

**Success at cost management can have a phenomenal effect on the value of a company.**

# Cost Management and Value Creation

John C. Groth and Michael R. Kinney

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## Introduction

There is good news, and there is good news, and there is good ... Successful efforts at cost reduction have unique consequences for the firm in terms of the creation of value. For very important reasons, boosting profits by cost reduction has far greater positive impact on a firm's value than an equal increase in profits from pricing[1]. Professionals have long recognized and given diligent attention to the important area of cost management. This article ties the wisdom and importance of such efforts to the creation of value. In particular, its focus is on benefits of cost management in terms of[2]:

- the reduction of business risk;
- the favourable *asymmetric* effect on the creation of value;
- the increased tax benefits since it allows, in fact calls for, an adjustment in the financing of the firm with attendant tax benefits.

Our presentation offers some additional considerations to those that are raised with emerging cost control technologies such as activity-based costing (ABC) and cost driver analysis. Our focus is also consistent with the

topical theme of relating organizational activities to value additivity. Managers should take actions that add value. Here we will illuminate factors related to costs, crucial in efforts to follow the prescription for value generation.

## The Economic Statement of Income

We cast our discussion in terms of a statement of income. Since we will address issues related to risk and value, it is better to focus attention on a statement of income constructed on a cash basis. One traces the appropriateness of focusing on cash events to nature of economic events for the firm. The firm seeks to generate income for which there exists an economic opportunity cost; that is cash. In the process of generating income, the firm incurs cash obligations in the form of cash-operating and financing expenses. Shortly we will review key relationships related to this issue.

A simplified statement of income plus some additional information appears in Figure 1. Of course, the numbers on an accrual-based statement can differ from a cash basis for a number of reasons. Most differences are attributable to periodicity effects, i.e. differences in the timing of a cash event and the accrual recognition of the event. In some companies, there is a high time-correlation between cash and accrual recognition of events. In others, there can exist quite a divergence. In either case, we recognize that cost control must be applied to the economic event, rather than the accounting treatment of the event. Furthermore, cost control must be applied to future cash events ("relevant" costs) rather than historical cash events. There are additional reasons to focus on cash events:

- Cash is an economic focus in that there always exist opportunities to employ cash or, to pay it out as a dividend.
- One can describe risk in terms of the ability to meet cash obligations and, the chance that the remainder after meeting all obligations provides an economic return to the owners.

For a company, the difference between the cash statement of income in Figure 1, and an accrual statement will depend on collection periods, deferred taxes and other factors. However, in terms of survival, economic necessities such as payroll, payments to suppliers, interest payments, tax payments ... are crucially important. Furthermore, adequate cash flow allows one to pursue opportunities. Investment opportunities will not accept accrual dollars. Accrual income does not become an economic event or opportunity until it converts to cash flow[3]. Until then, we can write it down, but not spend or invest it. In this article, use of the terms revenues, costs ... will be in cash flow terms.

**Cost Management**

Cost management begins with an awareness of what events spawn costs. Only after identifying activities that generate costs can cost management efforts be successful. Management can only control by altering or changing the nature and extent of activities that create costs. The emerging philosophy of activity-based management offers an appropriate framework to identify causes (activities) and effects (costs).

Further, cost management is an evolutionary rather than a static process. Over time, costs change for a variety of reasons including inflation, technological innovations, supply and demand effects, and variance in method or application as well as change in process. In addition, innovations in information technology continue to lower the cost of acquiring knowledge about costs. As a consequence, there exist new opportunities to access information that supports increased cost management efforts.

Cost management generally takes one of different forms:

- Cost containment.
- Cost avoidance.
- Cost reduction.

