

## **ASSUMPTIONS ABOUT THE "SD Inc." HYPOTHETICAL COMPANY**

(Composite of IBM, HP, Dell, Compaq, Xerox ... 1999 Fortune 500 data ... 83-85% of Top 10 Computer Co's)

<b>Revenue (millions)</b>	<b>\$44,000</b>
<b>Profit (millions)</b>	<b>\$3,000</b>
<b>Employee Population</b>	<b>120,000</b>
<b>Employees</b>	<b>108,000</b>
<b>Managers</b>	<b>12,000</b>
<b>Average Employee Salary</b>	<b>\$60,000</b>
<b>Average Manager Salary</b>	<b>\$70,000</b>

In the following worksheets, assumptions used in the calculations which are not obviously explicit are shown with this notation:

*(Assumption: ... )*

Most cells are calculated internally, but all are changeable.

The cells with the most critical assumptions are **highlighted**.

<b><u>EDUCATION INVESTMENT REQUIRED TO ACHIEVE BENEFITS</u></b>		
<b>Costs for One Day of Education for the Whole Company</b>		
Cost to develop and deliver the education		\$42,000,000
(Assumption: Whole company receives the education	120,000	
times the cost to develop and deliver one day)	<b>\$350</b>	
Cost of lost productivity of an employee while on course		\$17,753,425
(Assumption: Annual salary / 365	\$164	
times the number of employees)	108,000	
Cost of lost productivity of a manager while on course		\$2,301,370
(Assumption: Annual salary / 365	\$192	
times the number of managers)	12,000	
<b>Total cost of one day of education for the whole company</b>		<b>\$62,054,795</b>
<b>Annual Cost of Sustainability Education</b>		
Year 1		\$124,109,589
Year 2		\$62,054,795
Year 3		\$62,054,795
Year 4		\$62,054,795
Year 5		\$62,054,795

<b>Cost of 5-year investment in sustainability education</b>		<b>\$372,328,767</b>
<b>NPV of 5-year investment in education</b>		<b>\$319,939,628</b>
<i>(Assumption: Internal cost of money)</i>	6%	

## ATTRACTING AND HIRING THE BEST TALENT

### Cost of Recruiting a New Person

External advertising or internal job posting cost		\$5,000
Candidate screening costs		\$500
Interviewing costs ... preparation, interviews, follow-up		\$994
<i>(Assumption: Hours spent on interviewing activity)</i>	30	
Offer and hiring costs		\$500

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**Total cost of recruiting a new person** **\$6,994**

### Savings on Recruiting Costs

Normal cost of recruiting each new hire		\$6,994
x Number of new hires per year		12,000
<i>(Assumption: Percent of company workforce hired)</i>	10%	
Total Recruiting Costs		\$83,931,818
x Percent that will be attracted by sustainability image	20%	
x Percent reduction in recruiting costs for those attracted by company's sustainability image	5%	

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**Annual savings on RECRUITING costs** **\$839,318**

Percent savings in Recruiting Costs 1%

## RETAINING THE BEST TALENT

### Assumptions Used To Estimate the Cost of Losing a Good Person

The person's years of service with the company		5 years
"Decide Time" while the person, privately, decides to leave		1 month
"Save Attempt Time" while management tries to save the good person		0.5 months
"Vacant Time" when the position is vacant		2 months
"New Hire Training Time" for the new hire, by the company		0.5 months
"Department Training Time" for the new person		6 months
Monthly cost of an employee		\$5,000
Monthly cost of a manager		\$5,833

### Cost of Losing of a Good Person

Person's lost productivity during Decide Time		\$2,500
<i>(Assumption: Person's percent lost productivity during Decide Time)</i>	50%	
Managerial lost productivity during Save Attempt Time		\$729
<i>(Assumption: Manager's percent lost productivity during Decide Time)</i>	25%	
Person's lost productivity during Save Attempt Time		\$1,250
<i>(Assumption: Person's percent lost productivity during Save Attempt Time)</i>	50%	
Payroll and benefits administration		\$455
<i>(Assumption: Equivalent days of an employee's time)</i>	2	
Separation allowance		\$13,750
<i>(Assumption: Number of weeks' pay)</i>	11	

