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Evaluating the Financial Performance and Going Concern of Economic Units Using the DuPont Model : An Applied Study in the Bank of Baghdad

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Abstract

Performance evaluation is a tool that helps users, both internal and external, achieve planning and control objectives and make appropriate decisions. This can lead to rational investment decisions, as well as the possibility of evaluating the application of the accounting assumption of the continuity of economic units.

The research problem is represented by the following question: Is it possible to evaluate the financial performance and continuity of units by applying the DuPont model?

The importance of the research lies in assisting internal users (such as managers and others) and external users (such as investors and others) in evaluating the performance of economic units.

To achieve the research objectives, the financial statements of the sample unit (Bank of Baghdad) were used, and the DuPont model was applied to arrive at a judgment regarding the evaluation of financial performance and continuity of units.

The research reached several conclusions, the most important of which was the possibility of using the model to evaluate performance on the one hand and to evaluate the continuity of economic units on the other.

Keywords: *DuPont model; financial performance evaluation; financial statements; continuity of economic units*

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1. Introduction:

Performance evaluation by users is a control tool that assists managers and users, both internal and external, in planning, control, and decision-making. The importance of financial analysis is growing day by day due to the increasing importance of capital markets.

The research question is whether it is possible to adopt the DuPont model to evaluate the financial performance of private sector entities.

The importance of the research lies in the importance of using financial analysis tools to evaluate the performance of private sector entities.

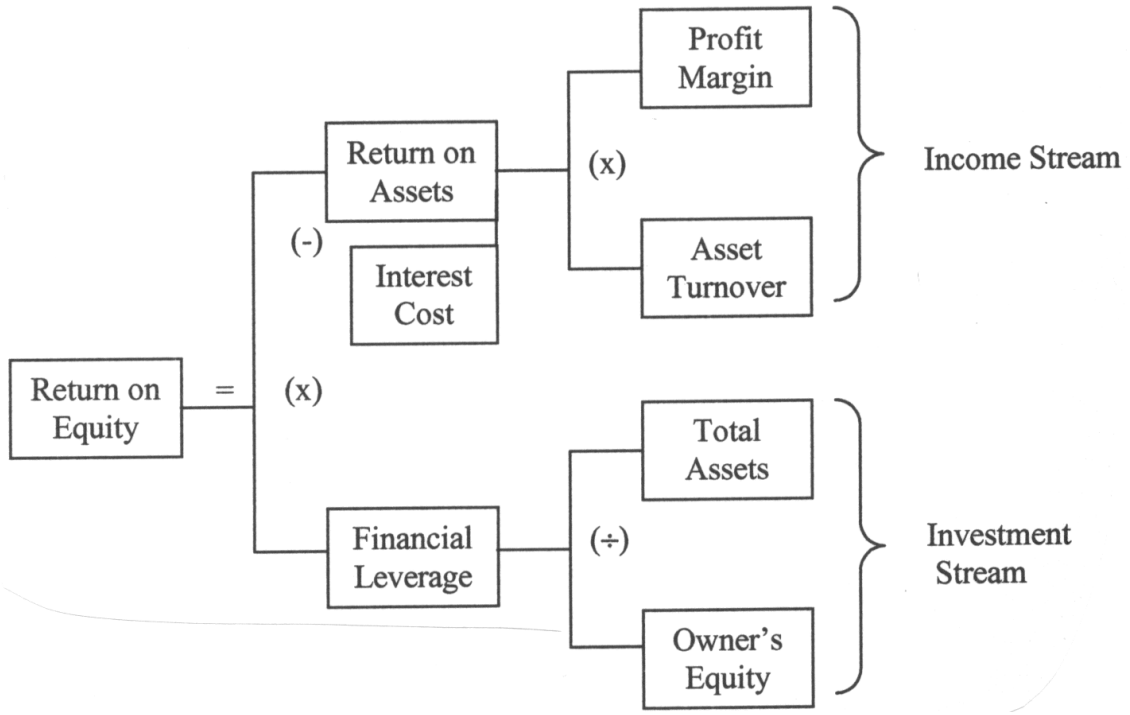
The DuPont model is a common and useful tool for assessing and understanding the drivers of profitability (Barry et al. : 2000,). The DuPont model is a ratio-based analysis allowing managers to observe the interactions among the important variables in the cost-volume- profit chain (Van Voorhis, 1981). As characterized by Blumenthal (1998), the DuPont model is a useful framework for visualizing financial information and is a good tool for assisting managers in understanding how operating, financing, and investment decisions impact financial performance. Firer (1999) explains the DuPont model as a financial analysis and planning tool intended to develop an understanding of the factors that affect the return on equity (ROE) of the firm using straightforward accounting relationships. He argues that the DuPont model allows for the assessment of the components of ROE and assists management in examining the possible influence of strategic initiatives on financial performance. Ross, Wester field, and Jordan (1999) further identify three factors that impact ROE as it is represented in the DuPont model:

(a) operating efficiency (measured by operating profit margin and calculated as operating margin divided by gross revenue),

(b) asset use efficiency (measured by asset turnover and calculated as gross revenue divided by assets), and

(c) financial leverage (measured by the equity multiplier and calculated as assets divided by equity).

In agreement with this description, Eisemann (1997) states that the ratios establishing ROE reflect three major performance characteristics: one income statement management feature (profit generated per sales dollar) and two balance sheet management features (sales generated per dollar of assets and the amount of solvency risk). Application to Farm Businesses The DuPont model allows producers to analyze the potential for improved financial performance by concentrating on variables having the most bearing on that performance. A graphical representation of the DuPont model is presented in Figure 1. A mathematical representation of the relationships reflected in Figure 1 is as follows:



Source: Adapted from Van Voorhis (1981).

Figure 1. DuPont Financial Analysis Model

Performance evaluation is a topic that has received considerable attention and research from both researchers and decision-makers, especially in light of the new economic transformations. With increasing competition, managers are forced to activate performance evaluation functions and adopt more rational tools, enabling them to respond to the needs and challenges of the market economy in a manner that suits the nature of economic units. This, in turn, has significant value and importance in increasing the unit's effectiveness and raising its production efficiency. Among the most important of these functions that improve performance is the financial function, which is relied upon more than other functions during the strategic or investment decision-making process after the feasibility study. The evaluation process requires a set of tools, techniques, and models, such as the Dupont model, financial ratio analysis, and other analytical methods.

The Dupont model is considered one of the best models for the evaluation process (according to studies), as it relies on the return on equity (ROE) and return on assets (ROA) ratios to demonstrate the causes and locations of changes in indicators within these two ratios, making the model comprehensive and important in its evaluation of financial performance. Decision-making is based on two criteria: economic value added and market value added, to maximize owners' wealth (Fatima Zahra Shadi, :2014)

2. Factors Influencing Performance:

There are numerous and diverse factors that can impact the performance of organizations. Studying and analyzing them is essential to achieving a sound methodology for performance evaluation, as a combination of factors is effective in a particular situation and not in others. The most important factors are as follows:(Muwaj Bilal: 2016):

A- Economic Factors:

Economic factors are among the most influential factors on performance, given the nature of an organization's activity, on the one hand, and the fact that the economic environment in general represents the source of its various resources and the future of its products, on the other hand.

Economic factors are, in turn, divided into general economic factors, such as economic growth rates, foreign trade policies, inflation rates, interest rates, etc., and sector-specific factors, such as the qualified workforce and wage levels in the sector.

B- Cultural Factors:

The concept of organizational culture is not a recent development. It can be defined as a set of elements that explain the operating rules and strategic choices of a particular unit. It consists of values, traditions, the history of the organization, and cultural norms shared by individuals within the same organization. Corporate culture can have a significant impact on the organization's long-term economic results. Furthermore, the organization must be open to the cultures of its competitors and exchange views with them, as comparing its culture with the cultures of other organizations is the richest source of information for comparing strategies. Therefore, corporate culture is the "cradle of performance." C- Technological Factors and Innovation: Similar to the various factors mentioned above, technological factors, including scientific knowledge, scientific research, technological innovations, and others, have become a fundamental challenge for performance. This is because the quality of the technology it uses contributes significantly to reducing or increasing costs. Therefore, it must be monitored, predicted, and evaluated to determine its impact, both on its own industry and on other industries that may affect its future. C- Political and Legal Factors: Political and legal factors are important elements that greatly influence the economic performance of an organization. They consist of the institutions of the governmental system, the state's foreign monetary and fiscal policies, as well as legislation, administrative decisions, court opinions, and regulations and procedures governing organizations. In general, political and legal factors include the following elements (Rabhi Ibrahim : 2019) :

