Value-based measure: an application of EVA in small manufacturing company in Bangladesh

Hoque, Mahfuzul; Akter, Mahmuda and Shil, Nikhil Chandra
Assistant Professors at the Department of Accounting and Information System, University of Dhaka, Assistant Professors at the Department of Accounting and Information System, University of Dhaka, Lecturer at the Faculty of Business and Economics, Daffodil International University

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Mahfuzul Hoque*
Mahmuda Akter*
Nikhil Chandra Shil*

Abstract: Performance measurement matters in today's complex business arena irrespective of the type, nature, and volume diversity in business. If the result of performance measurement goes wrong due to the faulty or inaccurate selection of tool(s), then the total process will prove wrong in due time. This paper evaluates Economic Value Added (EVA) as a smart and powerful alternative to traditional performance measures like gross margin, percentage change in sales, net margin etc. in a small manufacturing company perspective. Small manufacturing companies are the focus of the study, as most of the people in such companies believe that EVA is truly designed for large companies and the equation of EVA cannot be applied in small companies due to the non-availability of required data. This paper results in a typical model applicable to small manufacturing companies where all adjustments and other technicalities are discussed with a real life example. Finally, the possible advantages and opportunities of using EVA as a performance measurement tool is discussed that may encourage the users/readers to incorporate EVA with their current setup to reap the potential benefits from it.

Keywords: Economic Value Added (EVA), Market Value Added (MVA), Cost of Capital (COC), Net Operating Profit After Tax (NOPAT), Small Manufacturing Companies, Performance Measures, Tailored EVA, Generally Accepted Accounting Principles (GAAP).

* Mahfuzul Hoque, Ph. D., Mahmuda Akter, Ph. D are Assistant Professors at the Department of Accounting and Information System, University of Dhaka and Nikhil Chandra Shil is a Lecturer at the Faculty of Business and Economics, Daffodil International University.

Introduction

Performance measures are used to deliver information to support decisions of the corporate or divisional management and to deliver information to assess divisional performance. Business world becomes extremely complex due to the technological development in the field of operation along with the logical demand of the consumer groups for quality product at a minimum price. The companies are getting serious to incorporate all of these in a single package. Employee motivation is also getting preference since a highly motivated employee will work hard toward achieving performance goals. Along with motivation, performance evaluation comes up to evaluate the extent of motivation. People are searching for a better performance measurement tool that will help them to read the pulses of the employees rightly. In a word, performance measurement becomes a continuous effort and challenging style on part of the management to drive the workforce towards goal congruence.

All accounting based rate of returns (ROI, RONA, ROCE, ROIC), that are used as a performance measurement tool, fail to assess the true or economic return of a firm, because they are based on the historical asset values, which in turn are distorted by inflation and other factors (Villiers, 1997). In the nineties, value based performance measures; such as EVA has gained immense popularity. Introduced in 1982 by Stern Stewart, a New York based consulting firm, EVA gained significant attention after a 1993 Fortune article reported on how corporations such as AT&T and The Coca-Cola were using it as a performance measurement tool. Economic value added, commonly known by its registered trademark EVA, has already been used by more than 250 large companies (Blair, 1997). With the passage of time, more and more companies are incorporating it in their system that proves its superiority. Stern Stewart & Co, the developer of EVA, has already earned approximately $50 million in revenues a year only from EVA consulting (Clinton and Chen, 1998). In this paper, we have tried to discuss the use of EVA from small manufacturing companies perspective. Due to the complexities in EVA calculation and lack of expertise, people sometimes wrongly believe that it can only be used in large business.

The main objectives of this paper are, to explore the familiarity of EVA as a performance measurement tool with other available tools that are being used widely and to develop a tailored EVA model for small manufacturing companies with the considerations of present situation and the provisions for further development in case of necessity.

The paper concludes that EVA is not used as a performance measurement tool in most of the cases because it is unfamiliar and perceived to be difficult and complex to use in practice. Then also, the authors believe that it is going to be familiar and professionals are incorporating it within their current performance measurement structure as it is embedded in the concept of wealth (value in case of EVA) maximization. The total discussion is divided in some sections like EVA as a performance measurement tool, how to calculate EVA, its status in Bangladesh, methodology applied, results followed by an empirical illustration with implication of findings and conclusion.

