

7.2 Human Resources

When the Human Resources Module is activated, three areas must be addressed:

1. **Complement:** The number of workers in the workforce. Needed Complement is the number of workers required to fill the production schedule without overtime.
2. **Caliber:** The talent of the workforce. If companies are willing to spend the money, they can recruit a higher caliber of worker. This results in higher productivity and lower turnover. Companies set a Recruiting Spend budget of up to an additional \$5,000 per worker. If they spend nothing extra, their recruitment cost per worker remains at \$1,000 and they get an average person off the street. The more they spend, the higher the caliber of the worker.
3. **Training:** The amount of time workers spend in training each year. Training leads to higher productivity and lower turnover, but takes people off the job while they are in the classroom. Each training hour costs \$20.00 per worker.

Investments in Recruiting and Training raise your Productivity Index, which in turn lowers your per unit labor costs.

After reviewing this section, test your knowledge by clicking HR Quiz to the left.

Human Resources decisions are made in two locations:

1. The Workforce Complement percentage is entered at the bottom in the Production area;
2. Recruiting Spend and Training decisions are made in the Human Resource area.

When the module is not active, the Needed Complement will always be 100% and the Recruiting and Separation costs will automatically update as production schedules are adjusted.

7.2.1 2nd Shift and Overtime

Each production line has a 1st Shift Capacity, which is the number of units, in thousands, that can be produced each year by running a single eight hour shift. Companies can produce up to twice the 1st Shift Capacity by running a 2nd Shift and/or Overtime. 2nd Shift means workers arrive at the end of the 1st Shift and work a full 8 hours. Overtime means workers stay on past the first 8 hours of their shift.

Workforce Complement						
Last Year	Needed	This Year (%)	1st Shift	2nd Shift	Overtime	
583	729	98	666	48	2.2%	

Workforce Complement Percentage Entered in Production: Management has opted to hire 98% of this year's Needed complement (729 workers). The company will have

666 1st Shift workers and 48 2nd Shift workers for a total of 714. Some of these will work Overtime hours, which will account for 2.2% of the production schedule.

In the Production area's Workforce Complement row, the This Year (%) cell conveys the percentage of the Needed Complement that will be hired this year. 100% means that every job slot will be filled. While you can enter a percentage in excess of 100, the system will reject this entry and only hire the Needed Complement.

As a matter of policy, your company might want to hire fewer than the Needed complement. For example, a company buys automation that will become operational the following year. The managers know that next year the company will not need as many workers. The company can save recruitment costs this year and separation costs next year if it asks 1st Shift employees to work on Overtime versus hiring 2nd Shift workers who will be let go in a year's time.

However, Overtime can erode a company's Productivity Index.

7.2.2 Productivity Index

As decisions are entered, a projection of this year's Productivity Index will display on the Human Resources page. The higher the index, the lower the company's per unit labor cost (see 7.1.3 for a detailed explanation of the Productivity Index and labor costs).

Human Resources Recruiting Spend and Training budgets are not entered in thousands. To spend \$5,000, enter 5000.

STAFFING	Last Year	This Year
Needed Complement	729	729
Complement %	100%	98%
1st Shift Complement	583	666
2nd Shift Complement	0	48
Overtime%	25.0%	2.2%
Turnover Rate	9.5%	7.2%
New Employees	55	183
Separated Employees	146	0
Recruiting Spend	\$0	\$0
Training Hours	80	80
Productivity Index	100.0%	100.5%
Recruiting Cost		\$183
Separation Cost		\$0
Training Cost		\$1,143
Total HR Admin Costs		\$1,326

Training Hours and Recruiting Spend Entered in Human Resources: The company has decided to ask each worker to go through 80 hours training in the upcoming year. Training is projected to increase the Productivity Index 0.5%. Investing in Recruiting

Spend, which are bonuses to hire a better caliber worker, would also raise the Productivity Index.

If Labor Negotiations are scheduled, increases in the Productivity Index can be lost if the company uses a low wage/benefit tactic. The Productivity Index can never fall below 100%.

After the round is processed, the results of all HR investments appear on page 12 of the Capstone Courier in the HR/TQM Report.