- The state's foreign policy;
- The extent of the system's ability to achieve political stability;
- The clarity of objectives at the national economic level;
- Legislation and laws;
- The extent of democracy and political parties.

An organization must not only adapt to political factors but also anticipate laws, decisions, and government policies, although this is not easy, especially in developing countries. It can be concluded that the degree of state intervention is a measure of performance, and the greater the degree of independence and freedom granted to organizations in choosing management methods, the greater the opportunities for improving performance. C- Vision: __

Many business leaders have a clear picture of what the organization should look like in the coming years, and many of them have become true architects of the future. However, they have been unable to put this vision into action, limiting themselves to solving practical problems in the short term. This is due to several reasons, including:

- Difficulty navigating an uncertain future and overcoming its constraints;
- Incomplete understanding of the mission and even performance;
- Developing a strategy for a short period of time;
- Fear of change.

One of the common methods of financial analysis is to make use of financial ratios in order to compare current with past performance and with an industry standard or some other target of performance. it is pointed out that there are substantial interrelationships among financial ratios. One of the more familiar methods of depicting the interrelated nature of financial ratios is through the DuPont system of financial analysis. Briefly, the DuPont system decomposes the return on equity (ROE) into a set of factors that affect ROE. Each of these three factors can then be further decomposed in order to evaluate what may appear to be adequate or inadequate performance in the specific area. The most common approach in the textbooks is to cover what is generally referred to as the extended DuPont Equation, a 3-factor model. The three factors are: (1) asset utilization (2) relative profitability and (3) financial leverage. (Robert J and Betty L : 2003) .

Confirms (Lynn E. Dodge : 2017) One reason that studies employ different measures of financial performance is that they believe there is not a single ratio that identifies all levels of financial health. This belief is not entirely incorrect as many researchers used other measures of performance. These include profit margin and ROA (Gloy et al. 2002, Purdy et al. 1997, Ibenhdahl et al. 2014). Still, ROE is arguably the best measure because of the ability of ROE to be expanded into three other key ratios utilizing the DuPont Model (Mirsha et al. 2012). Mathematically, the DuPont Model demonstrates that the product of the operating profit margin (OPM), asset turnover ratio (ATO), and leverage multiplier is the ROE(Lynn E. Dodge : 2017)

Methodology :

i. Methodology: Standard DuPont Application
ii. Research Design

This study adopts a quantitative analytical design. Financial performance will be evaluated using the DuPont model for the research sample unit. A purposive sample listed on the Iraq Stock Exchange (Bank of Baghdad) will be selected due to the availability of financial data (balance sheet and income statement) for the years (2021, 2022 , 2023). This model was chosen for its ability to analyze financial performance across different dimensions (profitability, leverage, and efficiency), providing a basis for assessing sustainability and risk in the research sample bank.

3. Data Collection

The analysis is based on secondary data derived from the audited financial statements of the research sample bank. Specifically, the balance sheet and income statement are used to extract key financial indicators, including:

- Net income (or budget surplus/deficit),
- Total revenues,
- Total assets,
- Total equity.

These figures are used as inputs for the DuPont analysis.

4. Analytical Framework

First : **standard DuPont equation** is applied as follows:
ROE=Net Profit Margin × Asset Turnover ×Equity Multiplier

1. **Net Profit Margin (Profitability)=** $\frac{net\ income}{total\ revenue}$
2. **Asset turnover (Efficiency) =** $\frac{total\ revenue}{total\ equity}$
3. **Equity Multiplier (Leverage)** = $\frac{total\ assets}{total\ equity}$

DuPont breaks ROE into three drivers:

Profitability (Net Profit Margin): ability to generate profit from sales.
Efficiency (Asset Turnover): ability to use assets to generate revenue.
Leverage (Equity Multiplier): reliance on debt vs. equity financing.

