

Decision Making Relationships: Rational Firm

by Sophia Tutorial



WHAT'S COVERED

This tutorial will identify the important decisions made by the rational firm, or business. We will explore the various costs that a firm faces and how minimizing those costs allows a firm to maximize its profit.

Our discussion breaks down as follows:

1. The Business Mindset
2. Business Costs
3. Finite Resources
4. Opportunity Costs
5. Cost Minimization/Profit Maximization
6. Economic Profit: Example

1. The Business Mindset

Before we get started, it is important to note that these three words will often be used interchangeable, and they all mean the same thing:

Firm

Business

Producer

A firm is simply another word for a business, which is a producer of goods or services.

For this tutorial, it is necessary to get into the mindset of the business. It is very easy to think like a consumer, because we are consumers every day, always buying goods and services.

However, we don't all own our own companies, so for now, think like a business!

So, what is the point of owning a business? For most business owners, it is to make a profit, which is

accomplished by selling things and bringing in revenue.

However, you probably had to pay out a lot in terms of cost, in order to get that product to market. Therefore, if you are left over with money, you are left with a profit. Profit equals revenue minus costs.

Profit = Revenues - Costs

All businesses have to make three main decisions:

- How much should we produce?
- How should we produce it (e.g., technology, labor, etc.)?
- How much land, labor, and capital do we need to buy?

2. Business Costs

Regarding business costs, firms purchase what we call resources.

Note, these three terms are sometimes used interchangeably:

Resources = Inputs = Factors

Resources are the same as inputs, because they are the elements that businesses must purchase, that go into their production process. They are also known as factors or factors of production.

As mentioned, there are three resources:

- Land
- Labor
- Capital

Land	Labor	Capital
Anything from the land	People working to provide goods or services	Buildings, machines, and equipment



The idea of capital as a resource can be a bit confusing. Think of capital as things that have already been produced--like buildings, machines, and equipment--that help a business to further its production process.

Business costs are often categorized into two different categories: fixed and variable.

A fixed cost is one that doesn't change; it stays the same from month to month or year to year--like rent or property taxes.

A variable cost, on the other hand, varies with production. So, depending on how much you want to produce, you may need to buy more raw materials or pay more wages to workers.

Fixed Costs	Variable Costs
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Rent Property taxes	Raw materials Wages to workers
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3. Finite Resources

Now, a **finite resource** is a fixed amount of supply that is irreplaceable and non-recoverable, meaning there is a limit to it.

Scarcity exists in the world with almost everything. Land, labor, and capital are definitely limited; there is not an endless quantity of them.

Because there's not an endless quantity, this means that businesses must choose how much of each resource to purchase.

➞ **EXAMPLE** For example, here are possible decisions to be made regarding each resource:

- How much lumber do we need (land)?
- How many workers should we hire (labor)?
- How many machines should we buy (capital)?

All of these questions involve a cost/benefit comparison.

TERM TO KNOW

Finite Resource

A fixed amount of supply that is irreplaceable and nonrecoverable

4. Opportunity Costs

When businesses make decisions, it is important to note that they--just like consumers--face **opportunity cost**, which is the sacrifice made by choosing one value or opportunity over another due to limited resources.

Because our resources are limited, we must sacrifice something whenever we make a decision.

Whenever consumers make decisions, they face opportunity costs.

➞ **EXAMPLE** For instance, if you buy an expensive cup of coffee at Starbucks, perhaps you won't go out to lunch with your co-workers tomorrow. You would use our own individual preferences to make that type of decision.

Firms are going to face opportunity costs with their resources. They must continually weigh the alternative uses of land, labor, and capital.

➞ **EXAMPLE** For example, if they are hiring more workers, they are going to have to sacrifice either land or capital.

Just as we, as consumers, weigh the benefits and costs before we purchase something, so does the rational firm.

Opportunity Costs	
Consumers	Firms
Opportunity costs of purchases	Opportunity costs of resources
Use our preferences to decide	Must weigh alternative uses of land, labor, and capital

➦ **EXAMPLE** For example, how many workers should you hire? Isn't it always beneficial to hire more workers? Not necessarily. You have to look at the opportunity cost of hiring one additional worker, because that cost represents money that cannot be spent upgrading technology (capital), for instance. You'd be making a sacrifice in capital if you decide to purchase more labor.

