per se, is an inadequate measure of performance if it is not accompanied by the sales or the capital used to achieve it. Otherwise its use is quite limited. The level of profit margins is a better indicator of market power and that can also be accompanied by measures of revenue growth of market share. Revenue growth by itself has little or no impact on value.

#### **4. Net profit margin**

The net profit margin (net profits/sales) is considered to be a more meaningful measure of success representing the profit per dollar sales. Net profit margin measures the percentage of sales being converted into net profit available to shareholders and is considered a measure of efficiency.

Higher profit margins, may be possible by "erecting barriers" (according to M. Porter) through strategy by thwarting free competition, i.e., preferential access to raw material and to distribution channels by means of financing etc. Competitive advantage of any kind is a form of "barrier", which allows a company to obtain

"rents". To what extent that advantage can be sustained depends on whether it is easily imitated at reasonable cost.

The policy of increasing the margin by reducing the denominator deliberately is considered to be an undesirable development that jeopardizes the company's position in the market. Healthy net profit margin amelioration is feasible, only through minimization of costs for a given level of sales or maximization of sales for that level cost. Productivity improvement is vital and can take place for the existing assets or different asset base (due to divestment or additional investment.). Productivity improvement and focus on cost reduction is usually a common policy prescription in periods of market crisis and represent an inward oriented measure-fostering efficiency. However the benefits of that policy are of rather limited duration, such policies can be imitated relatively easy and don't represent a solid base for establishing and maintaining a competitive advantage.

Sales growth policies are more difficult and presuppose external focus and favorable acceptance of the products of the company by the consumers. According to Ansoff, matrix sales can be increased by segment penetration, segment development and/or product development. Sales expansion leads to cost reduction due to the learning and experience effect. Of course, policies, which dictate market and product development, are associated with higher risk.

Decisions about strategy require a trade off between the use of limited resources and appropriate positioning in the market while simultaneously achieving operational effectiveness. An increase in the net profits margin under perfect competition conditions means consumer satisfaction or/and productivity improvement.

Consumer satisfaction is translated into higher prices and more consumption of the product (expressed in quantity). On the other hand productivity improvement leads to lower expenses. The result in either case is greater profit margin, which is an outcome of market power. According to M.Porter, a company's positive profit margin reflects the degree of competitive advantage gained in the market place.

A similar conclusion was reached in a recent study, according to which, higher profit margins are translated into Revenue-Market share growth (and not vice-versa) (Trailer et al. 2000). Valuable intangible and hidden assets of the organization are translated into profit margin increase and market share expansion. Although profit margin reflects efficiency and effectiveness (if accompanied by market share), it obscures valuable pieces of information (given its aggregate) regarding the company's portfolio of products, individual product market size and profitability and their importance to the company.

To achieve a competitive advantage, the company must decide where and how it must compete in the market in order to generate the appropriate amount of revenues at an acceptable level of cost, so that the profit on capital invested yields an acceptable rate of return for the level of risk involved.

The balance sheet reports the assets that represent the internal environment, the resources of a company and the sources of future value. Their proper alignment with the external environment is translated in revenues and profits. Value is generated through the assembling and exploiting a portfolio of tangible and intangible assets (culture, knowledge, brands etc) that are the "substance of business genome, the economic DNA of firms" (Boulton 2000) in the era of new Economy.

Deterioration of profit margins over time, due primarily to gross margin abatement, is regarded as an ominous sign of the company's prospects. In such a

case, future profits are potentially less certain in terms of their duration as well as their magnitude. The profit margin usually falls as the volume of sales increases. Higher sales turnover in most cases requires lower profit margins (i.g. supermarkets).

### 5. Return on Assets (ROA)

Profit and profit margin concerns often lead to over-investment and to vertical integration. To mitigate that effect we must weight profit margins by the capital invested to generate the amount of revenues and profit.

$$\text{The result is the Return on Assets (ROA)} = \frac{\text{Net profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}}$$

ROA as a composite measure is considered to be more comprehensive indicator of performance. It combines a measure of efficiency (do things right) and effectiveness (do the right thing). It is the best single return measure (Copeland 1994 p.164). Assets turnover indicates how firms use their assets (the amount of which is predominately determined by the kind of industry they operate in) to maximize revenues by satisfying customer needs and it is regarded as an indicator of external effectiveness. "Strong customer relationships have been suggested as a means for gaining competitive advantage (Reimatz et al. 2000) since customers are the ultimate judge of value.

