

# Measuring Logistics Performance Using the Strategic Profit Model

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One useful way to determine how a proposed system change will influence profit performance and return on assets is by using the Strategic Profit Model (SPM) [1]. The SPM demonstrates that Return on Net Worth (RONW) is a function of three factors management can control: net profit, asset turnover and financial leverage. We derive and explain the SPM and then apply the model to six different firms in the footwear industry. We offer the SPM as a normative tool and use its predictive ability to offer insights to the logistics managers for each firm. We illustrate how the SPM can help maintain operational superiority or initiate a turnaround depending on whether the company is a financially strong or a struggling firm. Results expose certain common elements differentiating firms outperforming the marketplace from those less fortunate.

***When top management mandates improved financial performance, the logistics function will typically react by trying to improve two items: cash flow and return on assets.***

When top management mandates improved financial performance, the logistics function will typically react by trying to improve two items: cash flow and return on assets [2]. For example, management may attempt to improve cash flow by reducing accounts receivable and/or attempt to improve return on assets by reducing inventory levels. However, both of these attempts to enhance performance may prove disastrous if logistics management lacks an understanding of the potential consequences.

Oftentimes, the first alternative pursued is to reduce accounts receivable by tightening the firm's credit policy. Specifically, management must choose one or more of the following: 1) shorten the credit period; 2) tighten the credit standards; 3) strengthen the collection policy; or, 4) increase the discounts for early payment. Any one of these actions will affect both wholesalers and retailers and most likely will lead to lost sales in two ways [3]. First, these changes in effect alter the

manufacturer's price, changing the marketing mix and the competitive position of the product. This can lead to a decrease in sales. Second, a change to a firm's credit policy impacts the firm's customers and has the potential to alter the credit policies of each supply chain participant. For example, if the wholesale or retail customers are unable to improve accounts receivable collection from their customers, they are forced to more tightly manage their cash flow by placing smaller, more frequent orders. This leads to logistics problems (i.e., greater LTL shipments) and stock-outs, which further reduces sales volume and causes lost sales.

The second alternative is to reduce inventory levels. Reducing inventory levels without an accompanying core business change can result in increased logistics costs that can offset the benefit of inventory improvements. For example, lower inventory levels require more transactions increasing transportation costs. Lower inventory levels

also require smaller batch runs, which lead to higher production set-up costs.

Policy changes can be dangerous when management does not have a sophisticated understanding of the integrated nature of logistics and supply chain operations. There is a need to predict how managerial changes will influence the return a firm will earn on its assets and how it impacts net worth. One method of prediction is the strategic profit model.

## The Strategic Profit Model

The goal of every firm is to succeed. One component of success is to increase shareholder value. A specific way to measure that increase (or decrease) is to calculate the Return On Net Worth (RONW). Managers at DuPont Corporation created the DuPont Model to help them understand how changes in operations impact shareholder value [4]. Subsequent research formalized the DuPont Model and introduced the Strategic Profit Model (SPM) [5]. The SPM shows how RONW is a function of three factors that can be controlled by management: 1) net profit; 2) asset turnover; and, 3) financial leverage.

The SPM uses net profit (sales- expenses) to measure how efficiently a firm manufactures and sells its products. Asset turnover (sales/total assets) is used to measure how efficiently a firm employs its assets. Financial leverage (net worth/total assets) is used to measure how effectively management uses outside financing to increase the firm's RONW.

The strategic profit model employs a ratio analysis methodology to determine the return on assets (ROA) and RONW. The model employs two main equations:

1.  $ROA = \text{Profit Margin} \times \text{Asset Turnover}$
2.  $RONW = ROA \times \text{Equity Multiplier} = \text{Profit Margin} \times \text{Asset Turnover} \times \text{Equity Multiplier}$

Equation one relates the profitability of the firm to the value of the assets employed. Evaluation of individual firm performance is done by comparing the firm's ROA to the ROA figures of other firms operating in the industry. Equation two is used to determine return on net worth. RONW measures how well a firm uses shareholder investment. Each of the three factors (see RONW equation above) of RONW can be further broken down

into component values available on the income statement and balance sheet of any publicly traded firm. The SPM appears in Figure 1.

The gray boxes in Figure 1 represent numerical input from the firm's financial statements. The top half of the model contains input from the income statement, while the bottom half contains input from the balance sheet. Since these numbers are easily found in public financial data, the strategic profit model can be used to compare the performance of the firm against its peers.

In evaluating the model, it becomes apparent that to improve the RONW one, or a combination of, the following actions can be taken: a) increase sales; b) decrease cost of goods sold (COGS); c) decrease variable expenses; d) decrease fixed expenses; e) decrease income taxes; f) decrease inventory; g) decrease accounts receivable; h) decrease cash on hand; i) decrease other current assets; j) decrease fixed assets; and, k) increase financial leverage.

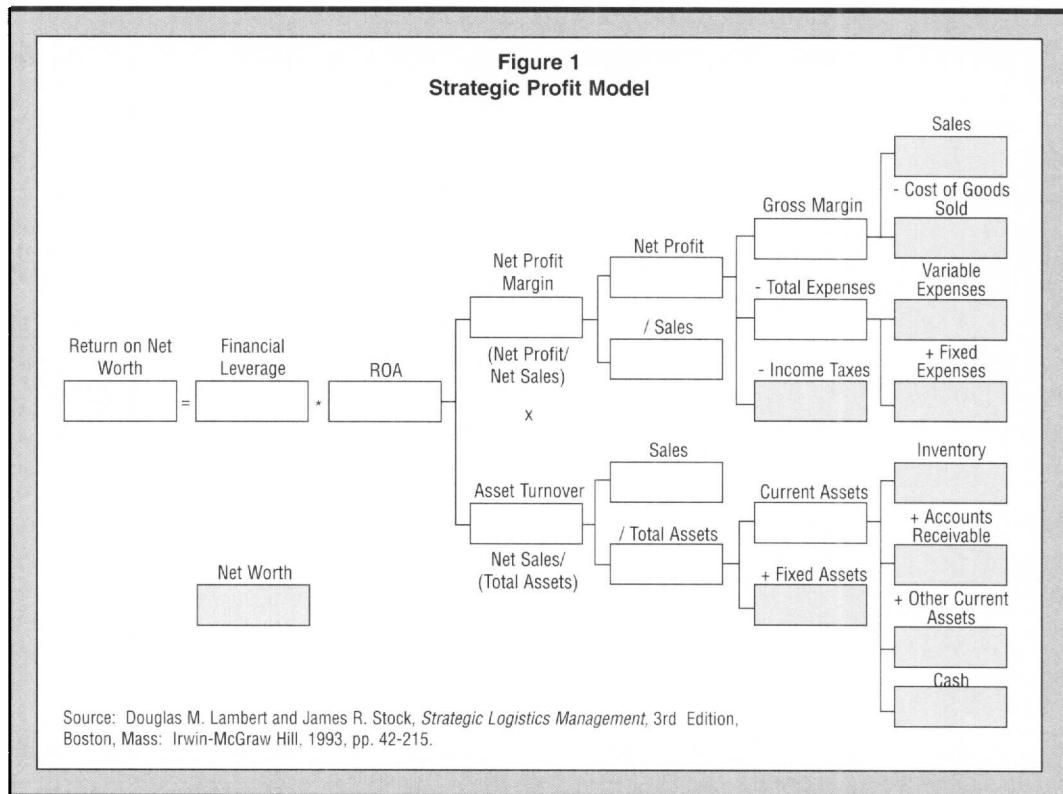
Of the 11 items (a through k), five can be influenced significantly by logistics decisions: a) increase sales, b) reduce COGS, c) reduce variable expenses, f) reduce inventories, g) reduce accounts receivable. These are the focus of the paper. These five items can be grouped into three categories: sales (revenue and volume), expenses (COGS and variable expenses) and assets (inventories and accounts receivables).

We apply the strategic profit model to six different firms in the athletic footwear industry. The results are derived from analyzing how changes to these five items affect the RONW for each firm. The footwear industry was selected because of the significant logistics issues facing the industry. The industry is evolving and change could be accelerated based on the fate of China's quest for permanent normal trade relations with the US. Clearly China's membership in the 134-nation World Trade Organization will have a considerable impact on the footwear business [6].

## Application of the Strategic Profit Model

The financial details of each firm can be entered into the SPM to see how decisions

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will affect ROA and RONW. By entering the model into a spreadsheet, what-if analysis can be done quickly and effectively. The results can be used to help management shape a firm's strategic direction and highlight the possibilities for improvement.