Economic Value Added as a performance measurement tool

EVA is a measure of corporate performance that differs from most others by charging profit for the cost of all the capital a company employs. The importance of EVA as a performance measure is very much evidential from the introduction of Harsco Corporate Finance Manual, "EVA is more than a performance measure; it is the focal point of a management system and a mindset. EVA affords the company the ability to establish clear, accountable links between strategic thinking, capital investment, day-to-day operating decisions, and shareholder value (Singer and Millar, 2003). It is the framework for a complete financial management and incentive compensation system that can guide every decision a company makes, from the boardroom to the shop floor, that can transform a corporate culture, that can improve the working lives of everyone in an organization by making them more successful, and that can help them produce greater wealth for shareholders, customers and themselves.

EVA is based on the common accounting based items like interest bearing debt, equity capital and net operating profit. It differs from the traditional measures mainly by including the cost of equity. Mathematically EVA gives exactly the same results in valuations as Discounted Cash Flow (DCF) or Net Present Value (NPV) (Stewart, 1990 and Kappi, 1996), which are long since widely acknowledged as theoretically best analytical tools from the stockholders perspective (Brealey and Mayers 1991). EVA is regarded as a single, simple measure that gives a real picture of stockholders' wealth creation (Tully, 1998). The reports claim that implementing an EVA policy triggers a company's stock price to rise (Burkette and Hedley, 1997) and its leading managers to act more like owners (Tully, 1993). In addition to motivating managers to create value for shareholders and being a basis for management compensation (Stern et al, 1989), value based performance measurement systems have further practical advantages. At operational level, this new approach often leads to increased shareholder value through increased capital turnover (Wallace, 1997).

One of the EVA's most powerful features is its suitability to management bonus systems. This has been empirically proved a good way to increase shareholder value (Wallace, 1997). It is an effective measure of the quality of managerial decisions (Lehn and Makhija, 1996) as well as a reliable indicator of a company's value growth in future (Fisher, 1995). EVA is superior to accounting profits as a measure of value creation because it recognizes the cost of capital and, hence, the riskiness of a firm's operations (Lehn and Makhija, 1996). Salomon and Laya (1967) studied the accounting rate of return (ARR) and the extent to which it approximates the true return measured with IRR. Harcourt (1965), Solomon and Laya (1967), Livingston and Solomon (1970), Fischer and McGowan (1983) and Fisher (1984) concluded that the difference between ARR and the true rate of return is so large that the former cannot be used as an indication of the later (De Villiers, 1997).

Since EVA is calculated from the accounting based numbers and some version of accounting return is used in calculating EVA, it is obvious that all the discrepancies also affect EVA. To avoid such problems, Adjusted Economic Value Added (AEVA) and Refined Economic Value Added (REVA) can be used. AEVA and REVA are both slightly modified versions of basic EVA and also both are created by academicians. AEVA uses current value of assets instead of book values (De Villiers, 1997). REVA

uses the market value of the firm in the beginning of the period instead of book value (Bacidore et al, 1997).

Last but not the least, one study found that relative to companies that did not adopt EVA, a sample of companies adopting EVA as a performance measure " i) increased their dispositions of assets and decrease their new investment, ii) increased their payout to shareholders through share purchases, and iii) used their assets more intensively. These actions are consistent with the strong rate of return discipline associated with the charge in residual income-based measures (James, 1997).

How to calculate EVA

The EVA is a measure of surplus value created on an investment. Here, surplus value simply stands for the difference between return and cost of capital. In a small manufacturing firm, the EVA model is modified, or more appropriately, simplified to some extent. This simplification comes due to the less complexity of operation, non-availability of required information and comparatively lower amount of financial involvement. Our proposed EVA model seeks six sequential steps to be followed before getting a periodic EVA, i.e., to what extent the owners' equity or wealth is changed (increased/decreased). These steps are outlined below followed by an illustration with one of our sampled manufacturing firms.

Step 1: Review the company's financial data

EVA is based on the financial data. Most of these data are available from the general-purpose financial statement consisting of at least income statement and balance sheet. Sometimes additional data from the notes to financial statements may also be required. In most of the cases, the last two years information prove sufficient to get all the required information to calculate EVA for any specific year. Income statement is used to calculate net operating profit after tax (NOPAT) and balance sheet is used to identify the capital invested in the business. Notes are used to find out the adjustments in NOPAT and cost of capital (COC) invested.