Lost knowledge, experience, and contacts <i>(Assumption: Percent of salary for 1st year employed plus additional percent for each subsequent year)</i>	50% 10%	\$54,000
Lost training invested in the employee <i>(Assumption: Number of days for 1st year employed plus additional days for each subsequent year)</i>	15 5	\$12,250
Lost customer revenue during Vacant Time <i>(Assumption: Person's share of monthly company revenue times Vacant Time divided by credibility factor)</i>	\$30,556 2 2	\$30,556
Lost department productivity during Save Attempt and Vacant Times <i>(Assumption: Percent of productivity lost by others times number of others affected)</i>	10% 5	\$6,250
Lost productivity in back-filling person's own work during Vacant Time <i>(Assumption: Percent of productivity lost by back-filling person)</i>	25%	\$2,500
Lost productivity of manager during Vacant Time <i>(Assumption: Percent of productivity lost by manager)</i>	10%	\$1,167
Lost productivity in person's job during Vacant Time <i>(Assumption: Percent of productivity lost, despite help from others)</i>	50%	\$5,000
Savings of person's salary while job is vacant		-\$10,000
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<b>Total cost of loss of a good person</b>		<b>\$120,406</b>

**Total cost of recruiting a new person**

**\$6,994** See Hiring sl

## Cost of On-Boarding and Training a New Hire

Setting up personnel records, system ids, etc. <i>(Assumption: Equivalent days of an employee's time)</i>	1	\$227
New hire training - Cost to company to deliver it <i>(Assumption: Cost per day of training times number of days of company training)</i>	\$350 14	\$4,900
New hire's own lost productivity during new hire training <i>(Assumption: Percent of productivity lost)</i>	100%	\$2,500
Lost productivity of back-filling person's work during new hire training <i>(Assumption: Percent of productivity lost)</i>	25%	\$625
Lost productivity of manager during new hire training <i>(Assumption: Percent of productivity lost)</i>	10%	\$292
Lost productivity in person's job during new hire training <i>(Assumption: Percent of productivity lost)</i>	50%	\$1,250
Cost to deliver formal department training <i>(Assumption: Cost per day of training times number of days of department training)</i>	\$350 5	\$1,750
New hire's own lost productivity during formal department training <i>(Assumption: Percent of productivity lost)</i>	100%	\$1,136
Lost productivity of back-filling person during formal department training <i>(Assumption: Percent of productivity lost)</i>	25%	\$284
Lost productivity of manager during formal department training <i>(Assumption: Percent of productivity lost)</i>	10%	\$114
Lost productivity in person's job during formal department training		\$568

<i>(Assumption: Percent of productivity lost)</i>	50%	
Buddy's lost productivity in own work during informal training		\$3,000
<i>(Assumption: Percent of productivity lost</i>	10%	
<i>times number of months of informal training)</i>	6	
Employee's lost productivity during informal training		\$15,000
<i>(Assumption: Percent of productivity lost</i>	50%	
<i>times number of months of informal training)</i>	6	

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**Total cost of on-boarding and training a new hire** **\$31,646**

**Cost of Losing and Replacing One Good Employee**

<b>Total cost of loss of a good person</b>		<b>\$120,406</b>
<b>Total cost of recruiting a new person</b>		<b>\$6,994</b>
<b>Total cost of on-boarding and training a new hire</b>		<b>\$31,646</b>

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**Cost of losing & replacing one good employee** **\$159,046**

Number of employees who leave each year		12,000
<i>(Assumption: Percent of employee population who leave)</i>	10%	
<i>x Number of good employees lost each year</i>		1,200
<i>(Assumption: Percent of employees who leave whom we want to retain)</i>	10%	