Higher asset turnover, due primarily to the artificial decrease of the denominator (through downsizing and/or divesting) which may allow management to boost ROA in the short run, "is harmful to long term competitiveness" (Hamel et al. 1994, p.8), since it is caused by postponing investment necessary to keep the firm abreast of the competition. Profit margins and asset turnover are inversely associated. Small profit margins are followed by higher asset turnover ratio and vice versa, so that the result of multiplication, i.e., the Return on Assets, in different industries is comparable. Otherwise the flow of capital from one sector to another, make them converge.

Companies, which base their competitiveness predominately on intangibles, may simultaneously exhibit high net profit margins and exceptionally high asset turnover, as it usually happens in the service sector. In that case the higher level of ROA is protected through differentiation. "ROA sometimes is called productivity ratio" and is indeed one of the most important measures of a company's "efficiency and productivity" (Allred James K. May 1997). In this case productivity reflects technical effectiveness expressed in quantity of goods produced and sold.

Cost leadership firms are usually recognizable by high asset turn over and product differentiation, and are inclined to show greater net profit margins. Any difference in Asset return in the Long run must be explained by risk differences.

The profit drivers are the revenue maximization, cost minimization (which maximizes margin) and the investment minimization for the given level of revenues which maximizes the velocity of assets.

"Differences or changes in ROA may be attributed to operating leverage and product life-cycle phenomena (Stickney).

The operating leverage emanates from the fixed cost, which entails the operation in a certain industry (i.g. Hotels, Oil Refineries, Airlines). This type of leverage is generated by the high proportion of investment in fixed assets compared to the

current ones, and the high proportion of fixed charges (interest expenses are excluded) compared to variable ones.

High fixed costs, require higher ROA to offset the greater risk involved in order to induce investment in the industry. Otherwise, the fixed costs must be lowered (i.g. through outsourcing certain activities) and/or the contribution margin must be increased by lowering variable cost. In this way, the level of activities the company must reach to break even is decreased and so is risk. Firms with high levels of operating leverage experience greater variability in ROA than industries dominated by current assets. This occurs due to the great amount of fixed cost, which has to be allocated

According to the **life cycle theory**, products or industries in the first stage of the cycle are usually characterized by higher profit margins and lower asset turnover, since the market hasn't been fully developed (the market share is low) and new investment hasn't been adequately exploited. As the market progressively matures, the competition increases, prices fall, the profit margins decrease (although cost decreases due to economies of scale and learning effects) and investment diminishes because of divestment. Finally asset turns over increases.

Through the different stages of the cycle (as it is introduction, growth, maturity, decline which correspond to the various cells of the BCG Matrix i.e. Question marks, stars, cows and dogs respectively) the revenues, cash flows, profits, investments and Return on Assets change.

At the early stages the need for investments is high, the outflows are great and revenues, profits and returns relatively low. At the late stages, cash flows, profits and returns increase especially due to lower cost and investment needs. Consequently, a firm must maintain a symmetrical portfolio of products belonging to different stages of the cycle in order to counterbalance the need for capital outflow for expansion with the supply of cash inflow.

The source of competitive advantage (cost leadership and product differentiation), as well as the appropriate strategies to be followed, according to M. Porter, (cost leadership, product differentiation and focus or any combination of these) depend on the stage of the cycle that every product is.

Low ROA may deliberately be followed by low capital gearing in tandem with higher than usual levels of liquidity as a means of decreasing a company's vulnerability to adverse market shocks. The interaction among the ratios is important. Lower profitability and returns combined with lower risk increases values. Otherwise higher levels of risk attributable to lower liquidity and/or use of excess amounts of debt can't be afforded.

Rates of returns can be inflated by the use of operating leases, more debt and other off balance sheet financing. In such a case ROA changes can be interpreted with caution.

There are **two key drivers of value**:

- the growth rate at which a company increases its revenues, profits and capital and
- Its return on invested capital relative to its cost of capital.

