Economics, Management and Entrepreneurship
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Lecture – 09
Relevant Information and Decision Making

Hello, good morning to all of you, welcome to the 9th lecture on economics, management and entrepreneurship. In the last class, we had discussed about direct costs, indirect costs and unallocated costs, we also talked about product costs and period costs and then towards the end of the lecture, we talked about 2 different types of costing systems; traditional costing and activity based costing.

I think towards the end of the last class, we could not complete a particular example that I had taken for activity based costing therefore, before I start the new topic today, I will like to do that problem once again.

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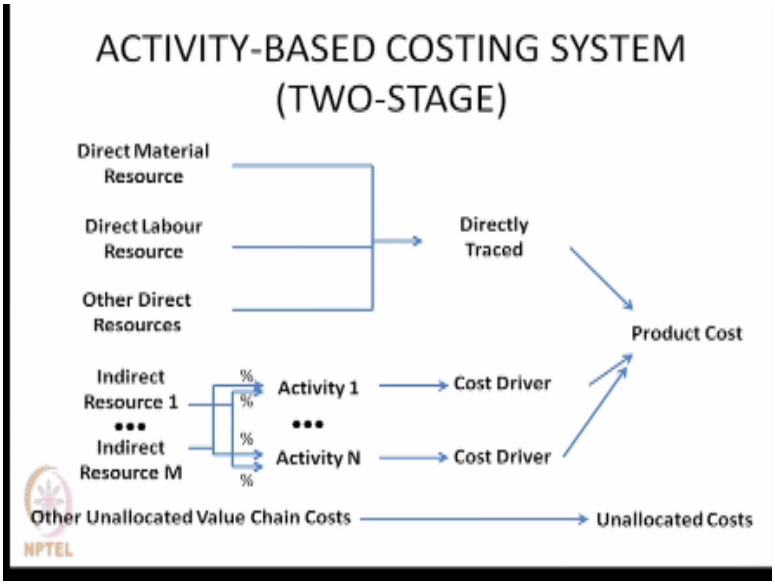

Activity based costing as this diagram shows, we can say that there are certain direct costs such as direct materials, direct labour and other direct resources that can be traced directly to the product cost whereas, there are certain indirect resources which, while we allocate them to a particular product, we would like to first of all define certain activities and then try to estimate the percentage of each of these indirect resources that are spent on each of these activities.

And then through the cost drivers, we can allocate each of these indirect resources to the product costs of course, as before unallocated costs remain unallocated and that we subtracted from the gross profit margin to give our net profit margin.

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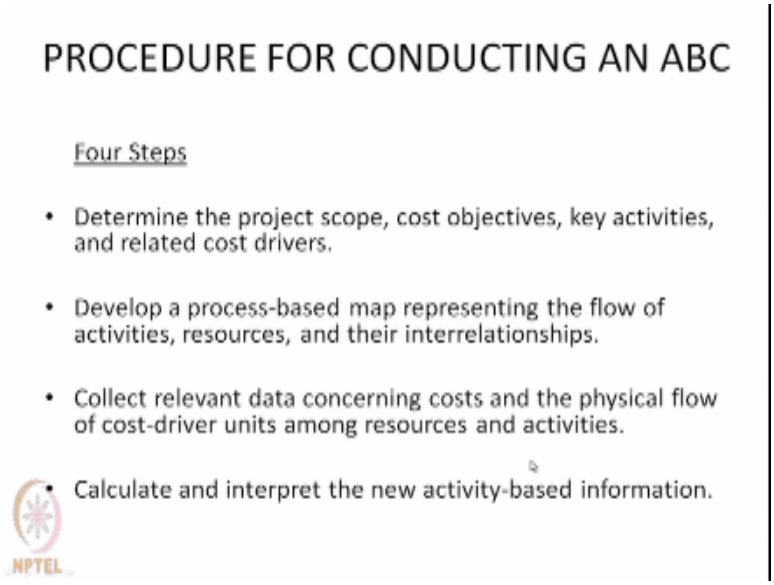

Now, there are 4 steps; the first step is to define the cost of Jack tips objectives, the activities and the related cost drivers, the second is to draw a process based map, the third is to collect the relevant data concerning the cost driver units among resources and activities and to identify the physical flows and of course, 4th is to calculate and interpret the new activity based information.