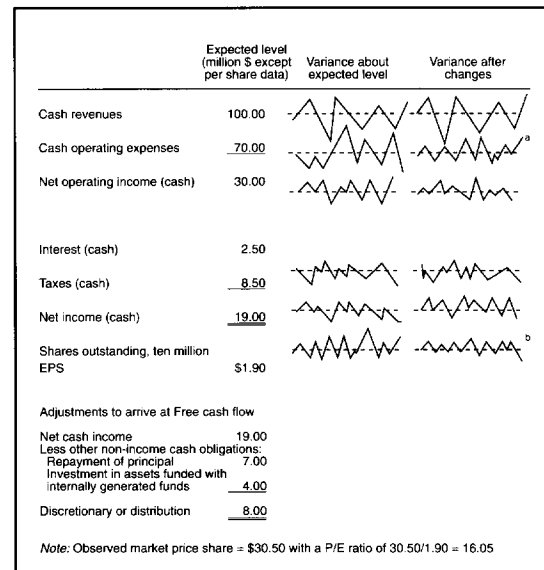
A cost containment approach has as its focus constraining or avoiding future increases in fixed or unit variable costs. Cost avoidance seeks to eliminate activities generating costs that are not justified on a cost/benefit basis. Cost reduction efforts seek to lower current fixed and variable costs associated with an essential activity. Ultimately, cost management efforts should be evaluated based on their impact on shareholder wealth.

**Risk and the Statement of Income**

Controlling and dealing with uncertainty is a major dimension of cost management. In Figure 1, we present the expected levels of revenue, costs, and income for a hypothetical firm. There exist uncertainties about these levels as depicted by the variance around the levels. Rather than depict variance with a “distribution”, we think it easy to visualize the discussion by depicting variance with jagged lines about the expected value. The more (less) jagged, the greater (less) the variance or uncertainty about the level of the expected cash flow.

An array of factors cause uncertainty in the expected levels of revenues, operating expenses, and, in turn, net operating income. Interest rates, actions of competitors, effectiveness of advertising, warranty offered, perceived quality of product, productivity of labour, purchase price of materials, materials usage ... *All factors that are external or internal to the firm that somehow might alter the level of revenues, operating expenses, and in turn, net operating income are business risk factors.* Some are

**Figure 1.** Levels of Cost, Revenue and Income



controllable (managing material use), some uncontrollable (interest rates in the marketplace). Interest rates do affect demand for product, the cost of invested working capital, and other operating variables. With some factors, the price is controllable or the quantity is controllable, but both cannot be controlled. For example, energy units per unit produced may be partially controllable, but the cost of a unit of energy is uncontrollable.

**Business, Financial and Total Risk**

*Business risk factors are related to what we do and how well we do things in terms of the assets in place, the management of the operation of those assets, and the interaction of the firm with the marketplace.* Altering the costs we incur in operations sometimes changes the level as well as the risk of the outcome. Often it also affects the amount of capital that is employed and the exposed risk. For example, a reduction in variable material cost per unit not only increases the margin; it also reduces the working capital invested in the operating cycle.

Choices made in financing the company along with the tax environment give rise to financial risk. *Financial risk is that additional uncertainty as one proceeds from net operating income to net income.*

We can better understand the effect of financing on firm value by exploring the following equation:

$$\text{Total firm value} = \text{Value of debt} + \text{Value of equity} \quad (1)$$



This equation makes us mindful of the fact that the total value of the firm is equal to the sum of the separate values of the outstanding debt and equity issues. In a typical debt or equity valuation model (such as that presented in Figure 2), the market value is equal to the present value of the future cash flows that will accrue to the debt and equity holders. In such a framework, the present value is a function of the timing, amount, and riskiness of future cash flow. Because of the effects of our tax environment, firm value is maximized when there is a particular and optimal balance in the levels of debt and equity, since the amount of debt and equity affect the expected cash flows and risks to shareholders. Recall that shareholders have claim to, and bear the risk associated with, the bottom line on the statement of income after allowing for other claims such as repayment of principal on debt.

This trade-off requires a consideration of financial risk. The amount and nature of debt as well as the extent of uncertainty in the tax environment help determine the optimal level of financial risk. Such risk may be higher for a firm that is unable to determine how much it will borrow for the period, or the rate it pays on some known borrowing may fluctuate because the debt has a variable rate of interest. In addition, the actual tax liability for the period is uncertain. Furthermore, the tax advantages associated with the deductibility of interest on debt in the current period are uncertain since pre-tax income may be insufficient to allow full deductibility in the current period[4]. Such uncertainty is even greater if there is no possibility to carry back operating losses to prior tax years, and any operating loss must be applied as a carry forward. Such a circumstance quickly erodes the present value of the tax-saving benefit of debt relative to the present value of default costs.