We reviewed financial data from six firms in the athletic footwear industry. The SPM was applied to each firm's financial information to help highlight strengths and weaknesses. Once strengths and weaknesses under the control of logistics management are identified, suggestions on how management can address each issue are offered.

Financial information for the six manufacturers of athletic footwear was found on the CNBC website ([www.cnbc.com](http://www.cnbc.com)). The latest year for which full fiscal year data was available at the time of this paper was 1998. The manufacturers under consideration include: a) Nike, Inc.; b) Reebok International Ltd.; c) Adidas-Salomon AG; d) Converse Inc.; e) Fila Holding S.p.A.; and, f) K-Swiss Inc. For comparison purposes, financial statements are presented on the CNBC website in a common format. Nevertheless, several assumptions had to be made. First, the income statements contained two expense entries, one titled SG&A Expense and the

other titled Non-operating Expense. SG&A Expense, or selling, general & administrative expense, was assumed to cover all variable expenses. This assumption is supported by the fact that SG&A expenses are consumed as part of a firm's operating activities, and generally rise and fall with the level of sales. Likewise, non-operating expense is assumed to cover all fixed expenses. This assumption is supported by the fact that non-operating expenses include items such as interest expense, which is unrelated to the activity level of the firm and essentially remains constant. Although not technically correct, the basis is reasonable. All expenses are totaled when calculating net profit, so the impact on the final analysis is minimal.

Second, although the model is set up to allow for changes to each individual variable, we have situations where the variables are dependent of each other. Specifically, changes in sales will cause an increase in cost of goods sold, variable expense, accounts receivable, and inventory. Therefore, the model has been slightly modified. After the financial data were entered into the spreadsheet model, we calculated the cost of goods sold (COGS), accounts receivable (AR), and inventory as a percent of sales. We used

**The SPM was applied to each firm's financial information to help highlight strengths and weaknesses.**

this ratio to keep the dependent variables (COGS, variable expenses, AR, inventory) as a constant percentage of sales as the independent variable (sales) was modified to increase ROA. In other words, the percentage change in sales required to meet the ROA goal was also applied to COGS, variable expense, AR, and inventory. The dynamic aspect of the spreadsheet model kept this a simple process, and exploring different solutions was done quickly and easily.

Third, when exploring possible business scenarios, occasionally the dependent variable as a percentage of sales was not kept constant. This sometimes occurs when sales grow at a slightly faster pace than the dependent variables (COGS, variable expenses, AR, inventory). This is a fair assumption since improvements can be expected due to economies of scale and better efficiencies in the supply chain. In these cases, changes in other variables affected by an adjustment in the sales variable were made. For example, we might have increased sales 10% and only increased COGS by 9%. It is important to note that the user of the model must understand the interaction between variables when changing multiple items, percentages, ratio relationships, or proposing solutions requiring changes to more than one variable.

Fourth, we assumed each of the firms investigated is comparable in terms of their competitive markets. For example, Nike does not own its' manufacturing facilities, rather they design the shoes and outsource the manufacturing activity. Also, Nike not only markets shoes, but a wide variety of active wear including shirts, running pants and jackets, sweatshirts, shorts, socks, and sunglasses. Likewise, adidas owns French ski manufacturer Salomon. For purposes of this exercise, and in the spirit of comparison across the athletic shoe industry, we assume that these firms only compete in the same markets, making comparisons more valid and meaningful.

What follows is an analysis of each of the six firms examined. The goal of our analyses is to find ways of growing ROA by 15%. This analysis is performed one firm at a time. First, the firm is compared to the peer group average. Next, strategies are proposed that investigate the required changes in sales,

expenses, and assets to achieve the desired goal. These strategies are considered in isolation, one variable at a time. Third, we present our recommendation for the firm. The recommendation may involve changing one or more variables to achieve the desired result. Finally, we examined the 1998 annual reports of each firm to evaluate each proposed action to improve their financial performance, and compared their strategy to what our model suggested. Tables 1 and 2 provide detailed comparison data for all six firms analyzed. Specific SPM analyses for each firm can be reviewed in Appendix A.

### Nike

Nike is the leader in our sample of shoe manufacturers. Nike has the highest sales and ROA. Their ROA is high because of a very good net profit margin and a slightly better than average asset turnover ratio. As compared to its peers, Nike management is very proficient at controlling costs. Their COGS and variable expenses are both better than the industry average. Nike managers are also very adept at managing assets. Its inventory level as a percent of sales is significantly below the industry average and its AR as a percentage of sales are slightly above average.

**Strategies to Improve ROA for Nike.** The three basic strategies that Nike logistics managers can use to improve ROA are to increase sales, decrease expenses and/or reduce assets. Assuming they desire to increase ROA by 15% we evaluate these various changes independently with the strategic profit model. To achieve a 15% increase in ROA, Nike management would have to increase sales by 23.2%. To achieve this level of sales, the firm would have a corresponding increase in COGS, variable expenses, inventory and AR. Net profit for the firm would remain roughly the same but the asset turnover increases, helping to improve ROA.

Reducing expenses can be achieved by lowering COGS and/or by lowering variable expenses. If all else is held constant, COGS would have to decrease by approximately 2% or \$117 million to achieve the 15% increase in ROA. Likewise, if we just decreased variable expenses by 4.5% or \$117 million we would achieve the same result. A more

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**Table 1**  
**Ratio Comparison Between Target Firms**

Company	Sales	Profit Margin	Asset Turnover	ROA	Financial Leverage	RONW
Nike	9553.1	8.20%	2.04	16.73%	1.44	24.03%
Adidas	5994.3	4.38%	1.59	6.98%	6.39	44.60%
Fila	1021.9	-10.29%	1.50	-15.46%	3.70	-57.18%
Reebok	3224.6	3.59%	2.10	7.55%	2.93	22.10%
Converse	308.4	-13.07%	1.90	-24.85%	NA*	NA*
K-Swiss	161.5	7.18%	1.47	10.55%	1.32	13.93%

\* Converse has a negative net worth which makes these calculations impossible

**Table 2**  
**Target Firm Comparison W/Peer Group - Items as a % of Sales**

		COGS	Variable Expense	Fixed Expense	Inventory	Accounts Receivable	Other Current Assets	Cash
<b>Peer Average</b>		<b>61.02%</b>	<b>30.57%</b>	<b>1.10%</b>	<b>16.75%</b>	<b>16.94%</b>	<b>3.94%</b>	<b>2.47%</b>
Nike	Actual vs. Peer	61.05% 0.03%	27.47% -3.10%	0.63% -0.47%	14.62% -2.13%	17.53% 0.59%	3.70% -0.25%	1.14% -1.34%
Adidas	Actual vs. Peer	59.40% -1.62%	32.39% 1.82%	1.03% -0.07%	19.08% 2.33%	15.69% -1.25%	4.40% 0.45%	1.01% -1.46%
Fila	Actual vs. Peer	64.07% 3.05%	43.25% 12.68%	2.25% 1.15%	21.01% 4.26%	21.13% 4.19%	3.97% 0.03%	10.83% 8.36%
Reebok	Actual vs. Peer	61.80% 0.78%	32.35% 1.78%	1.88% 0.78%	16.60% -0.16%	16.06% -0.88%	3.99% 0.05%	5.59% 3.11%
Converse	Actual vs. Peer	76.17% 15.15%	30.06% -0.51%	5.67% 4.57%	23.12% 6.36%	18.74% 1.80%	2.92% -1.03%	1.07% -1.40%
K-Swiss	Actual vs. Peer	55.73% -5.29%	31.70% 1.13%	0.00% -1.10%	20.74% 3.99%	16.41% -0.53%	2.85% -1.10%	23.16% 20.69%

\* Converse RNOW is from Negative ROA and negative financial leverage.

realistic scenario is to reduce both expenses simultaneously. Achieving a total reduction of \$117 million between the two expense categories will result in the desired ROA.

The final way for Nike managers to increase ROA is by reducing total assets. The easiest assets for logistics managers to change are inventory and accounts receivable. Again, we hold all else constant while we change both independently. To achieve the desired level of ROA, the firm would have to reduce inventory by 53.6% or \$610.6 million. To achieve the same results, accounts receivable would have to be reduced by

36.5% (\$610.6 million). Both these changes are substantial and could result in lost sales from stock-outs or a tighter credit policy.