The first set of variables are included in ROA formula while the second one requires the estimation of Equity Cost of Capital.

Value is a positive function of the amount and time period cash flows last and negative to the risk associated with them. Changes in value, according to Damodaran, are due to:

- Increase in the profit margins (efficiency)
- Increase in revenues from existing asset utilization (effectiveness) and prolongation of their useful life
- Decrease in the cost of assets

Economic Value Added (EVA) is the most popular measure of value creation or destruction lately (Al Ehrbar et al. 1998). It requires a lot of adjustments to financial data in order to be calculated.

ROA, which is an unadjusted accounting measure, was found to be something more closely correlated with stock returns than EVA (Dodds et al. 1996).

## 6. Return on Equity (ROE)

The Return on Equity (ROE) comes from ROA by multiplying it by Total capital/equity ratio and reflects the net profits available to shareholders. It is more sophisticated and takes into consideration the liability side of the balance sheet. The use of debt is utilized as a leverage to boost the Return on Equity in case the interest rates are lower than the return on assets. The third ratio (total capital/equity) is called the equity multiplier and represents the degree of debt utilization, which maximizes the value of the firm for a given level of risk.

Any augmentation in ROE without changing the ratio of debt/capital would certainly indicate a change in competitiveness, which in turn reflects the success or failure of the strategy as represented by the creation or the obliteration of value. This measure is employed as a criterion for investment decisions.

The return on equity is compared to the Capital Cost estimated by risk free rate plus the risk premium of the industry involved as well as the Beta of the given company according to the CAPM Model. This cost is the benchmark for new projects. If ROE is greater than the cost of capital used then value is created.

In order to close the gap between the present and desired level profitability it is necessary to figure out what combination of policy has to be performed. Specifically by how much the net profit margin has to change (gross margin, operating margin) the asset turnover. The composition of debt which in turn determines interest expenses and to certain extent tax burden.

Although, ROE suffers from an additional shortcoming compared to ROA, since it can be manipulated by changing financial leverage. It is a good measure "assessing the overall performance of the firm's management" (Flamholtz 2000, p. 492) and "traditionally the single most important and widely noted benchmark of corporate performance" (Teitelbaum 1996)

The extended Du Pont analysis, i.e.,  $\frac{\text{Net profits}}{\text{Assets}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Equity}}$

summarizes key relationships that explain the overall performance of the company and show the direction and magnitude on return of variations in profit margins asset turns over and use of debt capital. It includes the result of annual operation through the profit margin, the level of effective use of assets (fixed and current) employed by the revenues achieved as well as the magnitude and composition (equity debt) capital employed. Overall ROE combines income statement and balance Sheet (Assets and Liabilities) consideration. It evaluates the management of Revenues expenses, assets and debt. It merges efficiency and supply (profit margins) and effectiveness and Demand (Asset turnover) conditions. It incorporates flow (revenues, profits) and stock elements (assets, capital). (Curtis P. 2000). ROE was used as a long run ex-post performance measure in conjunction with SWOT analysis and Porter's "five forces" and "Diamond models" to examine the development of competitiveness in the tourism industry. (Leading Edge Ltd P. Curtis, 2<sup>nd</sup> on going evaluation of regional development program for Ionian Islands, June 1998). The ROE model in connection with SWOT and portfolio analysis were used to analyze competitive position of Ionian's islands tourism product and give policy prescription for the future (P. Curtis 2000).SWOT analysis explored internal and external industry that contributed to the present position which is represented from financial point of view by ROE.

The overall performance of the firm is determined to a great extent through the interaction of five forces which form the external environment of the companies according to M.Porter, which determines the attractiveness of the industry the firm operates in and how management handles these factors by positioning the company according to its strength and weakness (SWOT analysis). The balance sheet's magnitude and compositions represent the resources of the firm, while the income statement (The difference Revenues and Costs) represents the result of value proposition that firm makes to consumers by positioning itself in the market in accordance with its internal strengths.