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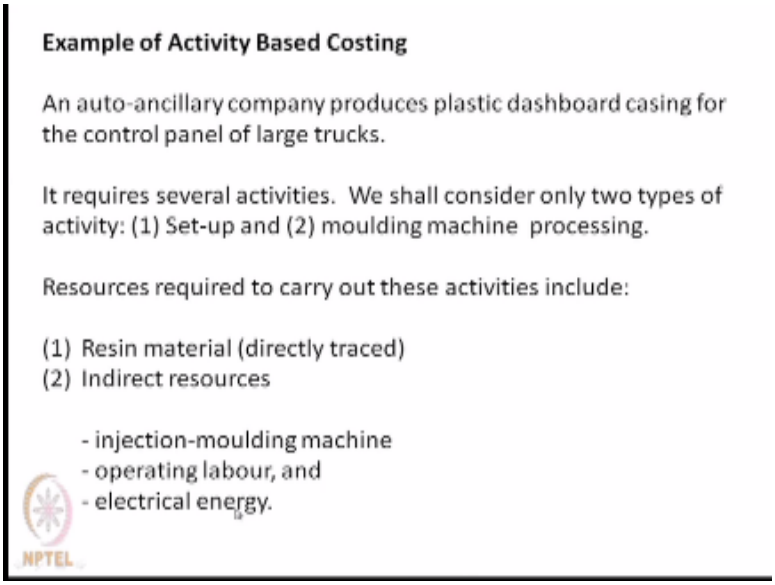

We have taken an example of an auto ancillary company that produces dashboard casings for large trucks and we have; we are considering 2 activities of several activities that are required;

one is setup of the moulding machine and a second is the actual processing by the moulding machine. 2 types of resources we can find out; one is directly traced and that is resin material and the other is in direct resources.

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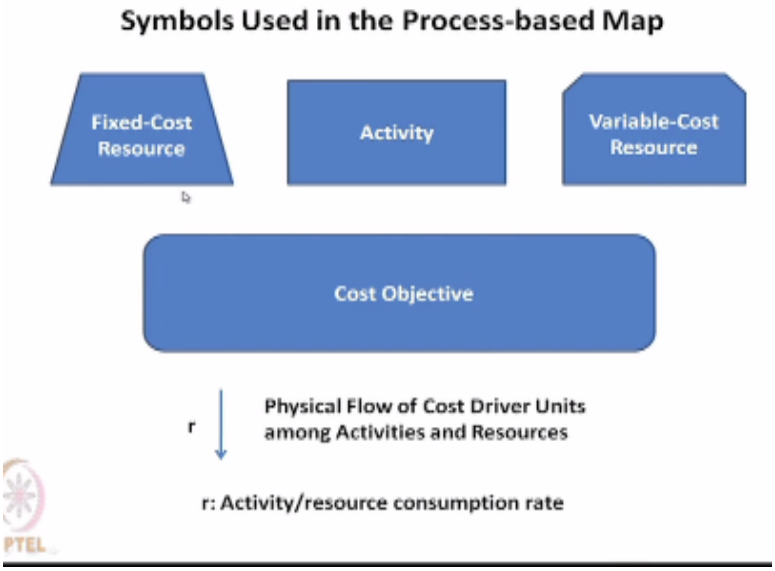

The moulding machine costs, the labour associated with it and the energy spent in processing, now this we wanted to so in the form of a map for which we need different symbols, we use this symbol to indicate the fixed cost resource, this symbol to indicate a variable cost resource, this for an activity, this for the final cost objective, this for the physical flow of cost driver units and r for the consumption rate of each activity or of resource.

