

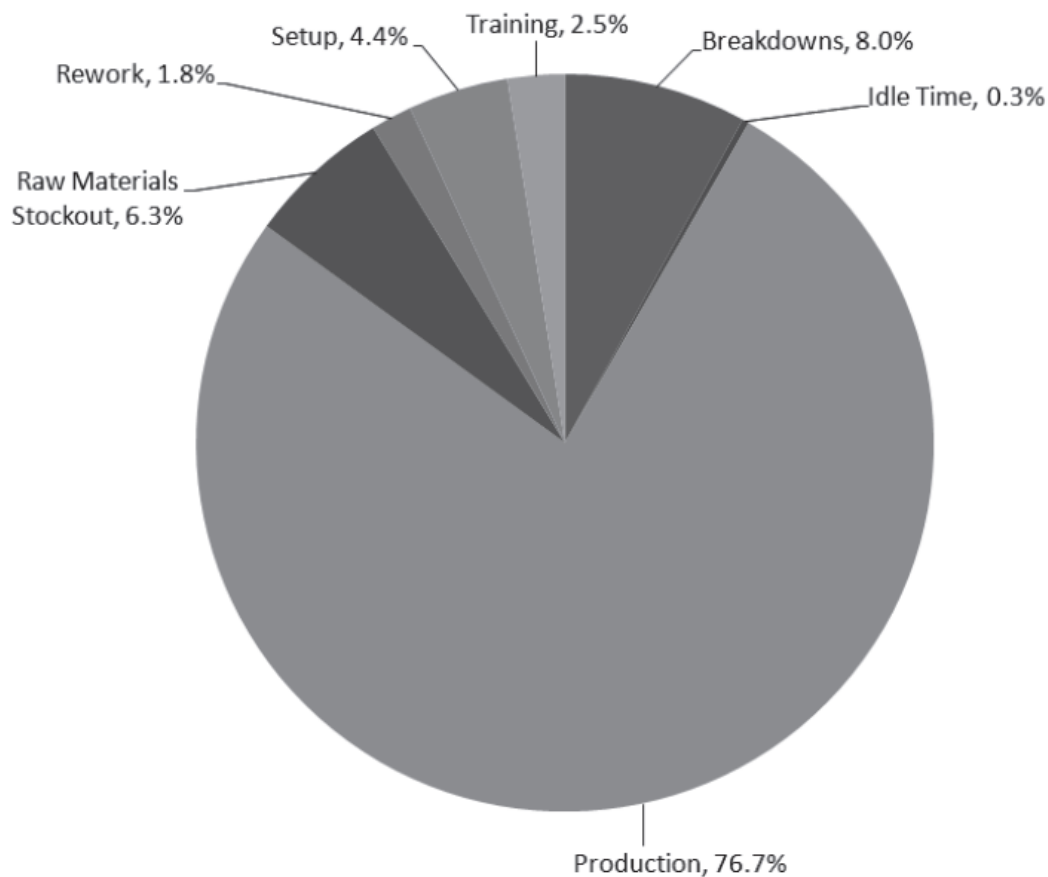
MikesBikes-Advanced

STRATEGIC MANAGEMENT SIMULATION

MB-A Manufacturing Guide

Your Factory

Manufacturing Capacity Usage



Your factory's capacity usage comprises:

Production: The percentage of time last year that your factory produced bikes.

Breakdowns: The percentage of time last year that your factory was inoperable due to mechanical malfunctions and line stoppages.

Idle Time: The percentage of time last year where your factory was inactive.

Raw Materials Stockout: The percentage of time last year lost to due to the unavailability of raw materials.

Rework: The percentage of time last year lost to time spent reworking units that were not fit for sale.

Training: The percentage of time last year lost because of worker involvement in training or improvement groups.

Setup: The percentage of time last year lost due to stoppages for machine set-ups.

Efficiency

The Manufacturing Responsiveness Report will display how your factory capacity has been allocated over the previous year, and enable you to resolve issues with inefficiency.