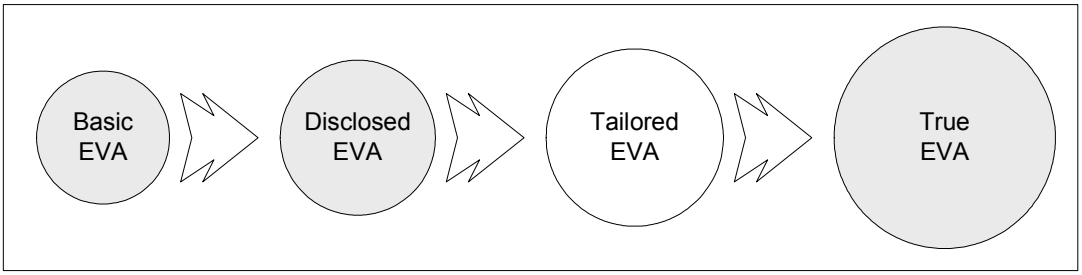
Step 2: Identify the necessary adjustments require to be considered

The conventional GAAP income statement and balance sheet are required to be adjusted to find out net operating profit and the true capital. Companies cannot replace GAAP earnings with EVA in their public reporting, of course. The first departure from GAAP accounting is to recognize the full COC. EVA also fixes the problems with GAAP by converting accounting earnings to economic earnings and accounting book value to economic book value, or capital. The result is a NOPAT figure that gives a much truer picture of the economics of the business and a capital figure that is far better measure of the funds contributed by shareholders and lenders.

Stern Stewart identified around 164 potential adjustments to GAAP and to internal accounting treatments, all of which can improve the measure of operating profits and

capital. Now the question comes, to what extent it can be adjusted. Let us have a look at the following EVA spectrum.

Figure 1: The EVA Spectrum



The "Basic EVA is the unadjusted EVA quoted from the GAAP operating profits and balance sheet. "Disclosed EVA is used by Stern Stewart in its published MVA/EVA ranking and computed after a dozen standard adjustments to publicly available accounting data. "True EVA , at the extreme right is the accurate EVA after considering all relevant adjustments to accounting data. However, our interest is at the "Tailored EVA . Each company must develop their tailored EVA definition, peculiar to its organizational structure, business mix, strategy and accounting policies, i.e., one that optimally balances the trade-off between the simplicity and precision.

Once the formula is set, it should be virtually immutable, serving as a sort of constitutional definition of performance. According to John Shiely, The CEO of Briggs and Stratton Corp, "Adopting EVA simply as a performance measurement metric, in the absence of some ideas as to how you are going to create value, is not going to get you anywhere (Kroll, 1997). The list of potential adjustments is too lengthy to detail here. Some adjustments are necessary to avoid mixing operating and financial decisions, others provide a long-term perspective, and some are needed to convert GAAP accrual items to a cash-flow basis while others convert cash flow items to additions to capital. The following examples include some of the major adjustments necessary to put NOPAT and capital on an economic basis:

- Research and development
- Strategic investments
- Accounting for acquisitions
- Expense recognition
- Depreciation
- Restructuring charges
- Taxes
- Balance sheet adjustments

Step 3: Identify the company's capital structure

Because of the deficiency of GAAP in describing a company's real financial position (Clinton and Chen, 1998), Stewart proposes up to 164 adjustments to regain the real picture of a firm's financial performance (Stewart, 1991; Blair, 1997). These adjustments are needed to eliminate financing distortions in a company's NOPAT and capital (Stewart, 1991). Regarding adjustments, some accounting items such as costs for research and product development, restructuring charges, and marketing outlays are

considered more as capital investments as opposed to expenses (Stewart, 1991). A list of such adjustments are given in **Appendix 1** where both bottom-up and top-down approaches are used to compute the NOPAT.

A company's capital structure comprises all of the money invested in the company either by the owner or by borrowing from outsiders formally. It is the proportions of debt instruments and preferred and common stock on a company's balance sheet (Van Horne, 2002). Stewart (1990) defined capital to be total assets subtracted with non-interest bearing liabilities in the beginning of the period. However, it can be computed by either of the following methods:
Direct Method: By adding all interest bearing debts (both short and long term) to owner's equity.
Indirect Method: By subtracting all non interest bearing liabilities from total assets.

Step 4: Determine the company's COC rate for the individual sources of capital in capital structure

Estimation of COC is a great challenge so far as EVA calculation for a company is concerned. It becomes more complex when small companies are considered whose sources of capital are unstructured and varied over the years. The cost of capital depends primarily on the use of the funds, not the source (Ross et al, 2003). It depends on so many factors like financial structures, business risks, current interest level, investors expectation, macro economic variables, volatility of incomes and so on. It is the minimum acceptable rate of return on new investment made by the firm from the viewpoint of creditors and investors in the firms' securities (Schall and Haley, 1980). Some financial management tools are available in this case to calculate the *COC*. A more common and simple method is Weighted Average Cost of Capital (WACC) (Copeland et al, 1996).