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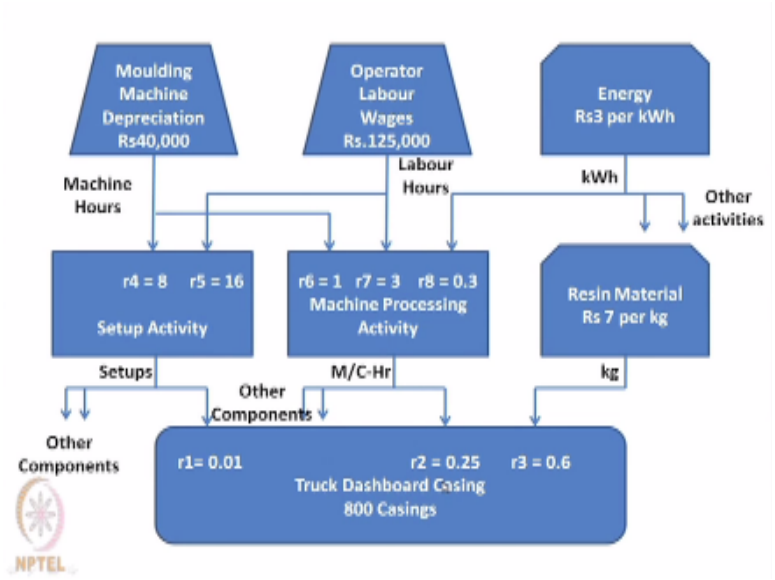

The example that we had cited is now depicted in the form of a map, we have 2 fix resources; operator labour is considered fixed because certain number of operators are with the company

and this is the moulding machine, this is also fixed cost, this is also fixed cost whereas, resin is a direct cost and it is a variable cost resource, energy is also variable cost but it is indirect because it is used for other activities as well.

Moulding machine is used not only for dashboard casings but also for other components for with it requires setups and machine processing activity, so what basically we said; we wanted to say how much fraction of the time moulding machine or how many number of times moulding machine is set up for dashboard casing compared to other components and similarly, how much labour force is utilized for dashboard casing compared to other component?

So, what we first do; we first define the consumption rates, this says one casing requires 0.01 setups or 100 casings require one set up, therefore 800 casings require 8 setups and similarly, we can find out at r2 is 0.25 meaning one casing requires 15 minutes of time of machine hour and are equal to 1/4 th machine hour and therefore 800 casings will require 200 machine hours and this says that one casing requires 0.6 kilogram of resin material.

Therefore, 800 casings would require 480 kilogram of resin material, so 480 multiplied by 7, this is the direct cost of resin material that goes to producing 800 casings, so this is simple to calculate, whereas these are not simple because as I was telling moulding machine is set up for producing 800 casings but it is also set up for other components, so just as we found out 8 setups for 800 casings similarly, for data of other components we can find out how many setups for other components.

Say for example, that we have 24 setups for other components that means that here it is 8 and here it is 24, so 24 + 8 is 32, so 1/4th of the total depreciation should be charged to these particular casings that means we have to find out the fraction of setups required for 800 casings compared to other components of the total setups. Similarly, for machine processing activity we require 200 machine hours; 800 multiplied by 0.25.

But for other components probably, 800 machine hours are required, so 800 + 200; 1000 machine hours are required but of that 200 machine hours are used only for dashboard casings, therefore 25% of this cost should go there, so this is how it is done.

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One casing requires

- 0.01 setup (i.e., 100 casings require 1 setup)
- 0.25 machine hour (i.e., 15 minutes)
- 0.6 kg of resin material

Hence, 800 casings require

- 8 setups, 200 machine-hours, and 480 kg of resin material

	Moulding Machine Depreciation (Machine-Hour)	Operator Labour (Labour-hours)	Energy (kWh)	Resin Material (kg)
Setup Activity (8)	8 x 8 = 64	16 x 8 = 48	-	-
M/C Processing Activity (200)	1 x 200 =200	3 x 200 = 600	0.3 x 200 = 60	
Total	264	648	60	480

And that is what we have basically done here, we have found out the total number of setups for moulding machine, total number of operator labour for the dashboard casing, total energy requirement is 60 kilowatt hour, total resin material 480 kilogram.