You should be aiming for a production allocation greater than 80%. There are various factors which have a negative effect on production; it's your job to reduce these to increase your Factory Capacity and reduce expenditure.

Breakdowns: Preventative maintenance spending reduces the likelihood of plant breakdown, hence decreasing capacity losses and lead time delays.

Raw Materials Stockout: Investing in developing strong relationships with your Suppliers is recommended to reduce stockouts. In the short-term you can also carry additional Raw Material Inventory as a buffer.

Rework: Rework time can be overcome by increasing both the average Staff Salary and also annual Training Hours.

Idle Time: You can decrease your factory's Idle Time by either increasing production (increasing consumer demand and your sales forecasts for your products), or reducing Factory Capacity.

Setup: Investment in Setup Time Reduction will improve your machinery and manufacturing processes to reduce setup time.

Note: Factory efficiency is also contingent on **Batch Size**, which represents the number of units produced in a given production run. Larger batch sizes reduce the number of set-ups and hence increase available capacity. However this comes at the cost of increasing factory lead-time and potentially delivery times if your factory is inefficient.

For more information on this topic, please refer to pages 41-43 of the Player's Manual.

Quality

The Manufacturing Quality Report enables you to monitor the factors which contribute to the quality rating of your products. An increase in the quality of your bikes is attained through a combination of motivation and training of staff (Salary and

Training), investment in Quality Systems Technology, and Product Inspections. Inspecting a percentage of your products is a very effective method of increasing quality in the short-term, however it is expensive. Quality Systems are a better investment in the long-term.

For more information on this topic, please refer to pages 42-44 of the Player’s Manual.

Growth

Factory capacity has two components – Factory Plant and Factory Workforce/Staff.

Factory Capacity: Your factory capacity is measured by standard capacity units (SCU). Each product requires a certain number of SCU to manufacture, and typical products are in the range of 0.1 to 2 SCU per bike depending on the product specifications and the degree of cost reduction incorporated in the design. The rule is that for each \$300 of product prime cost, a product requires 1 SCU to produce. For example, your existing Adventurer Bike has a product prime cost of \$275; therefore it requires 0.92 SCU for every unit produced in a given period.

Capacity Requirement Calculation

	Product 1	Product 2	Total
Desired production in units	20,000	10,000	
SCU per unit	0.92	2	
Required capacity in SCU	18,400	20,000	
Required capacity for 2 products (SCU)			38,400
Plus wastage estimate (SCU)			10,000
Overall required factory capacity (SCU)			48,400

SCU - Factory Plant and Factory Workforce: To increase your Factory Capacity you must purchase additional Factory Plant and/or hire more Staff. This choice is determined by factors such as; the urgency of the required additional capacity, how much additional capacity is required, and/or the current balance of your Factory Plant and Staff. As such, important items to note are:

- There is a one year delay in building additional Factory Plant, whereas additional Staff can be hired immediately. This is very important as future capacity requirements must be anticipated in advance.
- Hiring Staff may be immediate, but it is the more expensive option of the two.

- An efficient factory is one where Factory Workforce Capacity and Effective Plant figures are balanced (see Manufacturing Responsiveness Report). Where there is an imbalance, any increases in Factory Capacity will be limited.

Before you increase Factory Capacity it is important to balance Factory Plant and Staff. The Manufacturing Responsiveness Report enables you to balance your Effective Plant and Factory Workforce Capacity figures. The greater the distance between these figures, the less effective new Staff or Plant will be:

- If your Effective Plant exceeds your Factory Workforce Capacity, you are understaffed and your Factory Plant is not being used to its full potential. Any further increases in Plant Size, without also an increase in Staff, will result in a significant diminishing rate of Plant effectiveness; OR
- If your Factory Workforce Capacity exceeds your Effective Plant, you do not have enough Factory Plant to use your Staff efficiently. Any further increases in Staff, without also an increase in Plant Size, will result in a significant diminishing rate in Staff effectiveness.

For more information on this topic, please refer to pages 35-38 of the Player's Manual.