**Recommendation for Nike.** It appears the firm's efforts may be best spent on reducing expenses and increasing sales to achieve the desired increase in ROA. Nike's inventory levels are well below the norm suggesting they have good control over their inventory levels. The credit policy could be tightened slightly to lower accounts receivable, but the firm's leverage to increase ROA lies in their sales and expense control. A combination of

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increased sales and decreased expenses could result in the desired 15% increase in ROA. For example, the model shows that a modest 10% increase in sales coupled with a 1% decrease in COGS and a 0.5% decrease in variable expenses will result in a 15% increase in ROA.

**Nike's Future Plan.** Based on the 1998 annual report, it is evident Nike's management is undertaking some cost cutting measures. Variable expenses are 27.47% of sales and Nike management has expressed a desire to get variable expenses down to 25% of sales. In this case, the results of the strategic profit model support what Nike management planned for 1999. The only difference is that we assume variable expenses remain a constant percentage of sales. Nike management would like to alter the cost structure of the firm by reducing variable expense as a percentage of sales. The SPM can be used to predict the results of this as well. The model shows that if Nike management can reduce variable expenses to 25% of sales, ROA will increase to ROA to 21.75%. This translates directly into an increase in net worth.

### **Adidas**

Adidas has the highest RONW in the industry, but financial leverage is very high. Adidas' ROA is merely 6.98% even though it has a good profit margin (4.83%). Asset turnover is 1.59. Adidas' accounts receivable as a percentage of sales are considerably below the industry average, suggesting the firm has an efficient credit policy. Adidas has a very favorable COGS compared to its peers, but this is mostly offset by an unfavorable position in variable expenses.

**Strategies to Improve ROA for Adidas.** By using the SPM to assess the same three basic strategies applied to Nike, we attempt to increase the ROA of adidas by 15%. Adidas management could increase sales by 12% to achieve the desired result. Alternatively, adidas management could attempt to control costs by lowering COGS by 1.1% or \$39.2 million to achieve the desired increase in ROA. However, their COGS is already below the industry average, indicating further reduction may be difficult to achieve.

Another approach is to lower variable expenses by the same dollar amount, which is a 2.1% reduction in variable expenses. Again a combination of reducing COGS and variable expenses simultaneously to achieve the desired cost reduction of \$39.2 million is a realistic possibility. The final approach is to reduce assets in order to achieve the desired ROA. Adidas' inventory as a percentage of sales is considerably higher than the peer group. Even so, adidas management would have to lower inventory by 43% (\$280.2 million) to achieve the desired ROA. Likewise, a similar dollar value reduction in AR would be a reduction of 52%. Achieving such a reduction in assets seems unlikely without major infrastructure changes.

**Recommendation for Adidas.** Adidas management should concentrate on those areas that are under-performing relative to the peer group. Namely, reducing variable expenses and inventory levels. Combining these cost reductions with a modest increase in sales will result in the targeted ROA. The model predicts that using a strategy targeting a combination of several factors represents the best solution. In this case, a modest sales increase of 5% coupled with a 0.6% reduction in variable expenses and a 2% reduction in inventory will result in the 15% increase in ROA. When these changes are combined, they complement each other to achieve the desired results with less drastic changes. Even after the reduction, variable expenses and inventory are still higher than the peer group average. Adidas management could see further enhancements in ROA by continuing to concentrate on these areas.

**Adidas's Future Plans.** Adidas recently acquired Salmon skis, which has elevated their fixed assets. This has depressed the asset turnover ratio. We would expect this ratio to improve as operations are consolidated and redundant assets sold. This will further increase ROA. The notes in the annual report mentioned efforts to lower sourcing prices that would result in a reduction of COGS. The strategic profit model shows that a 1% reduction in COGS will result in a 13.6% increase in ROA. Relative to its peers, adidas' COGS figure as a percentage of sales is very good. We think adidas management

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would be well served by focusing their efforts on variable expense and asset reduction. Application of the SPM indicates improvement in both areas will positively impact ROA.

### **Fila**

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From an examination Fila's recent financial statements it appears that the firm is having financial difficulties. Fila's financial leverage is very high and their ROA is actually negative (-15.46%). ROA is negative because they have a negative profit margin. Asset turnover is slightly below the industry average. Fila management is not very effective at controlling costs. Variable expenses are 12.68% higher than their peer group. Managers at Fila are in need of a model like the SPM to help in strategy formulation.

**Strategies to Improve ROA for Fila.** Instead of the typical 15% increase in ROA, we use the model to make suggestions that would get Fila up to the industry average ROA of 12.45%. The model shows that no amount of increased sales will result in a positive ROA. Fila's variable expenses are so high that the firm can not hope to be profitable until variable expenses are under control. Similarly, it would take a 16.1% decrease in COGS just to reach positive territory in terms of ROA. A more realistic goal would be for Fila management to bring COGS down to the industry average. This would require a 4.8% decrease in COGS. If variable expenses were also to be brought in line with the industry average, ROA would soar to + 3.74%. This requires a 29.3% (\$129.5 million) reduction in variable expenses. Another approach is to reduce assets since inventory and accounts receivable are both well above the industry average. Fila management should reduce inventory and AR to the industry average. Even so, these accounts cannot be reduced enough to result in a positive ROA because of the high variable expenses.

**Recommendation for Fila.** The SPM indicates the best way for Fila's management to achieve a positive ROA is to aggressively cut variable expenses while pursuing COGS reductions and improving asset turnover by cutting inventory and AR. First of all, Fila

management needs to get operations more in line with their peers. Fila management would have to reduce COGS by 5.2% and variable expenses by 29.6% to get costs in line with the industry average. Couple this with an inventory reduction of 20% and an AR reduction of 4% and a positive ROA can be achieved. These are all very big changes and caution must be exercised when making such sweeping changes. These changes result in a 161% increase in ROA to 9.4%. To achieve the goal of reaching the industry average ROA, the firm would also have to increase sales by an astonishing 42%.

**Fila's Future Plans.** Based on the firm's 1998 annual report, Fila management has identified the firm's weaknesses and are planning to address them. They are cognizant that SG&A expenses (variable expenses) have more than doubled over the last two years. These increased expenses, combined with a 23% reduction in sales, contributed to the poor financial performance. Fila management is taking aggressive measures to reduce variable expenses and increase sales through new markets and repositioning products in older markets. The SPM supports Fila management's actions. If Fila were to gain back the 23% in sales and reduce variable expenses by 40%, ROA would increase to 12.95%. Management is attacking the two areas that have the most leverage on increasing their ROA.

### **Reebok**

Reebok is an average performer in the footwear industry. Asset turnover is only slightly behind Nike and adidas but the firm also has a low profit margin. The moderate asset turnover of 2.10 and low profit margin of 3.60% both contribute to an ROA of 7.55%. In terms of controlling costs, management at Reebok is behind the industry average in both COGS and variable expense categories. However, Reebok fares well against its peers when comparing inventory levels and AR. This indicates that Reebok could be a more solid performer in terms of ROA.

**Strategies to Improve ROA for Reebok.** Using the SPM to analyze Reebok financial data helped to determine potential areas for improvement. Since Reebok's ROA

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performance is well below the average of 12.45% for the top four performers, we used 12.45% as our target ROA. In order to achieve such an improvement in ROA, Reebok management would need to increase sales by 130%, not likely in a short time frame. Nevertheless, expansion into new market segments should be explored as a possible solution to increasing sales.

Reebok's low ROA is due to a low profit margin, which can be increased by addressing sales prices or costs. Since Reebok's costs rank higher than their peers, management may wish to focus on controlling costs to increase ROA. The SPM indicates that a 3.76% reduction in COGS would enable an increase in ROA to the 12.45% level. Likewise, a reduction in variable expenses of 7.19% will provide the desired ROA result. Instead of increasing the profit margin, Reebok can concentrate on reducing assets to increase ROA. The variables available to the logistics manager, inventory and AR, are already performing higher than the industry average. This suggests that logistics management at Reebok may have limited ability to directly impact ROA unless through customer service improvements. However, Reebok's performance related to their current assets and cash are worse than the industry norm. If management at Reebok is capable of reducing these assets to the industry norm (i.e., a 35% reduction for current assets and 55% reduction for cash would be required) their ROA would increase to 8.35%.

**Recommendation for Reebok.** Reebok management needs to focus on controlling costs, increasing sales, and reducing current assets and cash. The profit margin is relatively low and current assets and cash are negatively affecting ROA performance. A combination of events must be undertaken by management in order to bring Reebok's ROA performance up to the industry average. An increase in sales by 5%, decreases in COGS and variable expenses by 2%, a 10% reduction of other current assets and a 55% reduction in cash will result in the ROA increasing to 12.83%. This ROA figure is more in line with their competitors. Unfortunately, most of the key variables to be addressed are outside the scope of logistics

management and in the domain of the financial and manufacturing managers.