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Direct cost of energy = 60 kWh x 3 Rs/kWh = 180 Rs

Direct cost of resin material = 60 kWh x 7 Rs/kg = 420 Rs

Indirect machine depreciation cost allocated to Casing
= (% of machine hours used by Casing)(Rs. 40,000)

Indirect operator labour cost allocated to Casing
= (% of labour hours used by Casing)(Rs. 125,000)

% machine hours used by Casing = $\frac{264}{\textit{Total machine hours used by all components}}$

% labour hours used by Casing = $\frac{648}{\textit{Total machine hours used by all components}}$

Total Cost of Casing = 180 + 420 + Indirect Costs allocated to Casing

And then we multiply for the direct cost of energy and direct cost of resin material, there is no problem but for indirect machine depreciation cost, it has to be percent of the machine hour by casing multiplied by the total cost and similarly in direct operator lever is also calculated in the same way and this is what I was trying to tell you, 264 machine hours by casing, what is the total machine hours used by all components including the casings.

This ratio is multiplied with 40,000 to give the indirect machine depreciation cost and similarly for the indirect operator labour costs, we find out this ratio and multiplied with 125,000 rupees,

the total operator labour cost and that gives us the indirect operator labour cost allocated to casing. So, now we add the 4 components; the direct cost of energy which is 180, direct cost of resin material, which is 420, indirect machine depreciation cost and this cost together is the indirect costs allocated to casing.

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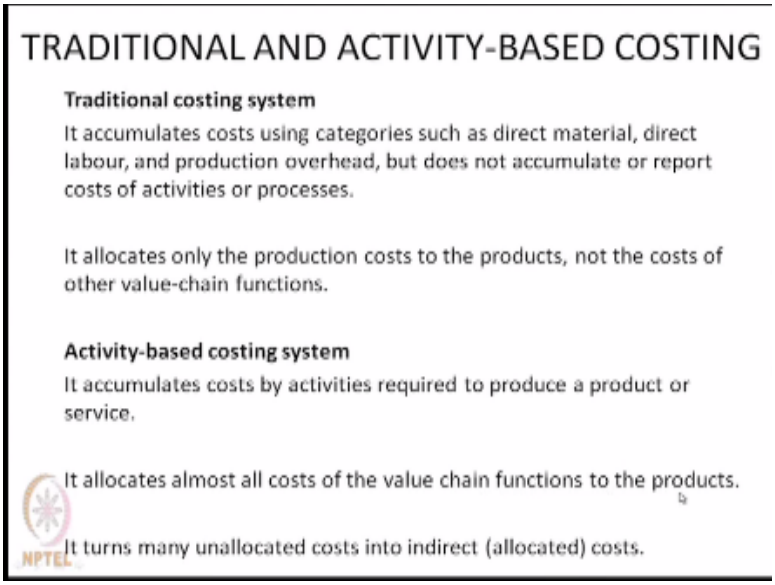

So, this is how the activity based costing works, so suppose now that we try to find out the difference between the approaches 2 approaches; the traditional and the activity based costing, we find that in traditional costing system it accumulates costs using categories such as direct material, direct labour, production overhead but does not accumulate or report costs of activities or processes.

It allocates only the production costs to the products and not the costs of other values and functions whereas, activity based costing system is much more precise, it accumulates costs by activities required to produce a product or a service, it allocates almost all costs of the value chain functions to the products and it turns many unallocated costs into indirect or allocated costs.

Now, we shall be using the concepts of activity based costing in many of our applications later with this, we pass on to; with this we end this particular topic and we pass on to our new topic, which is relevant information and decision making. First of all, what we mean by relevant information?