Business and financial risk combine to yield the total risk associated with the net income. *The optimal amount of financial risk for a firm varies as the business risk of the firm changes.* In general, an increase in business risk lowers the ideal amount of financial risk. Alternatively, a reduction in business risk argues for an increased use of financial risk. This argument hinges on the recognition that in our tax environment the use of debt results in tax advantages to shareholders. So long as the expected value of the advantages more than compensate shareholders for the added risk of debt, shareholders are happy[5].

### “Unnecessary” Risk and Value

If we can reduce the uncertainty of the outcome and not change the expected level of the outcome, we term the reduction “unnecessary risk”. We will wait to share examples of this until after discussing how squeezing out unnecessary risk often has other favourable outcomes.

In Figure 1 we demonstrate the the positive effects from a reduction in the risk of NOI. Note the reduction in risk is due to a reduction in the variance of operating expenses (marked <sup>a</sup>) which, in turn, reduces the risk of NOI[6]. Even though the variance in interest and taxes remains the same, the lower variance in NOI maps through to lower variance in NET income (<sup>b</sup>). Since the expected level of NOI is the same but the variance of both NOI and NET income is less, the market assigns a greater value. This occurs because a reduction in risk reduces the required rate of return and thus increases value. An increase in risk, attendant with the failure to manage costs effectively, increases the rate of return and decreases value. Importantly, the impact on value is non-linear.

To illustrate, an example using a common valuation model appears in Figure 2. The numbers in Figure 2 are for illustrative purposes and are not tied to any in Figure 1. Note that an equal increase or decrease in the required rate of return has an unequal effect on value. Thus a reduction in the risk of NOI that results from effective cost management maps through to a non-linear increase in value. Let us call this favourable change in value VRisk (in Figure 2, this value is \$4.38) since it is due to a reduction in risk. Later we will see that reduction in this unnecessary risk adds additional value.

### Cost Management, Joint Effects

*Success in cost management can have multiplicative effects.* For example, the same actions that squeeze out unnecessary risk often yield other benefits. Several sample scenarios appear in Figure 3. Let us consider another example here – improvements that result in a reduction in material usage or an increase in productivity

**Figure 2.** Changes in the Required Rate of Return and Effects on Value

A common valuation model capitalizes future cash flows to determine today's value					
Today's value = Sum of future cash flows, each discounted at the required rate of return					
The required rate of return, ROR, is a function of several factors including perceptions about the risk associated with the stream of expected benefits. Increasing and decreasing the required rate of return from the BASE rate of 20% by an equal amount (+4% and -4%) has an unequal effect on value					
		Periods and expected cash flows			
Today's value	@ROR = to	1	2	3	Total
\$57.88	24%	+\$20	+\$40	+\$30	\$90
\$ change = -3.93					
\$61.81	20%	+\$20	+\$40	+\$30	\$90
\$ change = +4.38					
\$66.19	16%	+\$20	+\$40	+\$30	\$90

**Figure 3. Joint Effects of Cost Management**

- Illustrations of actions that might reduce unnecessary risk and also alter the level of expected benefits include:
- Improving quality and reducing rejects in the production process: reduces variance in manufacturing costs; might also reduce variance as well as level in warranty claims and returns; to the extent the market differentiates on quality, might increase units sold or revenues per unit
  - More effective purchasing: might reduce variance in material price per unit as well as cost per unit
  - Reduction of energy content per unit: even if the variance of energy price does not change, this will reduce the variance of product costs if energy now is a smaller component of total variable costs
  - A reduction in variance of "fixed costs". Some "fixed costs" are subject to variance. Even if the variance of fixed costs remains the same, if their level is lower, the "weighing effect" of their variance on the variance of total costs and, in turn, NOI will be less
  - A reduction in the number of suppliers and a focus on long-term contractual relations with suppliers. In reducing the number of suppliers, larger price discounts can be obtained; longer-term supply contracts can be feasibly negotiated (reducing short-term price variances); and fewer resources will be consumed in monitoring the quality of inputs, establishing responsibility for defects, and accounting for supplier transactions
  - Adoption of technology to reduce inventory. In adopting techniques such as "just-in-time" inventory management, the costs of carrying inventory are reduced and the risks of obsolete inventory are virtually eliminated. Also, the inefficiencies now hidden below the layers of inventory will be exposed and can be addressed
  - Improvement in product design. Cost management will greatly benefit from improvements in product design that result in fewer component parts, standardized parts, and reliance on existing proven suppliers
  - Adoption of an activity-based management philosophy. Even if no formal system is employed, a managerial commitment to be attentive to the relationships between costs and activities will result in the identification and a reduction in the level of those activities (and their associated costs) that do not add value to the product