**Reebok's Future Plans.** Reebok management has invested heavily in high technology footwear products and has yet to realize the impact of the investment on its bottom line. Reebok has reengineered some of its business processes to help reduce SG&A expenses. The results from 1999 have begun to show positive results. Inventory levels and AR declined 7.8% and 5.1% respectively, showing that Reebok's logistics managers are continuing to manage effectively. Reebok management believes they will benefit from the adoption of technology in terms of savings in expenses and in terms of generating higher revenues. However, the annual report seems to indicate no policy changes related to financing and reduction of cash levels.

### **Converse**

Converse is the worst performer of the sample group. Converse's ROA is -24.85%, well behind even poor performing Fila. Converse's stockholder equity is actually in deficit, indicating financial trouble. Surprisingly, Converse is maintaining a respectable asset turnover. Although not at the same levels of the industry leaders, the asset turnover ratio remains one of Converse's stronger points. Converse ranks last in the sample group in terms of COGS, fixed expenses, and inventory. By far the most glaring issue facing Converse is its ability to control COGS. Converse's COGS as a percent of sales is 76.17%. The next closest firm is Fila at 64.07%, while the industry leaders achieve around 60%. With high COGS, Converse is clearly having difficulty posting profits.

**Strategies to Improve ROA for Converse.** In Converse's case, increasing ROA by 15% simply will not be enough to achieve a satisfactory performance level. A 15% increase in ROA would still yield a -9.85% ROA. Therefore we suggest a strategy that would enable Converse to equal an ROA of 12.45%, the average of the top four industry participants.

A simple increase in Converse's sales will not allow the company to achieve a positive profit margin. This is due to excessively high

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***K-Swiss is the smallest firm in the sample group. They have the lowest sales, however; their ROA is third best of the six firms examined.***

COGS. We suggest Converse management aim to achieve the industry average of COGS as 61% of sales (versus 76% for Converse). This will require management at Converse to decrease COGS by 20%, producing an ROA of 4.11%. Holding all other variables constant, and assuming Converse management is able to cut COGS by 20%, a 115% increase in sales would still be required to bring the ROA performance to the goal of 12.45%. Even if Converse management were able to reduce inventory by 27% and accounts receivable by 10%, making them on par with the sample group as a percentage of sales, the ROA would only increase from 4.11% to 4.87%. This suggests that the management of Converse needs to focus on reducing COGS and increasing sales. Although efforts by the logistics manager to reduce inventory and accounts receivable would be beneficial, immediate concerns center on COGS and sales.

**Recommendation for Converse.** Converse appears to be a firm facing considerable financial challenges. The firm needs to improve performance in just about every area to turn things around. Converse management's primary goal should be to achieve the industry average of COGS thus producing immediate positive performance in ROA (from -24.8% to +4.1%). To accomplish this, the firm must experience a 20% decrease in COGS, clearly a difficult task. We also suggest a blended approach to achieving a more reasonable ROA. Decreasing COGS by 20%, increasing sales by 70%, decreasing inventory by 28% and decreasing accounts receivable by 10% will produce the target ROA of 12.45%. All of these improvements are substantial.

**Converse's Future Plans.** Limited data were available from Converse's latest annual report. Converse's independent auditors indicated a "substantial doubt about the firm's ability to continue as a going concern given the recurring losses from operations and net capital deficiency." The annual report revealed downsizing and liquidity concerns as well as risks and uncertainties for the future. We were unable to ascertain if Converse management is working on expense reduction, however; COGS continued to remain at 76% of sales for the most recent

four quarters.

### **K-Swiss**

K-Swiss is the smallest firm in the sample group. They have the lowest sales, however; their ROA is third best of the six firms examined (10.55%). Furthermore, their profit margin is second best of the six footwear firms examined at 7.18%. But, asset turnover is the lowest of the six at 1.47. K-Swiss' healthy profit margin seems to result from the ability to control costs. K-Swiss has the lowest COGS and fixed expenses and the third lowest variable expense. K-Swiss outperformed the peer group average in AR but was worse than the peer group in inventory, other current assets, and cash. A glaring difference in relation to the peer group is in the cash category where K-Swiss' cash reserves as a percent of sales are almost 21% above the peer group. The high cash reserves help to explain the low asset turnover ratio. K-Swiss has the lowest financial leverage ratio of the six firms (1.32). The industry average is 2.87. The low asset turnover, low financial leverage, and high cash reserves suggest that K-Swiss' financial managers need to reconsider their financing policies.

**Strategies to Improve ROA for K-Swiss.** In order for K-Swiss to increase ROA by 15%, an analysis was performed on the required increase in sales, decrease in expenses, and change in assets to achieve the goal. K-Swiss has a healthy profit margin, mostly attributable to K-Swiss' ability to control costs. A 13.4% increase in sales would result in K-Swiss' ability to achieve a 15% growth in ROA performance. Although 13% is a large increase, it may be possible since K-Swiss' market penetration is only 0.6%. A 1% market penetration represents approximately \$246 million in revenue; K-Swiss is currently at \$161 million in revenue. A 13% increase in sales would only bring K-Swiss to a 0.68% market penetration. Thus K-Swiss could penetrate the market with relatively little impact on their larger competitors and achieve their 15% ROA growth. A 2% decrease in COGS or a 3.5% decrease in variable expenses would also enable K-Swiss to achieve 15% growth in ROA. Finally, K-Swiss could improve on the control of assets. In order to achieve the 15% ROA improvement,

K-Swiss would need to reduce inventory levels by almost 43% while holding other variables constant. In order to bring K-Swiss' inventory level on par with the industry, management would need to reduce inventory by 20%. A 20% reduction in inventory yields an ROA of 11.2%. In terms of AR, K-Swiss outperforms the industry average and a reduction of almost 55% would be needed to achieve the target ROA level. It is unlikely that K-Swiss would be able to do much to improve the AR category.

**Recommendation for K-Swiss.** The success of K-Swiss is due to the ability to control costs. Therefore, K-Swiss should concentrate on increasing sales and decreasing inventory levels. Due to the small size of K-Swiss, it may be possible to make substantial increases in sales simply by running promotional campaigns and gaining more visibility in the industry or slightly altering logistics strategies. In order to achieve the 15% increase in ROA, we recommend that K-Swiss increase sales by 10% and decrease inventory by 10%. We believe that K-Swiss could achieve loftier goals by increasing advertising and further decreasing inventory levels. In the case of K-Swiss, the logistics manager can play a key role in the growth and performance of the firm by reducing inventory.

**K-Swiss' Future Plans.** K-Swiss increased sales by 77% in 1999, increasing profit margin to approximately 12%. The increase in sales is due mostly to substantial increases in product volume, particularly in classics and children's lines. Price increases also contributed to the improved profit margin. It appears from the financial notes of the annual report that advertising expenses increased helping to generate sales. The annual report also described potential limitations in the K-Swiss supply chain; shipments direct from foreign manufacturers do not occur. This requires K-Swiss to maintain higher inventory levels. Perhaps more favorable JIT and/or vendor managed inventory (VMI) policies with retailers need to be explored.

### **Limitations and Suggestions for Future Research**

One of the limitations is that the SPM does not tell the logistics manager how to increase sales, lower expenses or

lower assets. Another limitation is that some weak areas identified by the model may not be easily changed in some firms, or may not be easily modified in the short-term. While most of the assumptions made in the research appear valid, it is impossible to be completely accurate when applying any model to predict future financial performance. Therefore, the SPM is offered as a tool designed to assist management in strategy formulation.

The six firms selected for the research are all from the same industry. Nevertheless, diverse organizational and financial structures plus significant variation in management practices limits the ability to generalize. The model should be extended and applied to various supply chain networks in an attempt to evaluate supply chain strategies and the effect these strategies can have on the ROA and RONW of a firm. Perhaps a more comprehensive supply chain evaluation model could be developed building on the underpinnings of the SPM. The new model could be used to evaluate overall supply chain performance by encompassing the performance characteristics of all supply chain participants.

The research supports using the SPM to examine the potential impact of adjustments in logistics strategy. However, due to inconsistencies in corporate structures, strategy implementation techniques, and a variety of other firm-specific issues, the impact of applying the SPM can vary greatly. As a result, other industries should be examined.