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Annual cost of losing and replacing good employees \$190,855,758

x Percent of these who would not leave if they were attracted to the company's sustainability initiatives

20%

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**Annual savings from higher RETENTION rate**

**\$38,171,152**

Overall cost of attrition

1,908,557,576

Percent savings of overall cost of attrition

2%

**INCREASED PRODUCTIVITY**

**Increased Productivity of Individual Employees**

Total number of employees	120,000
x Percent who will be energized by the company's sustainability initiatives	20%
x Percent increased productivity from their increased commitment	25%
x Average employee's annual salary	\$60,000

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**Benefit of increased productivity from INDIVIDUALS** **\$360,000,000**

**Number of full-time equivalent (FTE) employees** **6,000**

**Increased Productivity from Improved Teamwork Among Departments**

Total number of employees	120,000
x Percent increased productivity from interdepartmental teamwork	2%
x Average employee's annual salary	\$60,000

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**Benefit of increased productivity from improved TEAMWORK** **\$144,000,000**

**Number of full-time equivalent (FTE) employees** **2,400**

**Increased Productivity from Improved Working Conditions**

Total number of employees	120,000
x Percent of employees whose working conditions are improved	50%

x Percent increased productivity from improved working conditions	7%
x Average employee's annual salary	\$60,000

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<b>Benefit of increased productivity from improved WORKING CONDITIONS</b>	<b>\$252,000,000</b>
<b>Number of full-time equivalent (FTE) employees</b>	<b>4,200</b>

**Total Benefit of Increased PRODUCTIVITY ...**

<b>Benefit of increased productivity from INDIVIDUALS</b>	<b>\$360,000,000</b>
<b>Benefit of increased productivity from improved TEAMWORK</b>	<b>\$144,000,000</b>
<b>Benefit of increased productivity from improved WORKING CONDITIONS</b>	<b>\$252,000,000</b>

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<b>Annual benefit of increased PRODUCTIVITY</b>	<b>\$756,000,000</b>
<b>Number of full-time equivalent (FTE) employees</b>	<b>12,600</b>

## **REDUCED MANUFACTURING EXPENSES**

### **Simple, Macro-level Calculation**

Hardware revenue		\$22,000,000,000
<i>(Assumption: Hardware percent of total revenue)</i>	50%	
Hardware costs		\$6,600,000,000
<i>(Assumption: Costs as a percent of hardware revenue)</i>	30%	

### **Sustainability savings in manufacturing costs** **\$330,000,000**

<i>(Assumption: Percent of hardware costs saved)</i>	5%	
- Savings reinvested in other environmental projects		\$165,000,000
<i>(Assumption: Percent of savings reinvested)</i>	50%	

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### **Annual benefit in MANUFACTURING costs** **\$165,000,000**

Benefit expressed as a percent of hardware revenue	0.75%
Benefit expressed as a percent of overall revenue	0.38%

### **Checklist For a More Detailed Calculation**

#### **Savings from eco-friendly MATERIAL SUBSTITUTIONS**

Materials with smaller "ecological rucksacks"; recycled materials;  
non-hazardous materials; process redesign

#### **+ Savings from eco-friendly ENERGY SUBSTITUTIONS**

Renewable wind and solar energy; in-house generation; fuel cells;  
mini-generators powered by heat from manufacturing processes; process redesign

**+ Savings from MATERIAL REDUCTIONS**

Handling savings; zero-waste process redesign

**+ Savings from ENERGY REDUCTIONS**

Insulation; energy-efficient light fixtures; energy-efficient pumps; thicker, straighter, energy-efficient pipe systems; whole systems thinking when purchasing plumbing and electrical contracts and bids; thicker electrical wires; energy-efficient transformers; increasing off-peak electrical usage; off-the-grid process redesign; plus other energy reduction measures listed in the Reduced Expenses at Commercial Sites worksheet