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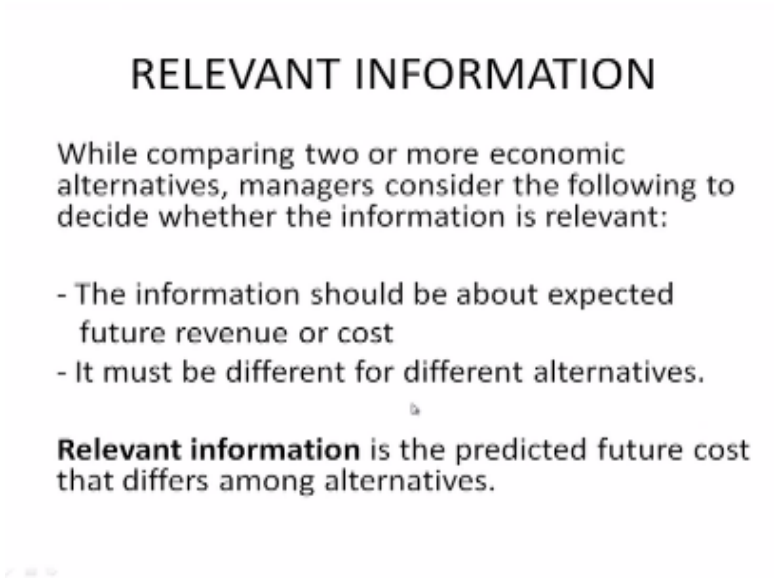

When we compare 2 or more economic alternatives, managers consider the following aspects to decide whether the information is relevant. One; the information should be about expected future revenue or cost, mark the word; future, it says that any cost information that is regarding expected future revenue or cost is relevant, so it is regarding future and not past, any past cost is a sunk cost and should not influence our decision regarding any aspect.

The second aspect that should be considered is that this information; cost information should be different for different alternatives, when there are different alternatives and the cost information is different that is a relevant piece of information, so we are more concerned with the future aspect of the information and not the past information and second that this information that is relevant only when it differs from one alternative to another alternative.

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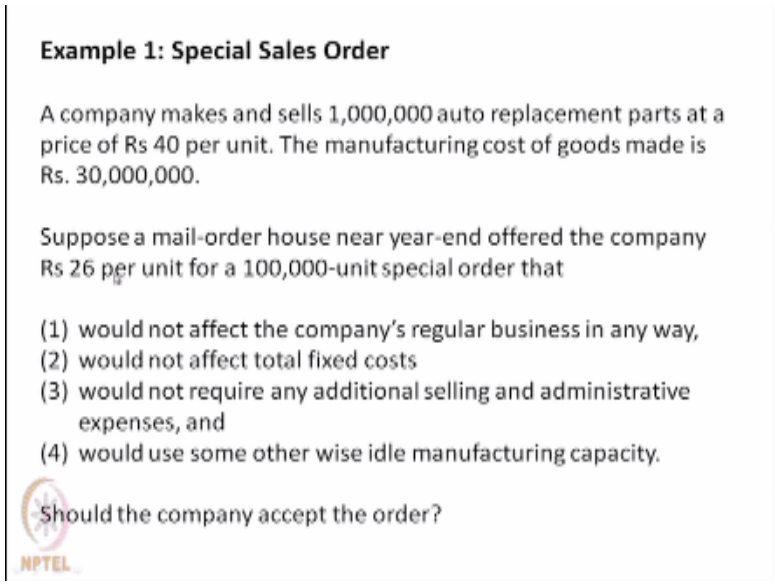

So, the definition that we give for relevant information is the predicted future costs that differ among alternatives. We will elaborate this in many examples that we are going to follow now. Now, let us take a simple example of special sales order, according to this a company makes and sells 1000 sorry 1 million sorry; 1 million auto replacement parts at a price of 40 rupees per unit, the manufacturing cost of goods made is 30 million rupees.