7.2.3 Human Resource Definitions

Needed Complement: The number of workers needed this year if the company is to avoid overtime.

Complement: The number of workers in your workforce this year. This year's complement percentage is entered on the Production spreadsheet in the This Year (%) column. It also appears in the second row of the Human Resource spreadsheet. Suppose you enter a percentage that is less than 100. Employees must work overtime to complete the work schedule. Excessive overtime drags down productivity and increases turnover. 2nd Shift and overtime workers cost 50% more per hour than workers on 1st Shift.

1st Shift Complement: For each product, if your schedules are less than or equal to the 1st Shift Capacity, your workers will only be used on a 1st Shift.

2nd Shift Complement: If for any product your schedule is greater than your 1st Shift Capacity, and if the This Year (%) is at or near 100%, workers will be added to a 2nd Shift. 2nd Shift workers are paid 50% more per hour than 1st Shift workers. 2nd Shift scheduling has no impact upon the Productivity Index.

Overtime Percent: The percentage of work performed on overtime. 100% means that every 1st Shift worker is doing a double shift. 15% means that, on average, workers perform 15% overtime. Overtime increases turnover and drags down productivity.

Turnover Rate: The percentage of workers who left the company last year, excluding downsizing. About 5% is rooted in unavoidable factors like retirement, relocation and weeding out poor workers. Remaining turnover is a function of employee dissatisfaction. The best workers leave first. Turnover is driven down by Recruiting Spend and Training Hours. Turnover also goes up as a result of overtime and a substandard compensation package from the Labor Negotiation.

The Turnover Rate ignores downsizing factors. It reflects the turnover in the population of workers that you keep after downsizing (that is, reducing production schedules or increasing automation).

New Employees: Employees recruited this year. At a minimum, New Employees reflects replacement of workers lost during the course of the year to turnover. It also

includes workers hired in January to increase the Complement from last year. New employees incur a Recruiting Cost. As a simplifying assumption, the simulation does not rehire fired or separated workers.

Separated Employees: Employees lost because of downsizing or increases in Automation. Specifically, Separated Employees is Last Year's Complement minus This Year's Complement. All separations occur in January and incur a Separation Cost.

Recruiting Spend: Recruiting Spend is the extra amount budgeted per worker to recruit high caliber workers. The higher the budget, the better the worker, resulting in a higher Productivity Index and lower Turnover. Your entry is added to a base amount of \$1,000 per new employee. \$0 means no extraordinary effort is spent recruiting new people. Diminishing returns apply after \$5,000 per worker.

Training Hours: Training Hours is the number of hours each year that each individual worker is taken off-line for training and development. For example, 40 means that each worker will spend 40 hours in training this year. Training produces a higher Productivity Index and a lower Turnover Rate. The more time off-line, the higher the needed Complement. Each training hour costs \$20.00 per worker in training costs.

Productivity Index: The Productivity Index indicates how the general workforce compares with the workers employed in Round 0. 100% means that current workers are just as good as original workers. 110% means that, on average, you only need 91% ($100 / 110 = 91$) of the Complement to do the same work as a workforce comprised of original workers. In short, higher productivity means fewer workers are required, and that drives down per unit labor cost. Recruiting Spend and Training Hours drive up the Productivity Index. Overtime drags down the Productivity Index. This Year actually means by the end of this year. Last year's Productivity is the driver behind your Complement requirements this year because it indicates your productivity level on January 1.

Recruiting Cost: The amount spent to recruit new workers. It equals the number of workers recruited times ($\$1,000 + \text{Recruiting Spend}$).

Separation Cost: The cost to separate (fire) workers. If you downsize your workforce (by reducing production schedules or increasing automation), each worker is given a separation package worth \$5,000.

Training Cost: Training costs are driven by Training Hours. Each worker-training hour costs \$20.00 and pays for such things as educational materials, instructors, etc. Training costs do not include time off the job.

Total HR Admin Costs: Total HR Administrative Costs are incorporated into the income statement's admin line item. Costs are allocated to products based upon their Complement. For example, if Able has 10 workers and Acre has 20, then the HR Admin costs (training, recruiting, etc.) would be twice as much for Acre as for Able.