Lastly, the model has been applied to the logistics function of six firms. While the results yield some interesting insight into the operating characteristics that differentiate successful firms from those that are less successful, the focus was only on the logistics function.

### **Conclusions**

As shown, a useful way to determine how a proposed system change will influence profit performance and return on assets is by using the SPM. The application of the SPM to the athletic footwear industry yielded some very interesting results. The result most common to all six firms studied is the direct or indirect impact of inventory and cost of goods sold on net profit, asset turnover, and financial

*The research supports using the SPM to examine the potential impact of adjustments in logistics strategy.*

**The results reinforce the importance logistics can have on the firm's financial performance.**

leverage, the three key elements examined. The results reinforce the importance logistics can have on the firm's financial performance.

The role of logistics on inventory decision-making has been a major factor in the operational performance of the firms examined. For example, the more successful firms are attempting to apply techniques that are similar to a pull-type of manufacturing system as opposed to the more traditional push-based systems. There are limitations to applying a pull-based system to the athletic footwear industry, but, techniques like collaborative planning, forecasting, and replenishment (CPFR), implementation of a modified JIT inventory system, and VMI are being successfully used to improve operational performance.

Since a true pull-based system is difficult to achieve in this type of industry, the key may be improved supplier relations leading to COGS and inventory reductions plus improved forecasting accuracy. This type of modified pull model allows companies to move from a push-based supply chain where production decisions are based on long-term forecasts, to a pull-based supply chain where production is more customer demand driven. The firms that best understand customer demand have the advantage of superior forecast accuracy and improved supply chain and company performance.

Push strategies focusing on forecasts tend to be slow to react to the changing marketplace, a critical issue in any fashion industry. Push strategies tend to lead to obsolete and excessive inventory, less manufacturing flexibility, and an inability to react quickly or even predict changing customer demand patterns. A pull-based strategy allows companies to implement several key concepts including postponement.

Postponement is delaying decisions and/or commitments until actual customer demand is known. The primary benefits of postponement include risk minimization and reduced total inventory. Postponement enhances the ability of the manufacturer to pursue a low risk strategy while remaining highly responsive to changes in customer demand. This by itself is a significant advantage. However, combine low risk customer responsiveness with lower inventory levels and the advantages can be

dramatic as the research results illustrate.

Just-in-time (JIT) inventory systems also impact the operational performance of firms in the footwear industry. Those logistics departments most successful in balancing JIT inventory systems with global sourcing, manufacturing, and transportation/delivery issues have in effect achieved a competitive advantage in the marketplace by cutting costs and maintaining or enhancing customer service levels. The results allow for differentiation between the firms that are most/least successful in managing these intertwined logistics management activities.

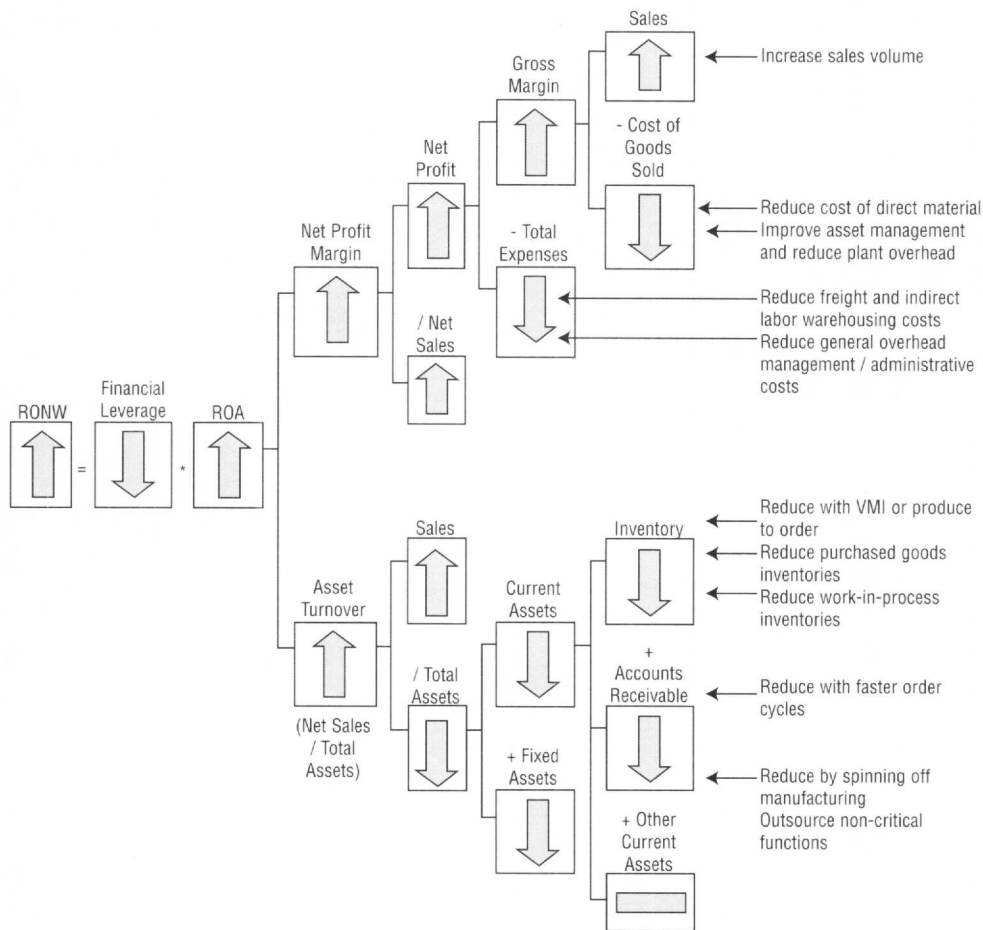
The results of the research indicate that the financial and operational performance of firms in the athletic footwear industry are heavily affected by inventory and COGS related issues. Therefore, the authors have chosen to illustrate how the SPM can be used to illustrate the impact of the supply management (purchasing) department on corporate financial performance (see Figure 2). We chose the supply management department for the illustration because of its impact on several inbound supply issues which our research has determined to be highly influential on the financial and operational performance of athletic footwear firms.

Given the importance of inventory in the research results, the authors believe that illustrating the impact of supply management using the SPM is imperative since it has such a direct effect on sales, COGS, expenses, and inventory. Specifically, members of this department can affect sales by increasing sales volume through quality and service improvements. Furthermore, they can affect COGS by reducing direct material costs, improving asset management, and reducing overhead. They also affect total expenses by reducing freight and indirect labor costs as well as general overhead and administrative costs. Finally, the supply management department can affect inventory levels by reducing purchased goods inventories and work-in-process inventories.

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- [1] Lambert, Douglas M. and James R. Stock, *Strategic Logistics Management*, 4th Edition, Boston, Mass: Irwin-McGraw Hill, 2000, pp. 42-303; and, Douglas M. Lambert

**Figure 2**  
**Logistics Contribution to Return on Net Worth**



and James R. Stock, *Strategic Logistics Management*, 3rd Edition, Boston, Mass: Irwin-McGraw Hill, 1993, pp. 42-215.

[2] Lambert, Douglas M. and James R. Stock, *Strategic Logistics Management*, 4th Edition, Boston, Mass: Irwin-McGraw Hill, 2000, pp. 42-303.

[3] Lambert, Douglas M. and James R. Stock, *Strategic Logistics Management*, 3rd Edition, Boston, Mass: Irwin-McGraw Hill, 1993, pp. 42-215.