➦ **EXAMPLE** Here is another example. It seems like the grocery stores are adding more and more self-checkout lanes all the time, which is an example of capital. So, how many should they add? Well, each one likely costs a lot of money. Each cost represents workers that cannot be hired or improvements in other areas of the store that cannot be made.

TERM TO KNOW

Opportunity Costs

The sacrifice made by choosing one value or opportunity over another

5. Cost Minimization/Profit Maximization

When businesses make decisions surrounding resources, they are seeking to minimize cost.

Cost minimization is an output strategy that incurs the least amount of cost.

Literally speaking, the least amount of cost would mean hiring no workers and spending no money at all, but that is not what we mean by cost minimization.

For the purposes here, we are talking about opportunity cost, which, you may recall, refers to what we give up or sacrifice.

Therefore, what we are looking to do, as a business, is use the production methods that minimize how much we are giving up or sacrificing in other areas.

This, in turn, will lead us to maximize our profits, which is the bottom line for any business owner. **Profit maximization** is the procedure of determining quantity and cost that yields the greatest profit.

TERMS TO KNOW

Cost Minimization

Output strategy that incurs the least amount of cost

Profit Maximization

Procedure of determining quantity and cost that yields the greatest profit

6. Economic Profit: Example

Now let's discuss the concept of economic profit, by walking through an example.

Suppose you are deciding to invest in a business, and an investment opportunity comes your way to open up a food truck.

It just so happens that you have \$40,000 saved up, which is the initial investment amount needed to purchase the truck itself. That \$40,000 was earning 5% in bonds, which will be a relevant piece of information later in the example.

After doing some estimations, you figure that you might be able to take in \$50,000 dollars in revenue the first year. However, you're also estimating that your out-of-pocket costs that first year will add up to \$49,000.

Initial investment = \$40,000

Estimated revenue = \$50,000

- 10,000 meals @ \$5 each

Estimated out-of-pocket costs = \$49,000

- \$25,000 in food costs
- \$24,000 in labor

So, is this a good investment? Well, let's take a look at this chart.

Initial Investment: \$40,000 Interest Rate Available: 5%			
Revenue	Total Revenue	Costs	Total Cost
10,000 meals x \$5 each	\$50,000	Food cost (10,000 meals x \$2.50 each)	\$25,000
		Labor cost	\$24,000
		Total cost	\$49,000

At first glance, it does appear that your profit or return would be \$1,000 in the first year.

However, this leaves an important component out of the equation: the opportunity cost.

Coming back to the initial \$40,000 investment, if you had simply left it in the bank, you could have earned 5%, or \$2,000.

Initial Investment: \$40,000 Interest Rate Available: 5%			
Revenue	Total Revenue	Costs	Total Cost
10,000 meals x \$5 each	\$50,000	Food cost (10,000 meals x \$2.50 each)	\$25,000

		Labor cost	\$24,000
		Opportunity cost (\$40,000 x .05)	\$2,000
		Total cost	\$51,000

When you calculate opportunity cost like an economist would, then you would need to factor in your food and labor costs, but you'd also need to factor in what you gave up the opportunity to do with your invested money.

Therefore, your total cost is actually \$51,000, which means that your costs exceed your revenue.



BIG IDEA

Economic profit will always take into account opportunity costs.

Economic profit = Total Revenue - Total Costs (including Opportunity Costs)

So, analyzing any return that an initial invested amount might be earning is an example of an opportunity cost that an accountant might *not* consider. However, if you decided to quit your salaried job to start the business, that would be an opportunity cost that you absolutely need to take into account.



SUMMARY

We began today's tutorial by getting into **the business mindset** to understand the decisions that businesses need to make. We learned about the types of **costs businesses face** and how we categorize them. We learned that because of **finite resources**, businesses must face **opportunity costs** when making decisions.

We learned that when businesses make decisions surrounding resources, they seek to **minimize costs** and **maximize profit**. Lastly, we learned that **economic profit** must include *all* costs, including opportunity costs.

Source: Adapted from Sophia instructor Kate Eskra.



TERMS TO KNOW

Cost Minimization

Output strategy that incurs the least amount of cost.

Finite Resource

A fixed amount of supply that is irreplaceable and nonrecoverable.

Opportunity Costs

The sacrifice made by choosing one value or opportunity over another.

Profit Maximization

Procedure of determining quantity and cost that yields the greatest profit.