of labour. One should measure increased productivity of labour in terms of throughput. If productivity of labour increases, then the variance in cost per good unit should decline. The increased productivity maps through to lower variable costs per unit accompanied by a lower variance in those costs. Now, consider Figure 4 and contrast it with Figure 1. Here, the level of NOI and NET are higher because of the reduction in costs. As indicated, the dollar amounts of NOI and NET are greater. We have assumed the same reduction in the variance of NOI and NET as in Figure 1. Similarly, a reduction in the variance

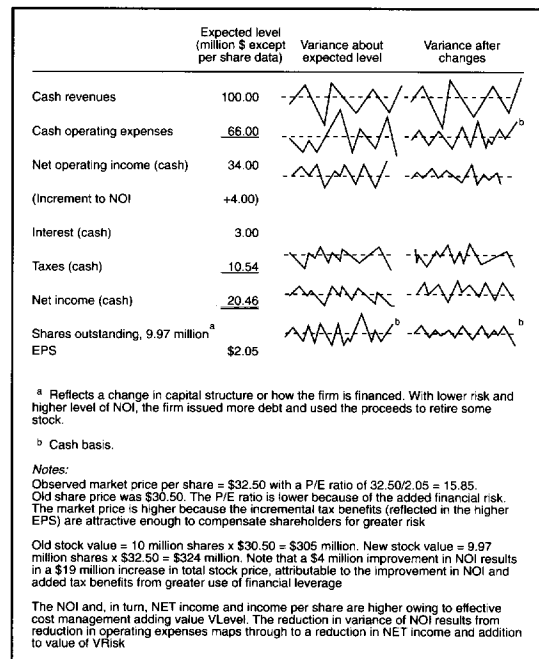
of NOI can be achieved by lowering the degree of operating leverage, i.e., as the level of fixed costs declines, the cost/unit becomes more and more stable across changes in volume.

Figure 5 illustrates that a change in level of benefits has a symmetric influence on today's value. Thus changes in benefit levels have a linear impact on value; the amount is \$6.21 in Figure 5. Changes in risk and required rate of return have a non-linear impact on value. The joint results are higher benefits with lower risk, resulting in increments to value of VLevel (owing to the increment in NOI) and VRisk (reduction in risk of the NOI as illustrated in Figure 2). Interestingly, although management efforts yielded only an increment to NOI, the reduction in risk "spreads over" the entire NOI. Careful management of events that give rise to costs usually results in lower costs and variance of those costs.

**Debt Level Effects**

Because interest on debt is tax deductible, shareholders reward the firm for using the right amount and nature of debt. Too much debt causes share price declines because the perceived tax benefits are not attractive enough to compensate for the higher levels of financial risk borne by the shareholder. To recognize the implications and

**Figure 4. Statement of Income**



benefits of cost management in terms of the financing of the firm, let us assume the following: shareholders think the amount of debt used and reflected in Figure 1 is ideal given their expectations about NOI. Thus the company is using just the right amount of debt.

In Figure 4, the level of expected NOI has increased and the risk associated with it has decreased. NOI must service debt requirements. The high level and lower risk of the cash flow stream to support debt allows an increment to debt and incremental tax advantages that accrue to shareholders. *Accordingly, the alteration in NOI prescribes a change in the optimal manner of financing the firm. The benefits of cost management reach beyond the operating side of the firm.* Let us call the increment to value that results from a new optimal method of firm financing VFIN. The results are illustrated in Figure 4. In particular, note that share price is greater even though the price earnings ratio is lower. Notes to the exhibit provide details.

### Other Increments to Value

Although the focus is on costs, we should recognize that success at cost management might generate other increments. First, a reduction in the working capital invested in the operating cycle *per dollar of generated contribution margin* should occur. For example, a reduction in the level and variance of variable costs results in less capital invested *per dollar of sales and contribution margin* in raw materials, work-in-process, finished goods, accounts receivable, and possibly even cash. Shareholders favour higher returns per dollar of capital invested; their approval is recorded in an addition to share value.