The overall *COC* is the weighted average of the costs of the various components of the capital structure. *WACC*, though a good tool to compute accurate cost of capital, is less useful for a small company. *WACC* includes both debt and equity part of financing. Each element in the capital structure has an explicit, or opportunity, cost associated with it (Block and Hirt, 2002). The cost of each component of the firm's capital – debt, preferred stock, or common stock equity – is the return that investors must forgo if they are to invest in the firm's securities (Kolb and DeMong, 1988). Thus, the difficulty arises in both of the cases. Cost of debt cannot be calculated because the debt instruments in this case are not traded in the open market. It is measured by the interest rate, or yields, paid to bondholders (Block and Hirt, 2002). Sometimes, these instruments have no developed market. Again, cost of equity is also difficult to calculate due to the non-applicability of the tools developed to this effect. For example, for large companies, the Capital Asset Pricing Model (*CAPM*) is a common method in estimating the cost of equity (Copeland et al, 1996). *CAPM* postulates that the cost of equity is equal to the return on risk-free security plus a company's systematic risk, called beta, multiplied by the market risk premium (Copeland et al, 1996). Risk premium is associated with the specific risks of a given investment (Block and Hirt, 2002).

In our financial environment, even the betas for large companies are not available. For small companies, regression analysis may be used in order to estimate their betas (Ross

et al, 1999). The next obstacle is to get a proper value of market risk premium. For large U.S. companies, the recommended market risk premium is 5 to 6 percent (Copeland et al, 1996; Stewart, 1991). For publicly traded small companies, the market risk premium is significantly higher with values around 14 percent (Ross et al, 1999). These rates are not absolute rather relative as these depend on time, location, macro economic variables and some other factors. In our environment, market risk is so volatile that the appropriate premium, demanded by the owners against their investment, for even the large companies cannot be accurately estimated. Even no company takes the responsibility to work in this area. For a small company, it cannot be thought of in current eco-financial setup.

Dividend discount model is another popular model in this case where market price of a share is equal to the present value of future streams of dividends (Khan and Jain, 1999). This model presupposes that the company under consideration is matured and normal growth one that we have assumed in our case. However, in this case also, the presence of an active market for securities is a must, otherwise, the COC_{Equity} cannot be determined which is the discount rate (k_e) in the following simplified version of Gordon's dividend capitalization model:

$$P = \frac{E(1-b)}{k_e - b_r}$$

Where, P = Price of shares
E = Earnings per share
b = Retention ratio
k_e = Capitalization rate/ COC_{Equity}
b_r = g = growth rate in i. e., rate of return on investment in an all-equity firm.

Considering all of the obstacles, we suggested a method derived from the *WACC* estimation and the *CAPM* model which have been adapted to the needs of small companies. We identify this rate as *COC* rate just to make a distinction between *WACC* that is used for large companies with the modified *WACC*. The *COC* that is developed here with the applicability option of small companies as considered here. The *COC* replaces the formal *WACC* in the following way:

$$COC = COC_{Debt} \times (Debt/(Debt + Equity))(1-t) + COC_{Equity} \times (Equity/(Debt + Equity)) \quad \ldots.(1)$$

Where *t* represents the corporate tax rate and incorporated with the weight of debts only as debt has the tax deductibility advantage.

Again, COC_{Debt} can be estimated as follows:

$$COC_{Debt} = Prime\ rate + Bank\ Charges \ldots\ldots\ldots\ldots \quad \ldots\ldots.. (2)$$

Where, prime rate is the core rate (explicit rate) charged on loan and bank charges are additional charges over the prime rate. Average bank charges in our study for small manufacturing companies vary from one percent to two percent.

On the other hand, the equation of COC_{Equity} comes from the equation of *CAPM* in a modified way. Under *CAPM*,

$$K_e = R_f + \beta(R_m - R_f) \ldots\ldots\ldots \quad \ldots\ldots(3)$$

Where, K_e = Cost of equity capital
R_f = Risk-free return

β = Systematic risk

R_m = Market return

If we rewrite the term of $\beta(R_m - R_f)$ by the risk premium, our equation for COC_{Equity} becomes:

$$COC_{Equity} = R_f + RP \ldots\ldots\ldots \quad \ldots\ldots(3a)$$

Where, R_f = Risk free rate

RP = Risk premium

R_f is the arbitrary rate of governmental treasury bill on which it is assumed that this rate does not vary with the actions and reactions of the market factors. In contrast, RP reflects the risk resulting from the investment in the equity. The riskier the investment, the higher would be the RP. If the RP is not higher, investors will not agree to invest their funds in risky business. We developed some risk premium ranges depending on some features of the sample companies.