**+ Savings from WATER REDUCTIONS**

Recycling and treating wastewater; closed loop, zero-waste process redesign

**+ Savings from REDUCING, REUSING, RECYCLING SCRAP MATERIAL**

Hazardous waste reduction and elimination; non-hazardous waste reduction, sorting, and elimination; industrial ecology with other companies; zero-waste process redesign

**+ Savings from REUSING/RECYCLING RETURNED PRODUCTS**

Reuse of products, components, and raw materials; design for disassembly; leasing; selling services instead of products; cradle-to-cradle redesign

**+ Savings from LESS PACKAGING**

**+ Savings from more EFFICIENT TRANSPORTATION of products**

More eco-friendly mode of transportation; lighter packaging; batching loads; more efficient routing

**+ Savings from FASTER APPROVAL CYCLES**

R&D savings; development savings; health and safety savings

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**Total savings from reduced manufacturing expenses**

## **REDUCED EXPENSES AT COMMERCIAL SITES**

### **Simple, Macro-level Calculation**

Selling, general, and administrative (SG&A) expenses <i>(Assumption: SG&amp;A percent of total revenue)</i>	15%	\$6,600,000,000
Energy, water, and consumables costs <i>(Assumption: Costs as a percent of SG&amp;A expenses)</i>	2%	\$132,000,000
<b>Savings in COMMERCIAL SITE operating costs</b> <i>(Assumption: Percent of SG&amp;A expenses saved)</i>		<b>\$26,400,000</b>
<i>Benefit expressed as a percent of overall revenue</i>		0.06%

### **Checklist For a More Detailed Calculation**

#### **Savings on EMPLOYEE DISCRETIONARY CONSUMABLES**

Paper savings from duplexed printing and copying; office supply savings;  
other employee suggestions

#### **+ Savings from improved WASTE HANDLING**

More sorting at source; composting; cafeteria waste to pig farmers

#### **+ Savings from ENERGY EFFICIENCIES through retrofits**

Super-windows; on-site power generation; sunlight; occupancy sensors;  
eco-efficient right-sized fan and HVAC systems; insulation; task lighting;  
energy-efficient appliances, office equipment, and lighting fixtures;  
passive solar heating; plus other measures listed in the Reduced  
Manufacturing Expenses worksheet

**+ Savings from ENERGY EFFICIENCIES in the design of new buildings**

All the above; revenue from selling excess energy back to the grid;  
plus eco-design ideas from multiple stakeholder consultations

**+ Savings from EMPLOYEE STEWARDSHIP**

Reductions through increased awareness of consumption; using stairs  
instead of elevators; turning off lights and equipment when not in use

**+ Savings from WATER CONSERVATION**

Low-flow toilets and plumbing fixtures; closed-loop water treatment using  
Living Machine approaches

**+ Savings from LOWER LANDSCAPING COSTS**

Naturalized landscapes; less/no watering or fertilizing; planting trees  
to offset greenhouse gases from business travel

**+ Savings from REDUCED OFFICE SPACE**

Telecommuting; e-mail; fewer people because of higher productivity

**+ Savings from less BUSINESS TRAVEL**

Videoconferencing; teleconferencing

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**Total savings from reduced expenses at commercial sites**

## **INCREASED REVENUE AND MARKET SHARE**

### **Simple, Macro-level Calculation**

Total revenue today		\$44,000,000,000
Potential revenue increase because of sustainability initiatives	5%	
<b>Increased REVENUE from sustainability initiatives</b>		<b>\$2,200,000,000</b>
<b>Increased PROFIT from sustainability initiatives</b>		<b>\$150,000,000</b>
<i>(Assumption: Percent of today's revenue that flows to profit)</i>	7%	

### **Checklist For a More Detailed Calculation**

- Percent of increased mind share of "green" consumers
- x Percent of historic markets share increase per percent of mind share
- x Percent of historic revenue per percent of market share