Now, suppose a mail order house near year end offered the company rupees 26 per unit for 100,000-unit special order that would not affect the company's regular business in any way, it would not affect the total fixed costs, it would not require any additional selling and administrative expenses and would use some otherwise, idle manufacturing capacity. What should the company do, should it accept this particular order or should it not accept this particular order?

Now, apparently as you can see it asks for giving only rupees 26 per unit whereas, the manufacturing cost appears to be rupees 40, the manufacturing cost appears to be rupees 30 because it is 30 million rupees to make 1 million auto replacement parts, so the unit cost of manufacturing is rupees 30, normally it sales at rupees 40, making a profit of rupees 10 per unit whereas, the order the customer is saying that he would like to pay at a price of rupees 26 per unit.

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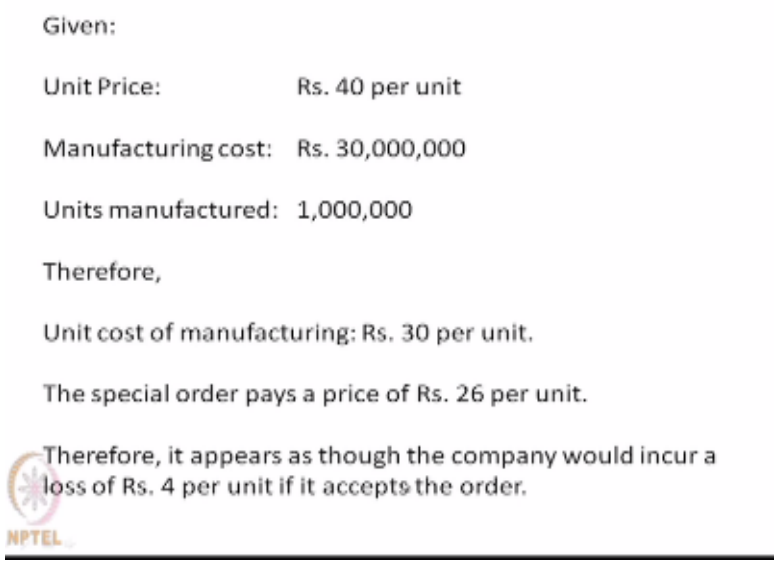

So, naturally 26 is < rupees 30 per unit which is the present manufacturing cost, so apparently, it appears as though the company would incur a loss of rupees 4 per unit, if it accepts the order, unit price is rupees 40, manufacturing cost is 30 million rupees for 1 million parts therefore,

cost of manufacturing is rupees 30, the special order is says that it can pay at a price of rupees 26, therefore as you can see this is not a very worthwhile proposal to accept.

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The company records show the following:

Variable expenses	
Manufacturing cost:	Rs. 24,000
Selling and administrative:	Rs. 2,200
Fixed expenses	
Manufacturing:	Rs. 6,000
Selling and administrative:	Rs. 5,800

The special order affects only the variable manufacturing costs, but affects neither the variable selling and administrative expenses nor the fixed expenses.

Hence the variable selling and administrative expenses and the fixed expenses are irrelevant for decision making on special orders.

The variable manufacturing costs are the only relevant costs.

Now, but if we analyse the cost records, we find the following; the company records so that the variable expenses associated with manufacturing of this type of parts is 24,000, selling and administrative expenses that are variable because as you know certain parts, certain components of selling and administrative could be variable, certain other could be fixed, so variable component of selling and administrative expenses is rupees 2200.

The fixed expenses are for manufacturing you require 6000 rupees and fixed component of selling and administrative expenses is rupees 5800, the special order affects not the fixed expenses because they are anyway, they will continue to be borne by the company, they are sunk cost, they are passed cost, they are fixed therefore, even though the company accepts this order, these expenses would remain and if it does not accept this expensive should also remain.