Table 1: Suggested ranges for Risk Premium (*RP*)

RP Ranges	Features determining risk category
19% and more	**High Risk** with high fluctuation in income, sensitive to the business cycle, high technology dependency, high operating leverage, new innovative product with high investment in research and development.
15% - 18%	**Moderate Risk** with moderate fluctuation in income, unstructured market, active competitors, extensive product line.
11% - 14%	**Average Risk** with a little fluctuation in income and revenue, fashion sensitive and manual operation.
7% - 10%	**Below Average Risk** with insignificant fluctuation in income and revenue, no sensitivity to business policies.
6% and less	**Least Risk** with fewer competitors in the market.

[**Source**: This table is the outcome of personal observation of the authors from the responses collected in a five point Likert scale questionnaire and putting them in descriptive statistical model.]

Step 5: Calculate the company's NOPAT

NOPAT is derived from *NOP* simply by deducting calculated taxes from *NOP*, i.e., *NOPAT* = *NOP* × (1 – Tax rate). These calculated taxes do not correspond the taxes actually paid because e.g. interest on debt decreases real taxes. The tax shield of debt is however taken into account with the capital costs. *NOPAT* is a measure of a company's cash generation capability from recurring business activities, while disregarding its capital structure (Dierks and Patel, 1997).

Most of the needed adjustments, to convert the accounting profit to economic profit as identified in step 2, are appropriate for large companies. On the other hand, small companies have some peculiar adjustments that are not required in case of large companies. For example, some researchers observed that an owner-manager's salary in a small business represents a much larger fraction of revenues than that in a large company (Welsh and White, 1981). It may imply that in a small business owner-manager's salary is not only salary but it also includes a charge for the capital that they invested in the company. To remove this distortion, an adjustment is needed with the accounting profit to find out the economic profit. Thus, here *NOPAT* can be calculated as follows:

$$NOPAT = Net\ \text{Pr}ofit\ After\ Tax + Total\ Adjustments - Tax\ Savinhs\ on\ Adjustments \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ (4)$$

Step 6: Calculation of Economic Value Added

At last, the EVA can be calculated by subtracting capital charges (equ. 1) from *NOPAT* (equ. 4) as follows (Stewart, 1991; Reimann, 1988):

$$EVA = NOPAT - Capital\ Ch\text{arg}es \ldots\ldots \quad \ldots\ldots.(5)$$
$$= NOPAT - C \times COC$$

Where, *C* and *COC* include all types of capital proportionately.

Positive EVA indicates value creation while negative EVA indicates value destruction for the company's owners.

The EVA and its status in Bangladesh

In Bangladesh, most of the companies use traditional measures. An analysis of annual reports of 65 companies is done that reveals, not a single company reported EVAs in their financial statements (Al-Amin and Hossain, 2004). Even, they do not use it to evaluate internally. It seems to be that people are reluctant to accept new but strong tool. In our environment, people are very much cautious to abide by the legal requirements. Disclosure is strictly governed by the legal framework and people always want to avoid voluntary disclosure. In terms of efficiency, our market is in weak form. Therefore, large companies, whether public or private, do not feel that they should incorporate tools like EVA in their present setup. However, in a large company perspective, it is simple to calculate EVA, as the required information is very simple to find or compute. It is a matter of time and intention only for the calculation and disclosure of EVAs so far as large companies are concerned. Nevertheless, the necessary data for calculating EVA is not available for small companies. That is why; we focus on small manufacturing companies here where performance evaluation is of paramount importance.

Methodology

Our study consists mainly of two parts. First part is the theoretical aspect and the second one has an empirical insight. A theoretical framework of applying EVA has been outlined above from available literature in this respect. Then, we have conducted a field investigation with a limited scope. We interviewed about 60 personnel in eight firms to gather their ideas about the use and applicability of EVA. Our sample firms are design firms that are located at Dhaka city with not more than 100 employees currently employed there. Some of the firms have their outlets scattered over the country. Personnel interviewed held positions like President, Vice-President, or Treasurer. Since the study represents a small sample size, the conclusions are more anecdotal in nature as opposed to being based on statistical analysis.