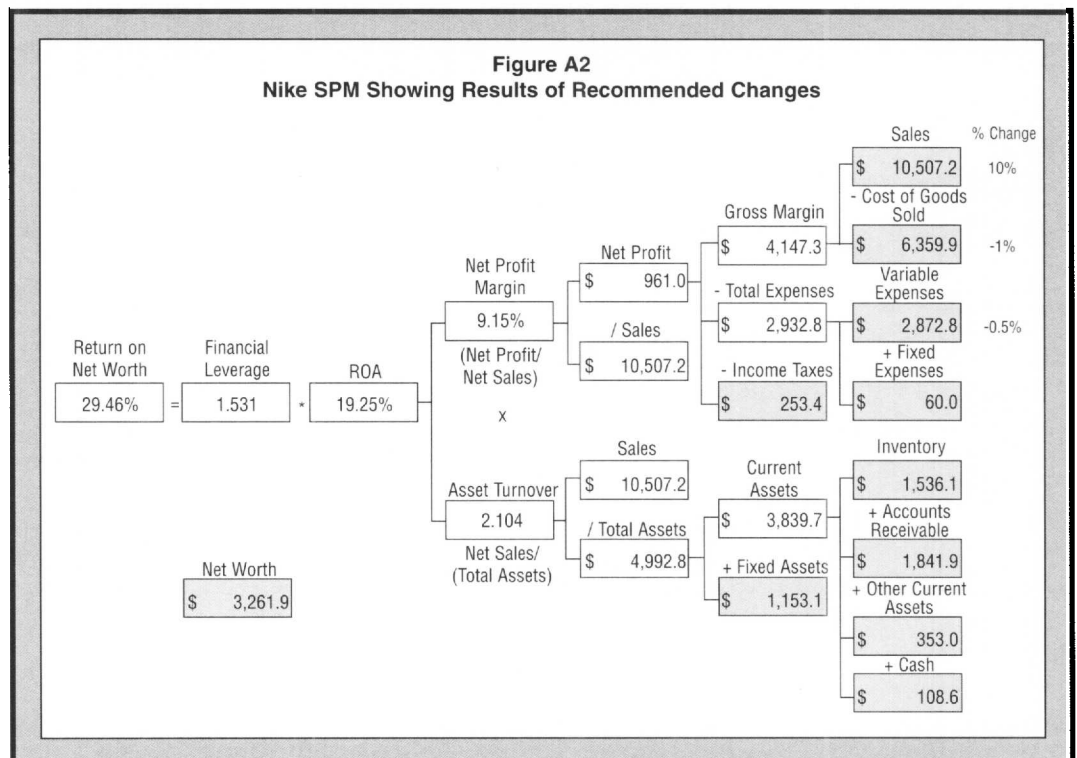
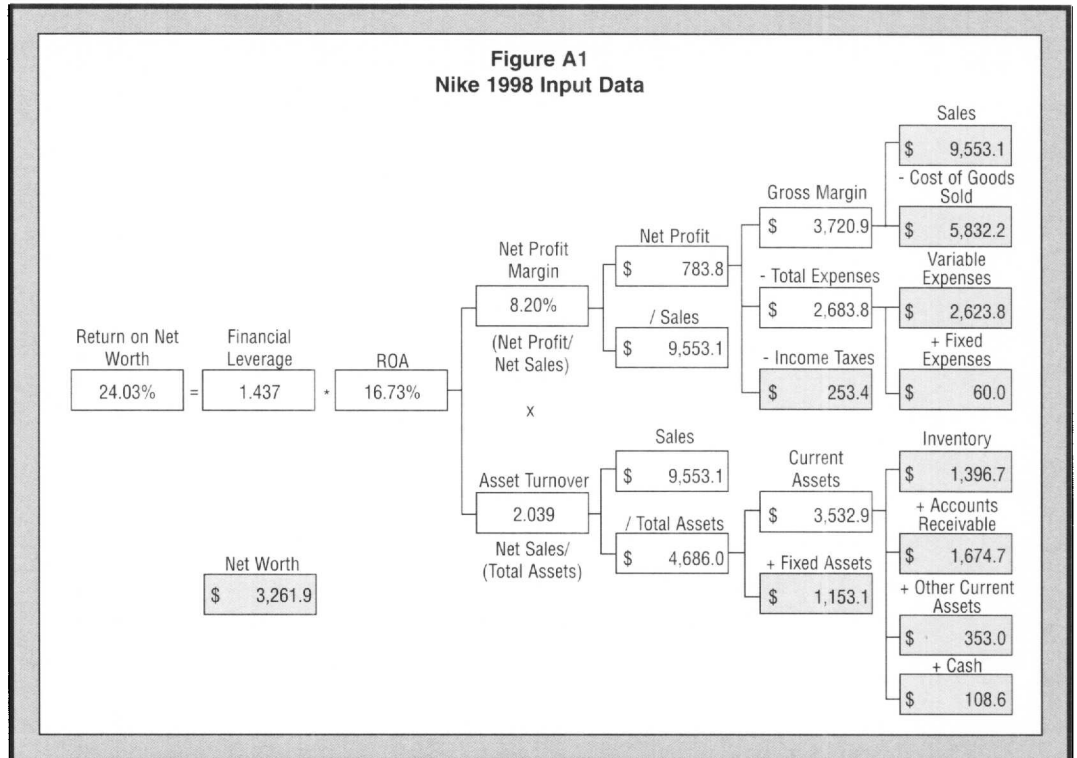
[4] Shapiro, Stanley J. and V. H. Kirpalani, *Marketing Effectiveness: Insights from Accounting and Finance*, Boston, Mass: Allyn and Bacon, Inc, 1984, pp. 67-85.

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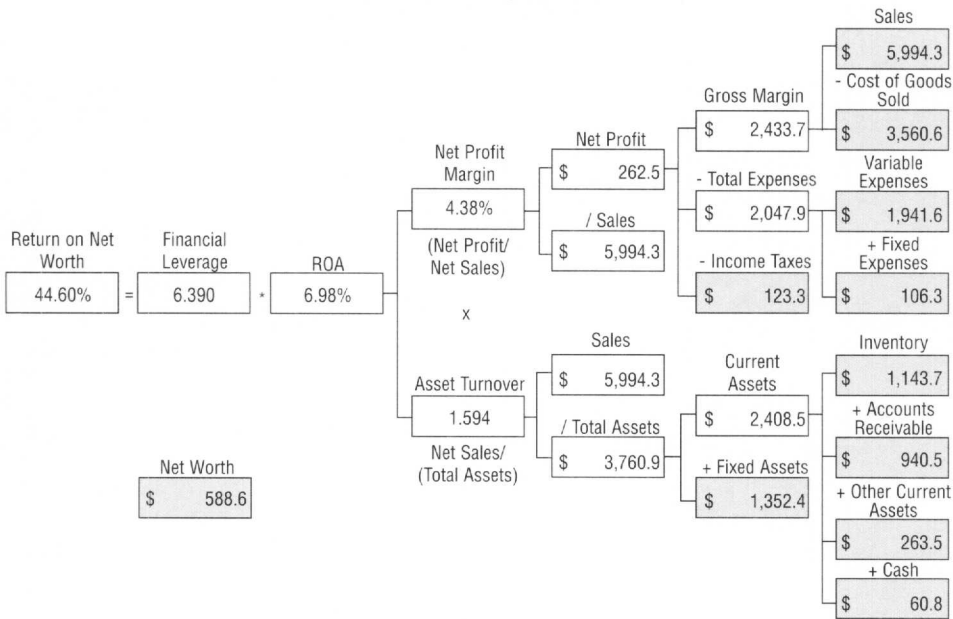
[6] Linn, Gene, "US Manufacturers Back China Entry to WTO," *Journal of Commerce*, May 5, 2000, 1A.

## Appendix A: Strategic Profit Models Showing 1998 Results

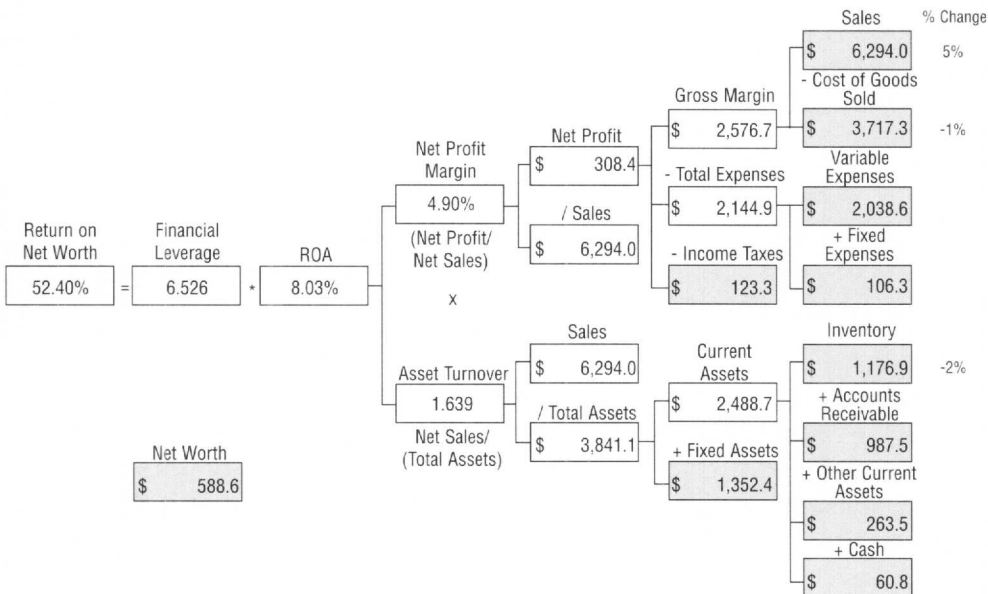
Contents: There are two graphs of the SCM for each firm. The first shows the firm's 1998 financial data. The second shows the firm's financial condition under our recommended plan. This is repeated for all six firms.