Now, since selling and administrative expense written here is variable, the variable part of selling and administrative expenses would; is a relevant cost just as the variable manufacturing costs. So, here the variable manufacturing expenses and the variable manufacturing expenses and the fixed expenses are irrelevant for; hello, you stop here, there is a problem here, I think we have to have a break here.

However, when we look at the company records, the company records; so the following fixed and variable expenses components, in the variable expenses the components are manufacturing

costs and selling and administrative costs. Manufacturing cost is 24,000 selling and administrative costs is 2200, fixed costs there is a manufacturing component and there is a selling and administrative component and they are 6000 and 5800 hundred respectively.

Now, if we look at the special order, then we realize that the variable part of the selling and administrative expense and the fixed expenses like manufacturing and selling and administrative expenses, the special order does not affect these 3 of them but it does affect the manufacturing costs therefore, the variable selling and administrative expenses and the fixed expenses are irrelevant for decision making on special orders.

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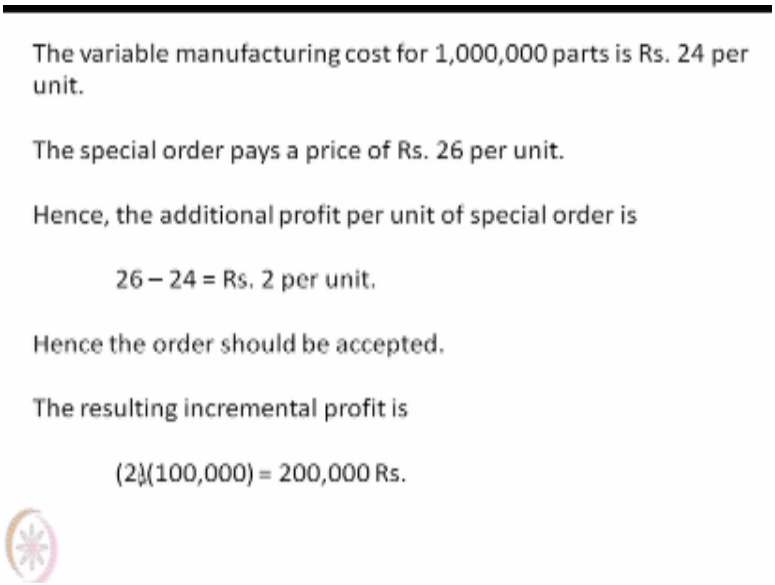

But the only the variable manufacturing cost is the relevant costs because it differs between the 2 alternatives of accepting the special order or not accepting the special order. Now, the variable manufacturing costs therefore for these parts is rupees 24 per unit because this is 24,000 they are all in thousands so, 24,000; 24 million therefore divided by 1 million gives us rupees 24 per unit is the unit manufacturing cost.

And the special order pays a price of rupees 26 per unit therefore, the additional profit per unit of special order is rupees 2, hence the order should be accepted, the resulting incremental profit is the additional, the 2 rupees per unit profit into; actually it is contribution to profit into 100,000 the size of the order that gives 200,000 rupees. So, basically in this example we say that the only relevant costs; future cost that differs among alternatives is the manufacturing costs.

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Example 2: Special Sales Order with Agent Fee

Suppose Example 1 is a little different:

1. The price is Rs. 27 per unit.
2. The agent who got the order for the company has to be paid a sum of Rs. 80,000.

Here both the variable manufacturing cost and the fixed cost of agent's fee are relevant.

Total incremental profit for the company is:

$$(27 - 24)\,(100{,}000) - 80{,}000 = 220{,}000 \text{ Rs.}$$

The variable manufacturing costs, we take another example is just an extension of the previous example, suppose that the agent; suppose that there is an agent who charges rupees 27 per unit who has given an order that price is 27 rupees per unit but because he has got the order for the company, he has to be paid a sum of rupees 80, 000. Now, here both the variable manufacturing costs and the fixed cost of the agent's fee are relevant.