Results of interviews

None of the firms interviewed use EVA currently or thinking to incorporate it soon. Some of the managers are acquainted with EVA measure; however, they stated that they have never heard of a small manufacturing company using this as a tool to

evaluate financial performance. To appraise the achievement of goal congruence in a current business setup, almost all of the firms use some common ready-made accounting measures like sales, growth in sales, gross profit, profit after tax, revenues, accounting rate of return etc. The users are not familiar with EVA and they aptly think that it is too complex to understand. To the best of their knowledge, there is no available literature or software that would enable them to implement an inexpensive and efficient EVA system. That is, EVA model for using in a small manufacturing firm is yet to be developed.

Empirical illustration

To propose EVA calculation for small manufacturing firms, as a realistic example we use data from one of the sample firms at Dhaka city. This firm is managed by two owner-managers and has more than 60 employees worked in a chain of outlets throughout the city. The company's line of business is fashion-ware with customized designs for the local user groups with a vision to extend the market over the boundary in near future. As per our commitment, we will refer to this company as "**Fashion Design** throughout the paper just to hide their explicit identity. The financial data are simplified for the readers just to turn their attention towards the process rather than on accounting details.

Step 1: Review the company's financial data

To assemble necessary financial information, we just collected their income statement, balance sheet and notes to the accounts. These are sufficient for all required information for our study. Table 2 shows the income statements for the years 2000 and 2001 and Table 3 shows the balance sheet for three consecutive years in a simplified way.

Table 2: Fashion Design's Income statement for the years 2000 and 2001 (in lac taka)

	Particulars	2000	2001
1.0	Sales Revenues (Less return, VAT etc.)	147.47	256.72
1.1	Cost of Goods Sold	93.29	130.16
1.2	**Gross Profit (1.0-1.1)**	**54.18**	**126.56**
1.3	General and Administration Expenses	21.56	49.23
1.4	Selling Expenses	2.95	7.4
1.5	Total Administration & Selling Exp. (1.3 + 1.4)	24.51	56.63
1.6	**Operating Profit (Loss) (1.2 –1.5)**	**29.67**	**69.93**
1.7	Other Income		
1.8	Other Expenses	0.5	0.8
1.9	Financial Expenses (Interest)		0.7
2	**Net Profit (Loss) before tax (1.6 + 1.7 – 1.8 – 1.9)**	29.17	68.43
2.1	Taxes (40%)	11.67	27.37
2.2	**Net Profit (Loss) after tax (2 – 2.1)**	**17.50**	**41.06**

Step 2: Identify the necessary adjustments requires to be considered

Now, after assembling all necessary financial information, the next step necessitates to identify all required adjustments to be considered. In case of Fashion Design, we do not find any documentation of cost related to research and development, extension of

current facilities, employee training, unusual write-offs or gains and thus adjustments are insignificant. One adjustment is needed in 2001's net profit for interest expense and tax shield. One important point to be noted here is that in the years 1999 and 2000, the company had no interest expense as the total financing was done by the equity. Another important adjustment needed is the amount of salaries (partial) drawn by the owner-managers as a contribution of their capital investment to the company. In a personal interview, the owner managers agreed that the amount so drawn might be roughly equivalent to Tk. 2 lacs in each of the years. These adjustments are needed to find out the true *NOPAT*. Because, *NOPAT* is a measure of a company's cash generation ability from recurring business activities (Dierks and Patel, 1997).

Step 3: Identify the company's capital structure

Capital structure includes all forms of financing whether generated internally or by borrowing externally. It can be estimated under each of the two methods as identified earlier. In case of direct method (financing approach), all interest-bearing debts (both short and long term) are added to owner's equity to find out the total amount of capital invested. On the other hand, in case of indirect method (operating approach), all non-interest bearing debts like accounts payable, sundry creditors, accrued expenses are subtracted from the total liabilities to calculate the total capital invested in the business. Tables 4 and 5 represent the amount of capital invested by Fashion Design under direct and indirect methods respectively.

Table 3: Fashion Design's Balance Sheet for the years 2000 and 2001 (in lac taka)