Five forces influence prices, costs, investments and elasticity that are the basic factors that explain long term profitability. Industry's characteristics determine considerably the profit margin, the asset turnover even the capital structure of the firm. The structure of an industry continues to remain an important factor that influences a firm's profitability, although the boundaries of the industry may change over time (Mc Gahan 1999). For companies with performance that does not conform to the average of the industry, resources, abilities and competency are more important than the kind of industry per se in determining performance (Hawanini 2000).

The structure of the industry might change or the balance of power be shifted from one part to another... Dynamic industry analysis can help to prevent a competitive position from being eroded because someone else has rewritten the rules of the industry. (Hussey 2000 p.75)

"Competitive advantage is necessary for the survival of a company much of its effect can be negated by weak industry fundamentals although respectable performance is still possible under these circumstances" (Suutari 2002, p.37)

Firm specific factors are more important for those firms that exhibit exceptional performance either above (outperformers) or below (underperformers) the average of the industry and it is because of their individual characteristics that they differ in profitability. At the same time, the nature and the level of competition (environment)



influences and shapes resources which then affect competition in a reciprocal way (Henderson 1997). Detail Profitability analysis is vital in examining competitiveness since it is the result of it.

Out performers excel at positioning and execution which characterizes a comprehensive strategy while at the sometime integrate all all elements of it i.e. direction value proposition, resources, capabilities culture. All these are integrated properly with the external environment and focus on a specific theme. This type of integrated strategy is the best explanation of long term success (Mifflin et al. 2000).

Profitability is a combination of effectiveness and operating efficiency.

Value is best measured by profits. Value is not only profitability; it also involves risk and the cost of capital invested. Profits are a function of a market's profit margin, size, and growth rate. Declining returns over time would stand for increased competition and may indicate certain tendencies in an industry.

The attractiveness of the market depends on its size, growth ratio and the profit potential, cyclicity, competitiveness and vulnerability. Industry's attractiveness influences profitability and the rate of internal growth.

ROE determines the internal growth of the company, (g) which depends on the amount of earnings available (ROE) to reinvest as well as the rate of reinvestment (r)

$$g = r \times ROE \Rightarrow g = r \times ROA \times \frac{\text{Total Capital}}{\text{Equity}}$$

The magnitude of ROE determines future success given that "winning companies often control the industry profit pool and use that leverage to ensure and invest at higher rates than their competitors" (Zook 1999) and so discourage them to compete.

## 7. The Heart of the Business Model (HOB)

According to M. Porter, in order to track down the individual sources of competitive advantage we must break down the level of analysis for the internal assessment. The existence of Resources, capabilities and competencies that constitute the company's strengths and support the value chain must be identified in the framework of SWOT analysis.

The magnitude of the value creation process can be considerably increased by managing the

interrelationships among activities in a unique way in order to promote synergies that can't be imitated in the short run and require considerable cost.

The triple ratio Du Pont model can be extended further into the "Heart of Business" (HOB) and "Finance Effect Multiplier" (O' Higgins).

The HOB is comprised of the following ratios:

$$\frac{\text{Revenues}}{\text{Total Assets}} \times \frac{\text{Gross Profit}}{\text{Revenues}} \times \frac{\text{Operating Profits}}{\text{Gross Profits}}$$

which correspond to external marketing, effectiveness production and administration capability respectively.

$$\text{Given that } \frac{\text{Gross profit}}{\text{Revenues}} \times \frac{\text{Operating Profits}}{\text{Gross Profits}} = \frac{\text{Operating Profits}}{\text{Revenues}}$$

The HOB model is comprised of external effectiveness, measured by asset turnover and internal operating efficiency, measured by operating profit margin ratio which supplement each other to create profit return and value to shareholders, through the ratio

$$\frac{\text{Operating Margin of Profits Before Interest and Tax}}{\text{Total Assets}}$$

This ratio indicates how effectively the management uses its internal resources and to certain extent the capability and competencies to create profit and it is the primary and absolutely healthy determinant of the return on Equity.

These areas of operation may determine the "core competencies" which can apply to different activities. To the extent that they are unique, valuable, difficult or costly to be imitated, they create a sustainable competitive advantage and lead to superior profitability.