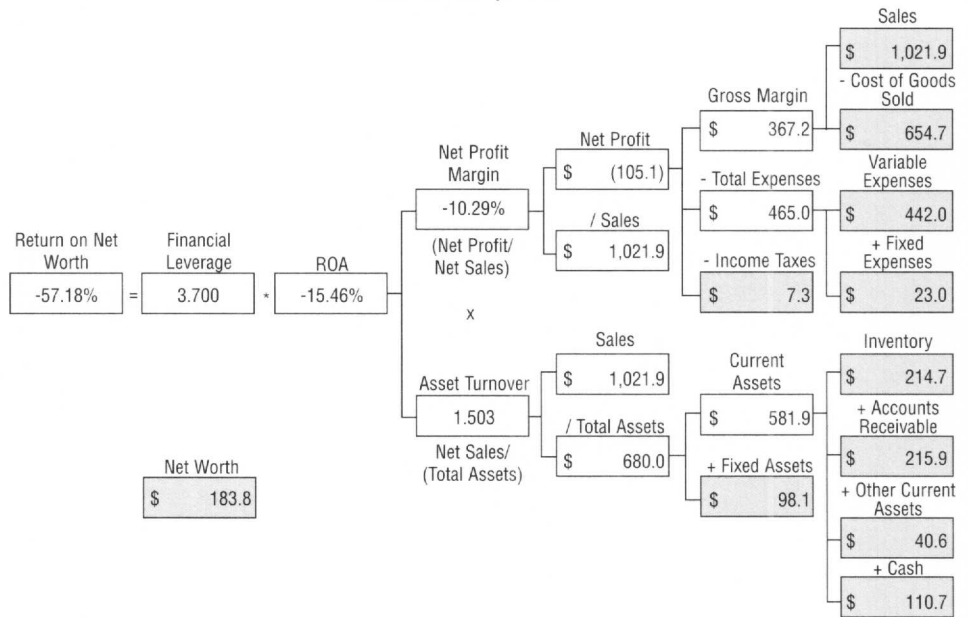
**Figure A3**  
Adidas 1998 Input Data



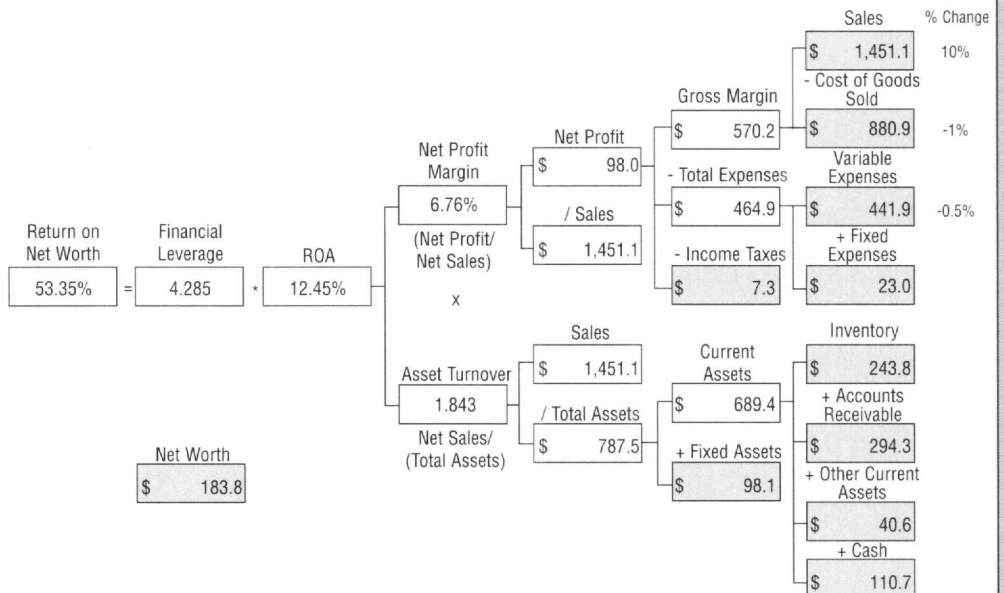
**Figure A4**  
Adidas SPM Showing Results of Recommended Changes



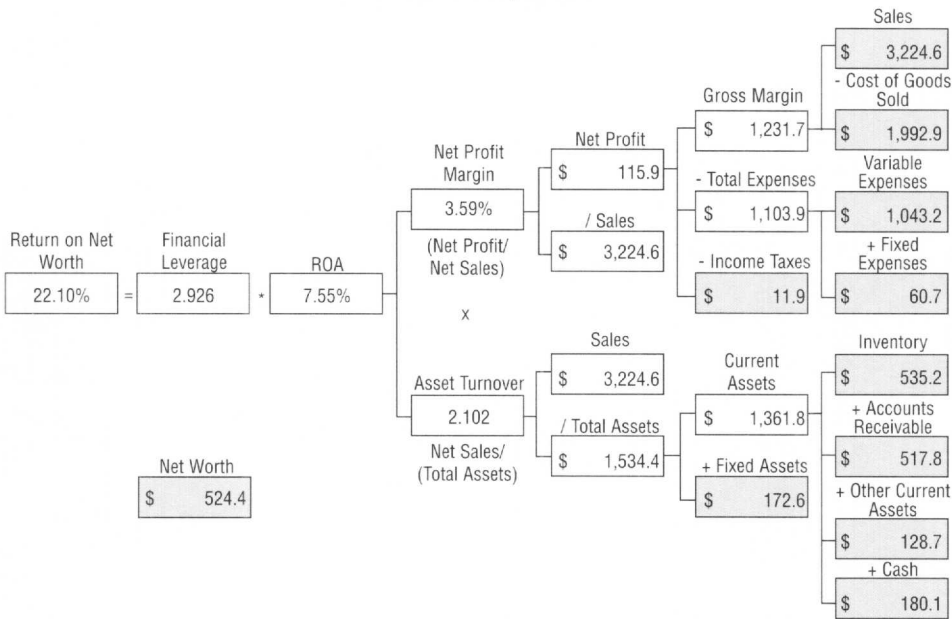
**Figure A5**  
Fila 1998 Input Data



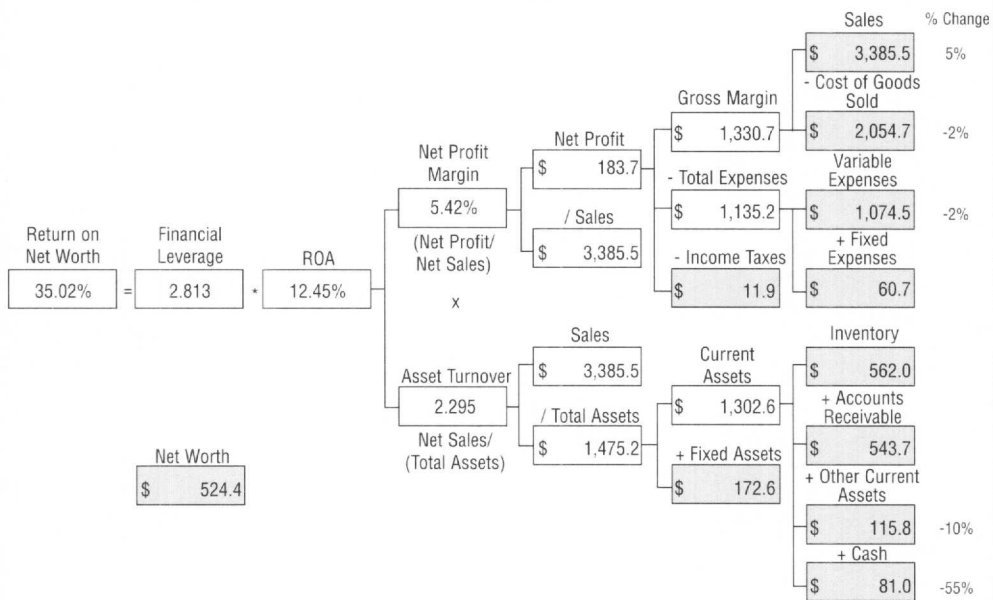
**Figure A6**  
Fila SPM Showing Results of Recommended Changes