Second : Going Concern

The going concern assumption means that a company is expected to continue operating indefinitely into the future. This means:

- If profitability is weak (low profit margin), the company may experience losses and negative cash flows.
- If asset turnover is low, this indicates inefficiency, leading to insufficient sales.
- If the equity multiple is too high, this indicates excessive reliance on debt, which increases financial risk.

Thus, the DuPont analysis highlights whether a company's going concern risks stem from:
- Low profitability (unsustainable earnings).
- Weak efficiency (underutilized assets).
- High leverage (risk of default).

Practical side :

First : Table (1) balance sheet for the years (2021, 2022 , 2023)

Items	2021	2022	2023
Cash	706,104,609,000	722,854,049,000	1,294,042,234,000
Balances with other banks	181,712,652,000	145,683,305,000	661,476,219,000
Investments	1,136,627,000	1,197,494,000	1,372,128,000
Financial assets	2,368,857,000	2,378,166,000	8,025,607,000
Other financial assets	442,311,497,000	664,735,996,000	622,465,491,000
Credit facilities	121,636,282,000	89,496,407,000	61,630,568,000
Property and equipment	60,520,275,000	73,537,949,000	76,063,568,000
Intangible assets	364,886,000	1,013,274,000	1,082,496,000
Other assets	23,652,971,000	21,198,202,000	22,339,518,000
Total assets	**1,539,808,656,000**	**1,724,199,578,000**	**2,748,497,945,000**

Liabilities and shareholders' equity			
Deposits from banks and other financial institutions	863,909,000	857,122,000	11,137,855,000
Deposits Customers	1,157,462,988,000	1,309,292,958,000	2,170,254,205,000
Cash margins	14,677,854,000	15,194,507,000	21,458,164,000
Income tax provision	7,168,178,000	10,635,320,000	26,048,820,000
Miscellaneous provisions	6,583,550,000	5,499.465,000	6,565,149,000
Long-term loans	1,616,256,000	579,381,000	19,502,000
Other liabilities	42,306,043,000	32,564,577,000	39,295,789,000
Total liabilities	1,230,678,778,000	1,374,573,312,000	2,274,889,484,000
Shareholders' equity			
Share capital	250,000,000,000	250,000,000,000	300,000000000
Statutory reserves	15,405,776,000	18,003,470,000	25,547,375,000
Other reserves	58,441,000	58,441,000	58,742,000
Fair value reserve	(3,680,025,000)	(3,504,393,000)	2,317,684,000
Foreign currency translation differences	1,092,265,000	1,092,265,000	(13,462,776,000)
Retained earnings and losses	45,641,421,000	83,976,483,000	159,257,436,000
Total shareholders' equity	309,129,878,000	349,262,266,000	473,718,461,000
Total liabilities and shareholders' equity	**1,539,808,656,000**	**1,724,199,578,000**	**2,748,497,945,000**

Source: Financial statements published in the Iraq Stock Exchange

Second :Table (2) Income statement

Items	**2021**	**2022**	**2023**
Interest Income	21,468,956,000	44,795,773,000	52,903,454,000
Interest Expense	(7,673,454,000)	(9,469,104,000)	(9,896,291,000)
Net Interest Income	13,795,502,000	35,326,670,000	43,007,163,000
Net Commission Income	47,454,283,000	56,023,994,000	134,163,500,000
Net Interest and Commission Income	61,249,785,000	91,350,664,000	177,170,663,000
Net Foreign Exchange Gains	18,557,632,000	20,208,430,000	53,528,587,000
Investment Profits and Income	630,499,000	113,000	38,000
Other Income	2,524,873,000	362,745,000	3,403,639,000
Total Income	82,962,789,000	112,0210952,000	234,102,927,000
Salaries	(14,211,636,000)	(14,452,518,000)	(15,702,774,000)
Operating Expenses	(9,470,019,000)	(13,650,068,000)	(10,753,678,000)
Depreciation	(1,801,673,000)	(2,234,842,000)	(2,937,149,000)
Miscellaneous Provisions	(500,000,000)	(730,988,000)	(3,657,404,000)
Total Expenses	(25,983,328,000)	(31,068,416,000)	(33,051,005,000)
Profit Before Allowance for Credit Losses	56,979,461,000	80,953,536,000	201,051,933,000