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#### **Increased revenue from new "green" customers**

- + Increased revenue from more loyal customers
  - + Increased revenue from new markets
  - + Increased revenue from services through dematerialization and leasing
  - + Increased revenue from environmental services
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**Total increased new revenue**

## **REDUCED RISK**

### **Simple, Macro-level Calculation**

Total revenue today		\$44,000,000,000
Selling, general, and administrative (SG&A) expenses <i>(Assumption: SG&amp;A percent of total revenue)</i>	15%	\$6,600,000,000
Part of SG&A expenses associated with risk <i>(Assumption: Percent of risk-related SG&amp;A expenses)</i>	5%	\$330,000,000
<b>Expense reductions from REDUCED RISKS</b> <i>(Assumption: Percent of risk-related SG&amp;A expenses saved)</i>	5%	<b>\$16,500,000</b>
<i>Benefit expressed as a percent of overall revenue</i>		0.04%

### **Methodology For a More Detailed, Scenario-based Calculation**

Based on a scenario methodology described in

*Pure Profit: The Financial Implications of Environmental Performance*

by Robert Repetto and Duncan Austin in a report for the World Resources Institute, 2000.

#### **Step 1: Identify salient future issues**

- o Identify future environmental, social, and economic forces that are likely to have significant financial impact on the company within the time frame of the assessment (e.g., the next 10 years).
- o Consult experts from government agencies, industry, environmental

- and social activist groups, consultants, and scientists.
- o Research published literature.
- o Use a matrix of the forces for change (e.g., market prices and availability, regulations, changes to taxes and subsidies, liabilities, and other risks outlined earlier) and the stages of the product cycle (e.g., supply of raw material, manufacturing process, product output, post-consumer take-back) to identify the key value drivers over the range of the product cycle.

### **Step 2: Build scenarios around each**

- o Define the range of plausible outcomes associated with each issue.
- o Develop two to three scenarios for each issue.

### **Step 3: Assign probabilities to each scenario**

- o Especially do this for the best- and worst-case scenarios.

### **Step 4: Assess company exposure to these issues**

- o Have industry or company experts rank each issue based on the magnitude of its potential impact on earnings, its timing (the sooner it happens, the greater its impact), and its probability.

### **Step 5: Estimate financial impacts contingent on the scenarios**

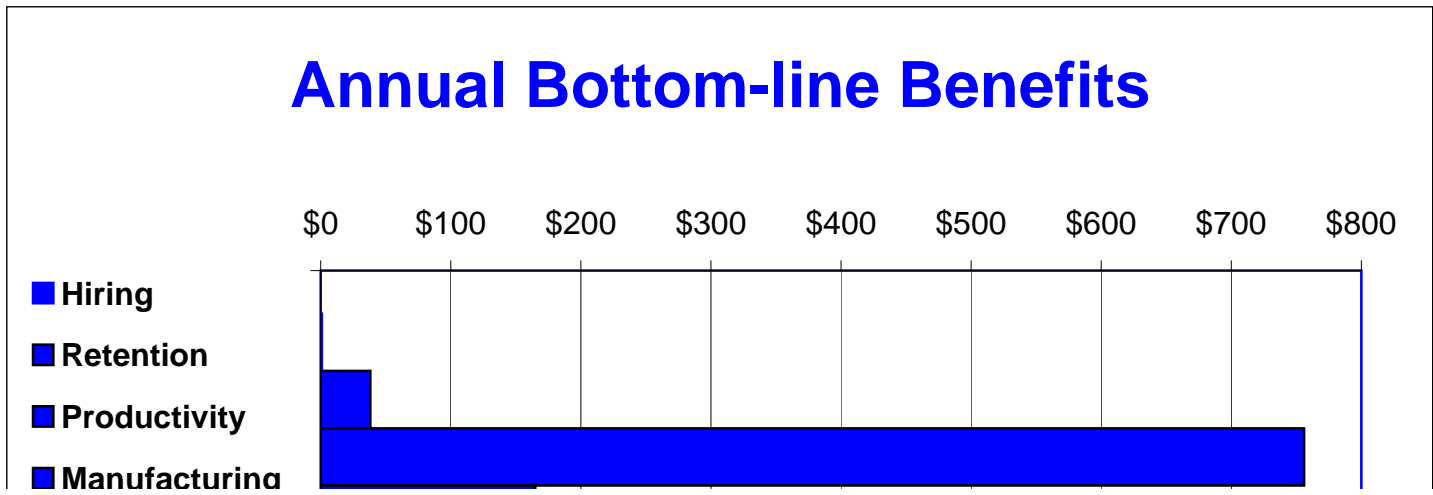
- o For the forecast period, first build baseline financial forecasts using industry and company trends. Use a valuation technique (e.g., McKinsey's entity discounted cash flow model or Stern Stewart's Economic Value Added model)