Superior performance lasts only if a company is positioned accordingly, given its strength and weakness, in order to exploit opportunities and neutralize the threat (SWOT analysis) created by the external environment, a vital part of which is the degree of attractiveness of the industry determined by five forces the organization operates in. Efficiency in using debt wisely determines interest and tax management and amplifies ROE further as it can be seen explicitly through the intermediation three more ratios the following ones:

$$\frac{\text{Profits before Taxes}}{\text{Operational Profits}} \times \frac{\text{Net profits}}{\text{Profits before taxes}} \times \frac{\text{Total Capital}}{\text{Equity}}$$

The first ratio reveals the interest charges and the second, the interest on the taxes paid. Both are functions of the specific amount of debt used represented in the third ratio.

$$\frac{\text{Gross Profits}}{\text{Revenues}} \times \frac{\text{Operating Profits}}{\text{Gross Profits}} \times \frac{\text{Revenues}}{\text{Total Assets}} \times \frac{\text{Profits before Taxes}}{\text{Operating Profits}}$$

$$\frac{\text{Net profits}}{\text{Profits before taxes}} \times \frac{\text{Total Capital}}{\text{Equity}} = \frac{\text{Net Profit}}{\text{Revenues}} = \text{ROE}$$

The first two ratios, reflect the operating margin from the non financial activities of the

A firm's ROE encompasses different aspects of internal (value chain) and external (mainly industry attractiveness) factors in the environment.

It reflects proficiency in the value chain activities and offers management clear ideas on how to attain and sustain success (O' Higgins 1999). This can be used to turn strategy into practice.

In addition it manifests the repercussion of any change in the value drivers on the performance of the firm through the interrelationship depicted above. It reveals the critical success factors for performance improvement contributing so to performance management. As such, ROE is considered to be a comprehensive indicator of strategy formulation and implementation success in the long run especially for companies belonging to the same industry. The longer the time period under examination the more difficult to foolish many people since any manipulations are discernible with the lapse of time. The adoption of ISAC rules by the E.U will render intercountry comparisons more reliable.

The extended ROE model through HOB is less amenable to manipulations and distortion, since any attempt in that direction is more easily detected through further breaking down of the initial ROE-DU PONT model. Additional safeguards can be used in that direction to detect any attempt for earnings managing. (Fairfield et al 2001)

The use of monthly financial data shortens the time, bridges the time lag and renders the use of non financial leading indicators (through a type a Balanced Scorecard) of performance a costly, time consuming, sometimes frustrating and rather redundant exercise which should be adopted only when benefits outweigh the cost (explicit and implicit) involved. To communicate strategy, to focus efforts and facilitate strategy implementation and performance management. Then it helps "to ensure that actions functional units are aligned with organization's vision, mission and goals to achieve qualitative and quantitative objectives and this is a competency that embraces the entire organization it is about "learning from change" and bring it (through knowledge management, to the insight of more people into the process and share it for the benefit of organization) (Cameron P. 2001 pp.16-17)

Clear strategy and effective execution during turbulent times is the secret of success (Most admired companies 2002 p.28)

## **8. Conclusion**

Strategy must create and exploit opportunities using internal sources, capabilities and competencies in aligning firm to its environment. Strategies must eventually lead to profitability otherwise must be reassessed. Strategy is necessary to attain and sustain competitive advantage while recognizing industry's constraints. Financial ratios are useful as measures of management's performance in the long run that presupposes clear strategy and appropriate execution. Profitability is the result of achieving competitive advantage that is sustained through reinvestment part of the earnings gained in the market.

Composite measures are more comprehensive than the individual ones which express a partial aspect of performance or a specific point of view.

The expanded form of DU PONT-ROE model comprises supply and demand factors

- balance sheet and income state information
- effectiveness and efficiency (do the right thing and do things right)

It can be used as a policy analysis tool since it prescribes policies by uncovering the repercussions of a change in different parameters. Explains the direction and magnitude of a change in productivity, production, marketing, administration, taxation and interest management, on profit margin, asset turnover and debt ratio on ROE

The decomposition of DU PONT-ROE through HOB model unveils further the value chain factors to sustain competition and close the gap of performance. The criticism pertaining to distortions of financial data can be restricted through prolonging the examination period and the use of earning manipulation models and updated data which shorten financial report period.

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