Second, favourable cost management can alter the revenues for a variety of reasons. To illustrate: value-adding production as well as organizational activities

give rise to costs; greater control of activities should result in better quality of the process and the product, lower costs in terms of cost per good unit produced, and lower variance in costs. To the extent current and potential customers perceive and value improvements in quality, the demand and/or price for the product may increase with aggregate added contribution margin and increased stock value. Since there can be a trade-off between volume and contribution margin per unit, one normally focuses on the aggregate (contribution margin derived from the sale of all units) contribution margin relative to the opportunity costs of assets employed.

In addition, without going into detail, we share still another benefit. Providers of capital are sensitive to a host of issues. The relationship between expected returns and risk and other alternatives in the world determine the cost of capital to a firm. Thus the improvement of the risk-return relationship from cost management efforts translates into a lower cost of capital for the company. Last, on the real global scale one can attest to the importance of efficiently managing a company: society benefits in terms of better value per unit of scarce resource. A higher standard of living results. Thus effective cost management not only passes muster with shareholders, it also meets the test of yielding value to society. That is the ultimate "bottom line".

### Summary

The impact of cost management extends well beyond the "bottom line". In Figure 6 we summarize the increments to value. The market will recognize improved cost relationships in share price. Reductions in risk within a firm that result from cost management have favourable asymmetric effects on value. The results of an improved level of benefits have a linear effect on share price [7]. In addition to the level and uncertainty of operating cash flows, effective cost management often results in a

**Figure 5.** Effects of Changes in Level of Benefits

Here the rate of return is constant at 20%. The cash flows are increased and decreased by an equal percentage, -10% and +10%. Notice that the dollar change in today's value is symmetric

	@ROR = to	Periods and expected cash flows			Total
Today's value	20%	1	2	3	
\$55.60		+\$18	+\$36	+\$27	\$81
\$ change = -6.21					
\$61.81 BASE	20%	+\$20	+\$40	+\$30	\$90
\$ Change = +6.21					
\$68.00	20%	+\$22	+\$44	+\$33	\$99

**Figure 6.** Summary of Increments to Value

Potential increments to value that result from effective cost management	
VRisk	= Reduction in perceived risk of NOI, expected level of NOI held constant
VLevel	= Increase in expected level of NOI
VFin	= Greater "good" debt capacity and attendant benefits
VOther	= Good "by-products" of cost management. Example: actual increase in product quality resulting in lower warranty claims and product returns

reduction in invested capital per unit of generated return. In addition, cost improvements on the operating side of the firm have implications for and offer potential benefits on the financing side.

Last, we assert that effective cost management results in the realization of a noble goal: it yields benefits that extend beyond the statement of income and share price. A well managed company passes the test in the social market for goods and services. Efficiently using scarce resources to fulfil needs is a very important part of the prescription for good business. Cost management is very much part of filling it.

#### Notes

1. Shortly we will see that one can derive benefits in terms of increased value even if one does not reduce costs.
2. Another article currently in progress (“Cost Management and ‘Social’ Responsibility”) offers persuasive arguments that cost reduction yields numerous benefits external to the firm including effects on the efficiency of markets for goods, services, and capital and social benefits.
3. In fact, one value of accrual-based accounting data lies in their ability sometimes to provide assistance in predicting future cash flows.
4. Thus we recognize that debt is risky in two ways. First, debt is risky in the sense that cash operating income may be insufficient to cover required payments to the debt holders, and thereby subject the firm to the costs of default. Second, the income stream may not be large enough to utilize the entire interest tax shield.
5. We do not focus on this issue. A review of capital structure theory appears in a number of books including, *Financial Management, Theory and Practice*, by E.F. Brigham and L. C. Gapenski, The Dryden Press.
6. We recognize that correlation among all variables that aggregate to any summary numbers such as NOI affects the variance of the summary number. Injecting details on this is a needless complication.
7. Certain circumstances can exist that would cause changes in level to have a non-linear effect on value. We choose to ignore these special circumstances in this article.

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John C. Groth is Professor of Finance and Michael R. Kinney is Assistant Professor of Accounting, both at the College of Business Administration and Graduate School of Business, Texas A & M University, College Station, Texas, USA.

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#### Application Questions

- (1) How much waste exists in your organization? What kind of effort would be needed to reduce it by 10 per cent? By 50 per cent?
- (2) Should cost reduction disciplines such as those outlined by the authors be embraced by quality managers? Should cost control be a part of quality standards and environmental management standards?