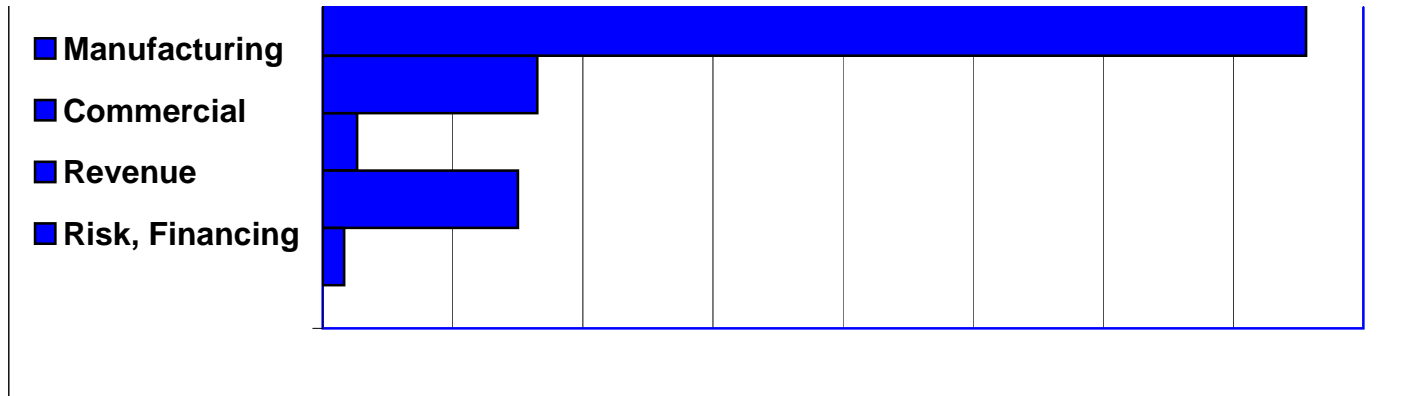
to equate the value of the company to the sum of the discounted present values of all its separate cost, revenue, investment, and financing streams.

- o Then, for each scenario, quantify the outcomes in terms that can be used in a financial analysis (e.g., impact on prices, production costs, revenues, expenditures, investments required, and balance sheet liabilities) for each year in the forecast period. If appropriate, do this for individual company locations.
- o Reduce these year-by-year amounts to discounted present values using an estimate of the weighted average cost of capital.
- o Add these present values to obtain the net financial impact for the combined scenarios, and express this as a percentage of the company's current market valuation.