**Figure A7**  
Reebok 1998 Input Data

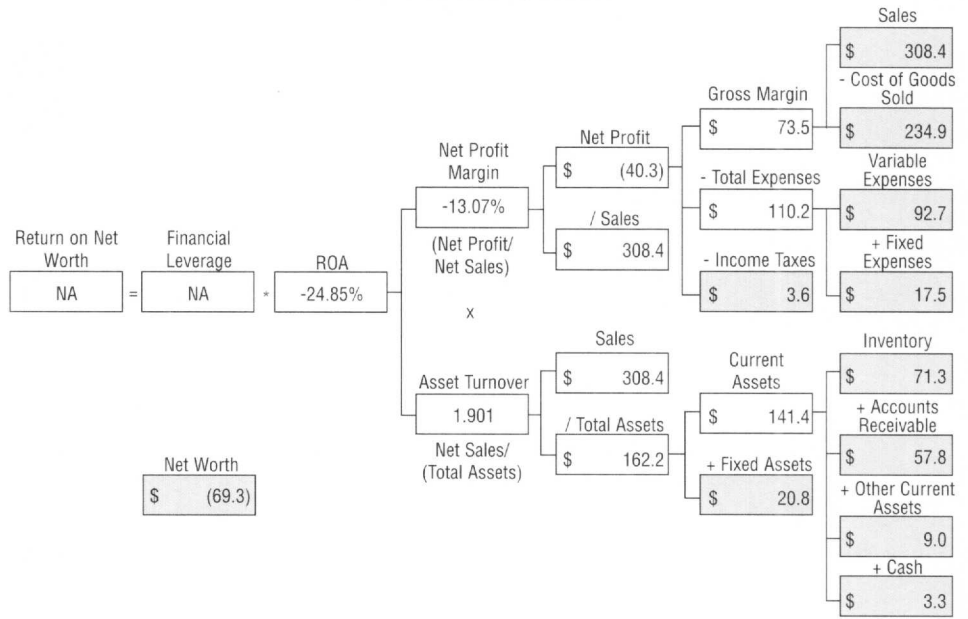


**Figure A8**  
Reebok SPM Showing Results of Recommended Changes

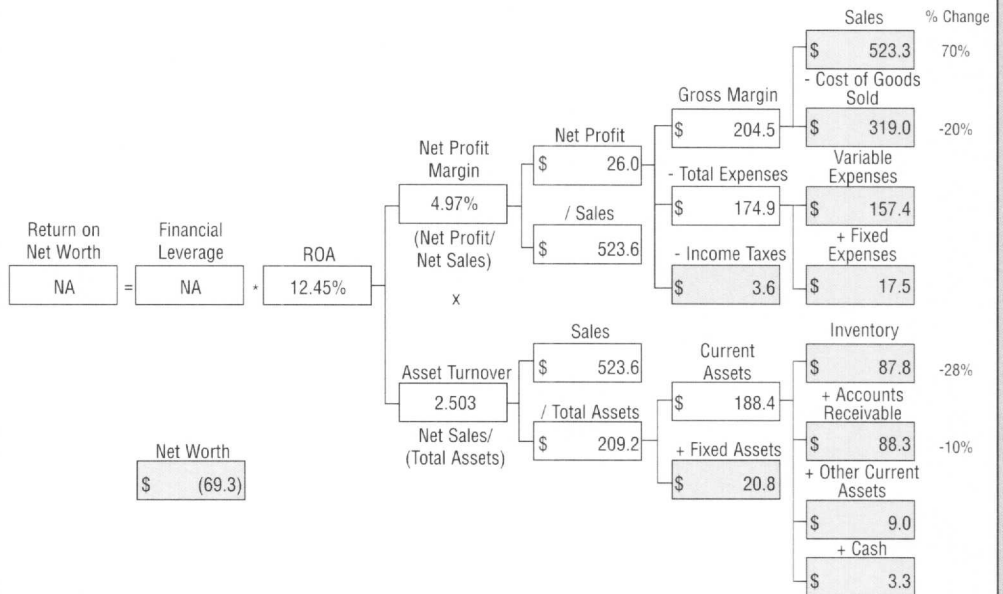




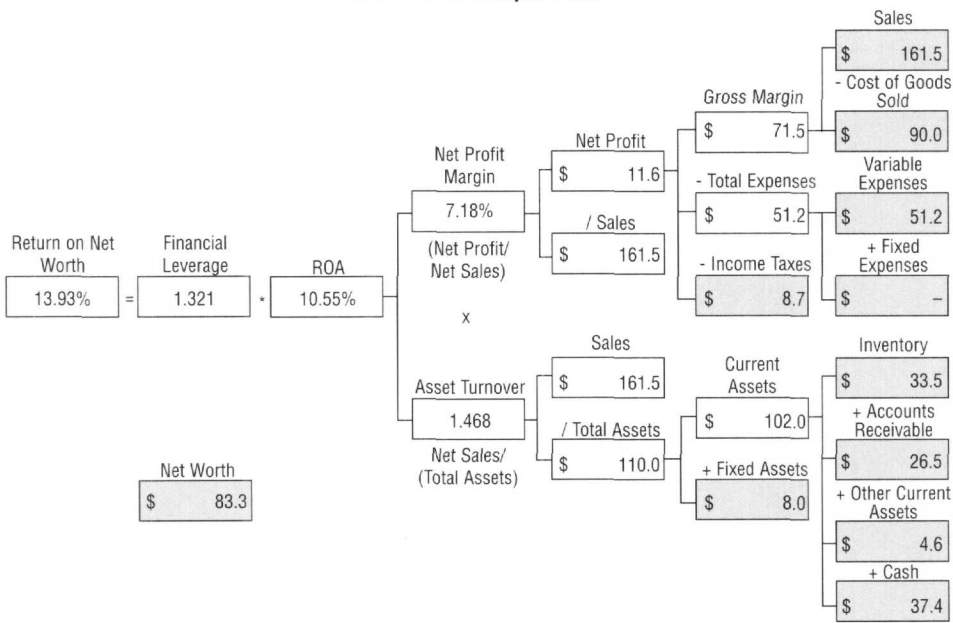
**Figure A9**  
Converse 1998 Input Data



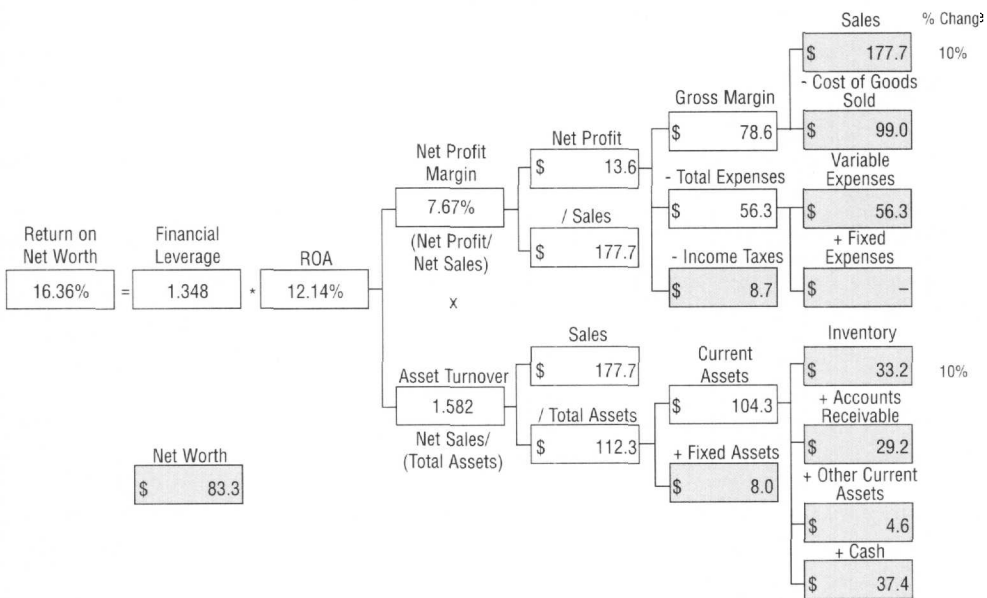
**Figure A10**  
Converse SPM Showing Results of Recommended Changes



**Figure A11**  
K-Swiss 1998 Input Data



**Figure A12**  
K-Swiss SPM Showing Results of Recommended Changes



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