Expected Credit Loss Expense	(19,830,363,000)	(17,163,731,000)	(19,221,111,000)
Net Profit Before Tax	37,148,542,000	63,789,805,000	181,830,811,000
Income Tax	(7,168,179,000)	(10,635,320,000)	(26,048,820,000)
Net Profit After Tax	**29,980,363,000**	**53,154,485,000**	**155,781,991,000**

Source: Financial statements published in the Iraq Stock Exchange

First Step = Table (3) Extract key numbers

Year	Net Profit (After Tax)	Total Income (Revenue)	Total Assets	Equity
2021	29,980,363,000	82,962,789,000	1,539,808,656,000	309,129,878,000
2022	53,154,485,000	112,021,095,200	1,724,199,578,000	349,262,266,000
2023	155,781,991,000	234,102,927,000	2,748,497,945,000	473,718,461,000

Second Step = Table (4) DuPont Ratios

Year	Net Profit Margin	Asset Turnover	Equity Multiplier	ROE
2021	36.1%	0.054	4.98	**9.7%**
2022	47.4%	0.065	4.94	**15.2%**
2023	66.5%	0.085	5.80	**32.8%**

Third : Conclusions drawn based on the above equations from 2021-2023

- Profitability (Net Margin) improved massively (36% to 66%).
- Efficiency (Asset Turnover) increased (0.05 to 0.085), meaning better use of assets.
- Leverage (Equity Multiplier) remained high (~5x), showing strong reliance on liabilities.
- ROE jumped from 9.7% (2021) to 32.8% (2023) that means excellent growth in shareholder returns.

i. Profitability (Net Profit Margin)

- 2021 = 36% | 2022 = 47% | 2023 = 67%
- The rising margins show the Baghdad bank is improving its ability to convert revenues into profits . This strengthens sustainability, because higher profitability means better ability to cover costs, provisions, and potential shocks.

Impact on Going Concern: Positive – strong profitability provides financial resilience.

ii. Efficiency (Asset Turnover)

- 2021 to 0.05 | 2022 to 0.07 | 2023 to 0.09
- Still low (typical for banks, since assets are mainly deposits and loans), but improving steadily. And this Indicates better utilization of assets to generate income.

Impact: Supports going concern – more efficient use of resources.

iii. Leverage (Equity Multiplier)

- Around 5x across the years (2023 peaked at 5.8x)
- This means the company relies heavily on debt/deposits relative to equity.
- High leverage boosts ROE but increases financial risk if liquidity weakens.

Impact: Caution – while leverage supports growth, it raises vulnerability to external shocks (e.g., deposit withdrawals, credit losses).

iv. Return on Equity (ROE)

- 2021 to 9.7% | 2022 to 15.2% | 2023 to 32.8%
- Strong upward trend. By 2023, ROE far exceeds typical cost of equity (~10–12%).
- Indicates the company is creating substantial shareholder value.

Impact: Strong positive – high ROE signals the business is not only sustainable but thriving.

Going Concern Evaluation

A- Strengths point :

- Rapid growth in net profits and margins
- Rising ROE (well above industry norms)
- Expanding retained earnings, strengthening equity base

B- Risks point :

- Heavy reliance on leverage (Equity Multiplier ~5x)
- Exposure to credit risk (Expected Credit Loss expenses are significant, though manageable)

5. Conclusion

The DuPont Model is a multidimensional model for analyzing financial performance and the sustainability of an economic unit. It analyzes overall performance, including profitability, efficiency, and leverage. This model highlights financial sustainability factors and identifies potential risks. This model helps decision makers, such as auditors and financial managers, evaluate an economic unit by assessing its efficiency, maintaining financial discipline, and managing financial leverage.

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