Assets	1999	2000	2001		Liabilities & Owner's Equity	1999	2000	2001
Current Assets:					**Current Liabilities**			
2.1 Cash in hand	4.9	6.7	11.26	3.5	Accounts payable/ Sundry Creditors	2	8	32
2.2 Cash at Bank				3.6	Bank Loan (under 1 year)			6.89
2.3 Accounts Receivable				3.7	Long term loan –installment due within 1 (one) year			2.08
2.4 Inventory/Stock	31.55	38.83	97.81	3.8	Other Current Liabilities			
2.5 Advance Deposit				**3.9**	**Total Current Liabilities (3.5 to 3.8)**	2	8	40.97
2.6 Prepaid Expenses	3.75	3.75	11.5		**Non-Current Liabilities:**			
2.7 Other Current Assets				4	Long term Loan			10.03
				4.1	Other non-current liabilities			
2.8 Total Current Assets (2.1 to 2.7)	**40.2**	**49.28**	**120.57**	**4.2**	**Total Non-Current Liabilities (4.0 + 4.1)**	0	0	10.03
Fixed Assets				**4.3**	**Total Liabilities (3.9 + 4.2)**	**2**	**8**	**51**
2.9 Land &Building (net of dep.)					**Equity/Net Worth:**			
3 Plant and Machinery (net of dep.)	2.88	4.54	6.25	4.4	Capital/Paid-up Capital (Less Drawing)	21	24	20
3.1 Furniture and Fixtures (net of dep.)	5.25	7.24	12.49	4.5	Retained Earnings	25.44	29.17	68.42
3.2 Other Fixed Assets				4.6	Reserves			
3.3 Total Fixed Assets (2.9 to 3.2)	**8.13**	**11.78**	**18.74**	4.7	Less: Intangible Assets (i.e. Goodwill, Trade Mark, patent etc.)	0.11	0.11	0.11
				4.8	**Tangible Net worth/equity (4.4 +4.5+4.6 – 4.7)**	**46.33**	**53.06**	**88.31**
3.4 Total Assets (2.8 + 3.3)	**48.33**	**61.06**	**139.31**	**4.9**	**Total Liabilities and equities (4.3 + 4.8)**	**48.33**	**61.06**	**139.31**

Table 4: An estimation of the capital employed by Fashion Design under direct method or financing approach (in lacs taka)

Components of capital	1999	2000
Current Liabilities	-	-
Non-current Liabilities		
Net Worth	46.33	53.06
Capital	**46.33**	**53.06**

Table 5: An estimation of the capital employed by Fashion Design under indirect method or operating approach (in lacs taka)

Components of capital	1999	2000
Total Liabilities	48.33	61.06
Accounts Payable/ Sundry Creditors	(2.00)	(8.00)
Capital	**46.33**	**53.06**

In calculating the capital, we assumed the book value of the liabilities truly represent the current market value. Furthermore, since the Fashion Design's equity and other debts are not traded in a financial market, it is assumed that the values on the balance sheet are good estimators of market values. Finally, no adjustment is made to convert the accounting capital to financial capital just to keep the illustration simple and precise.

Step 4: Determine the company's COC rate for the individual sources of capital in capital structure

The *COC* rate has two parts. The prime rate for the cost of debt is 15% for this typical company and on an average, they have to pay other charges of 1% of the amount borrowed. Thus, the pre-tax COC_{Debt} will be 16% for the year 2001 if we put the values in equation 2 as developed earlier.

$$COC_{Debt} = Prime\ rate + Bank\ Charges$$
$$= 15\% + 1\% = 16\%$$

In 2000, they have no debt and that is why no COC_{Debt}. For the *COC* calculation, we have taken weighted average yield of 91days government treasury bill rate (ranges between 6.25% - 7.25%) of 7% as a proxy for risk free rate and according to our analysis; the company lies in average risk area that requires 12% of risk premium. Having this information and equation 3, COC_{Equity} can be estimated as follows:

$$COC_{Equity} = R_f + RP$$
$$= 7\% + 12\% = 19\%$$

The 19% cost of equity rate will be same for both of the years if the company will remain in the same risky area over the years.

As we got both cost of debt and cost of equity, now we can calculate overall *COC* using capital structure as shown in Table 4 and equation 1, as follows:

$$COC = COC_{Debt} \times (Debt/(Debt + Equity))(1-t) + COC_{Equity} \times (Equity/(Debt + Equity))$$

In both of the years, the cost of equity will be 19% just equivalent to the cost of equity since the company's capital structure consists solely of equity funded by the internal parties in the form of capital and retained earnings.

Step 5: Calculate the company's NOPAT

As we have already identified the necessary adjustments of net operating profit in step 2, it becomes very simple here to compute adjusted *NOPAT*. In 2001, we have to adjust *NOPAT* by the capital charge in salary and interest expense with the tax shield. However, in 2000, we have to adjust only the capital charge embedded in salary and respective tax shield, as the company had no debt in their capital structure in the specified year. Using equation 4, the *NOPAT* for the years will be as follows:

2000	2001
$NOPAT = Net\,\text{Pr}\,ofitAfterTax +$	$NOPAT = Net\,\text{Pr}\,ofitAfterTax +$
$TotalAdjustments - TaxSavingsonAdjustments$	$TotalAdjustments - TaxSavingsonAdjustments$
$NOPAT = 17.50 + 2 - 2\times\ 0.4 = 18.70$	$NOPAT = 41.06 + 2.7 - 2.7 \times 0.4\ = 42.68$

Step 6: Calculation of EVA

Finally, the Fashion Design's EVA can be calculated by putting the values in equation 5 as follows:

In 2001,

$$EVA = NOPAT - CapitalCh\,\text{arg}\,es$$
$$= NOPAT - C \times COC$$
$$= 42.68 - 53.06\times\ .19$$
$$= 42.68 - 10.08$$
$$= 32.60$$

In 2000,

$$EVA = NOPAT - CapitalCh\,\text{arg}\,es$$
$$= NOPAT - C \times COC$$
$$= 18.70 - 46.33\times\ .19$$
$$= 18.70 - 8.80$$
$$= 9.90$$

Thus, in both of the years, Fashion Design creates positive value for its owners amounting to Tk. 990000 and Tk. 3260000 in years 2000 and 2001 respectively. It means that the wealth of the owners increased by the amount of EVA.

Implications of findings

After the calculation of EVA, we met the owner-manager of the company and explained the result to them. They showed their best interest with the EVA measure as compared with their current measure of earning after interest and taxes (EAIT). They were amazed with adding borrowed fund in their capital structure that helped them to get tax advantage by way of reducing tax liability. Thus, they could add more wealth in the year 2001 as compared with 2000 due to the presence of debt in 2001. Moreover, they found that EVA approach is consistent with the objectives of the business, which is, wealth creation for the owners that was not prima facie considered in case of traditional measures.

The Fashion Design owner-manager assured us that they would incorporate EVA measure very soon to evaluate performance and compare the changes with the current measure. They agreed that EVA measure would help them to utilize their financial

resources more economically. Their reactions satisfied us and encouraged us to conduct some vigorous study in the same field if demand arises to develop the proposed model for small manufacturing companies with the new business situation.

Conclusion

Creation of values for the owners is important in business, irrespective of the volume of investment or type of operation. Moreover, in case of EVA measurement, companies, whether large or small, have to earn more than capital charges if they want to add value positively. Thus, in an EVA controlled world, everybody works to maximize the gap between *NOPAT* and capital charges that will ultimately ensure both financial efficiency and operational efficiency. Financial efficiency means the construction of capital structure in such a way and from such sources that will ensure minimal capital charges. On the other side, operational efficiency will ensure more *NOPAT*.

However, it is to some extent difficult to implement EVA in small manufacturing companies, a tailored definition of EVA is required to be set on the specific type of operation and the needs of the business. EVA is the most widely used value-based performance measure (Myers, 1996) probably just because it happens to be an easier concept compared to the others. In implementing EVA, one of the most important things is to get the people in organizations to commit to EVA and thereby also to understand EVA (Klinkerman, 1997). For the first time, it may have some impurities in it. Nevertheless, in future courses of time, the EVA model can be made error free. Once the employees get motivated to maximize EVA, wealth creation becomes a regular phenomenon in a business. With the implementation of EVA, it paves the way to incorporate some modern and powerful cost management tool in future like EVA integrated with Activity Based Costing (ABC).

In this paper, we have tried to develop an EVA model for small manufacturing business setup with considering all of their hindrances and technicalities. We have confronted with the question, "Whether EVA can be used in small manufacturing companies as a tool to measure performance? Through this paper, we employed our best effort to give an answer to the question. Whatever may be the size and nature of operation, EVA is suited with some adjustments. In most cases, the additional effort in calculating EVA is outweighed by the value of the additional information showing improvement opportunities i.e. benefit is always greater than the cost of incorporating EVA as a new tool replacing the traditional tools.

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Appendix 1

Calculation of NOPAT from Financial Statement Data

A. Bottom –up approach

Begin:

Operating profit after depreciation and amortization
Add:
Implied interest expense on operating leases
Increase in LIFO reserve
Goodwill amortization
Increase in bad-debt reserve
Increase in net capitalized research and development
Equals:
Adjusted operating profit before taxes
Subtract:
Cash operating taxes
Equals:
NOPAT

B. Top-down approach

Begin:
Sales
Add:
Increase in LIFO reserve
Implied interest expense on operating leases
Other income
Subtract:
Cost of goods sold
Selling, general, and administrative expenses
Depreciation
Equals:
Adjusted operating profit before taxes
Subtract:
Cash operating taxes
Equals:
NOPAT

Note: Table based on information in Stewart (1991).