**TOTAL BOTTOM-LINE BENEFIT**

Totals from Seven Benefit Areas	Annual Savings and Increased Revenue	Annual Profit Increase
Annual savings on RECRUITING costs	\$839,318	\$839,318
Annual savings from higher RETENTION rate	\$38,171,152	\$38,171,152
Annual benefit of increased PRODUCTIVITY	\$756,000,000	\$756,000,000
Annual benefit in MANUFACTURING costs	\$330,000,000	\$165,000,000
Savings in COMMERCIAL SITE operating costs	\$26,400,000	\$26,400,000
Increased REVENUE, and resulting PROFIT	\$2,200,000,000	\$150,000,000
Expense reductions from REDUCED RISKS	\$16,500,000	\$16,500,000
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<b>TOTAL</b>	<b>\$3,367,910,470</b>	<b>\$1,152,910,470</b>
<b>Percent of previous year's revenue &amp; profits</b>	<b>8%</b>	<b>38%</b>
<i>(Assumption: Revenue &amp; profit in previous year)</i>	\$44,000,000,000	\$3,000,000,000





Benefits Obtained Over Five Years	% of Benefit	Gross Benefit	- Education Investment	Net Benefit	IRR on Educ'n Invest't
Year 1	30%	\$1,010,373,141	\$124,109,589	\$886,263,552	714%
Year 2	50%	\$1,683,955,235	\$62,054,795	\$1,621,900,440	2614%
Year 3	70%	\$2,357,537,329	\$62,054,795	\$2,295,482,534	3699%
Year 4	90%	\$3,031,119,423	\$62,054,795	\$2,969,064,628	4785%
Year 5	100%	\$3,367,910,470	\$62,054,795	\$3,305,855,675	5327%
<b>Total net benefit over 5 years</b>				<b>\$11,078,566,830</b>	
<b>NPV of 5-year investment in education</b> <i>(Assumption: Internal cost of money)</i>		<b>6%</b>		<b>\$9,029,019,657</b>	

## DERIVATION OF "SD Inc." ASSUMPTIONS

Source: FORTUNE 500 web site at <http://www.fortune.com/fortune/fortune500/ind8.html> for 1999

	FORTUNE 500 Ranking	1999 Revenue US \$ millions	% Change From 1998	1999 Profit US \$ millions	% Change From 1998	1999 Employees Number	% Change From 1998	1998 Revenue	1998 Profit	1998 Employees
<b>Computers, Office Equipment</b>										
Intl. Business Machines (IBM)	6	87,548	7%	7,712	22%	307,401	6%	81,821	6,321	290,001
Hewlett-Packard (HP)	13	48,253	3%	3,491	19%	84,400	-32%	46,848	2,934	124,118
Compaq Computer	20	38,525	24%	569	0%	76,100	-5%	31,069	569	80,105
Dell Computer	56	25,265	38%	1,666	14%	36,500	50%	18,308	1,461	24,333
Xerox	87	19,228	-4%	1,424	261%	94,600	2%	20,029	394	92,745
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Total		218,819	10%	14,862	27%	599,001	-2%	198,074	11,680	611,302
<b>Average of top 5 companies</b>		<b>43,764</b>	10%	<b>2,972</b>	27%	<b>119,800</b>	-2%	39,615	2,336	122,260

The above data is used as the basis for the assumptions for the hypothetical "SD Inc." company used in sample calculations in the worksheet. The following data about the rest of the top 10 "Computer & Office Equipment" companies is for information purposes only.

Sun Microsystems	150	11,726	20%	1,031	35%	29,700	13%	11,703	1,027	29,661
Gateway 2000	203	8,646	16%	428	24%	20,726	9%	8,632	427	20,707
NCR	283	6,196	-5%	337	176%	32,800	-1%	6,199	331	32,803
Apple Computer	285	6,134	3%	601	94%	8,348	2%	6,132	595	8,346
Pitney Bowes	354	4,548	5%	636	10%	30,628	-2%	4,546	635	30,634
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Total of top 10		256,069	9%	17,895	22%	721,203	-2%	235,286	14,696	733,455
<b>Average of top 10</b>		<b>25,607</b>	9%	<b>1,790</b>	22%	<b>72,120</b>	-2%	23,529	1,470	73,345

**SD Inc. as a % of Top 10**

**85%**

**83%**

**83%**

**84%**

**79%**

**83%**