And therefore, the total incremental profit for the company is 27 rupees the sales price for this special order - the variable manufacturing cost 24 multiplication the size of the order which is 100,000 - the agent's fee 80,000, so that gives us 220,000 rupees, which is higher than this.

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Example 3: Dropping a Department

A departmental store has three departments. The present operating income is as under. All figures are in thousands of rupees.

	Groceries	General Merchandise	Drugs	Total
Sales	1,000	800	100	1,900
Variable COGS	800	560	60	1,420
Contribution margin	200	240	40	480
Fixed expenses				
Avoidable	150	100	15	265
Unavoidable	60	100	20	180
Total Fixed Expenses	210	200	35	445
Operating Income	(10)	40	5	35

The management is thinking to drop the Grocery Department. Will it be a correct decision to drop the Grocery Department?

We take another example to illustrate the usefulness of the concept of relevant information. We take a case of a departmental store, it has 3 departments; groceries, general merchandise and

drugs and this table gives different aspects of revenue and costs and finally gives the operating income department wise. Here the sales, they are all in 1000 rupees, so sales that is the revenue; the total revenue is for groceries, it is 1000 rupees that is 1 million rupees.

800,000 for general merchandise, 100,000 for drugs, totalling 1900,000 that is 1 million 900, 000 rupees' total revenue, now the cost of goods sold; the variable part of the cost of goods sold; this is variable part; the variable component of cost of goods sold is 800,000 rupees for groceries, 560,000 for general merchandise, 60,000 for drugs, totalling; 1 million 420,000 rupees total.

The contribution margin as you already know is the revenue - the variable cost of goods sold which is 200, 240, 40, 480,000 rupees, this is total of all these 3. Now, the fixed expenses are divided into 2 types; avoidable, unavoidable. Avoidable means that if groceries dropped this cost will not be there whereas, unavoidable means that if groceries is dropped, this will continue to be owned by the company.

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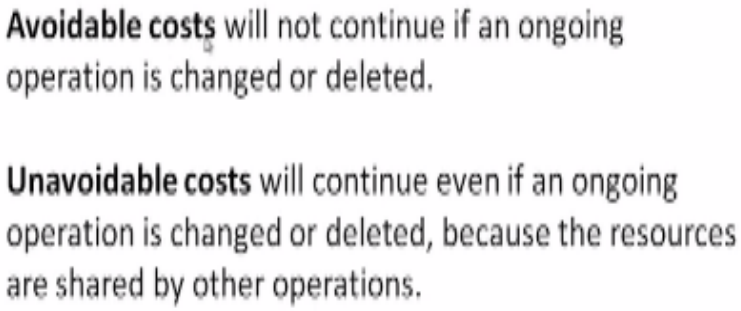

A definition for a avoidable cost is that this cost will not continue, if an ongoing operation is changed or deleted whereas, an unavoidable cost will continue even if an ongoing operation is changed or deleted because the resources are shared by other operations of the company, so this classification of fixed costs is done because as we will see, there is a decision to be taken on whether any one of these 3 can be dropped.

So, total fixed expenses come to 150 + 60; 210 here, 100 and 100; 200 here, 15 + 20; 35 here and 445 here, so if we subtract all the expenses from the revenue, the grocery source a loss anything within parentheses in accounting literature it means a loss, so 200 is the contribution margin - the fixed expense, which is 210 yielding a loss of 100 and is indicated by writing the number within parentheses.

The contribution margin for general merchandise is 240 and total fixed expense is 200, so subtracting 200 from 240, gives 40, here it is – 35, 5, here it is 480 – 445; 35,000 rupees. Now, if we look at the operating income of these 3, we see that the general merchandise is showing the highest operating income and groceries is showing a loss of course, the total is a profit is positive.

Now, because the grocery department is showing a negative profit meaning a loss, the management is thinking to drop groceries, will it be a correct decision to drop the grocery department? This is our; this is a decision to be taken by the management, now in this case let us understand that there is something called unavoidable expense, it means that even though we drop groceries, this cost will continue to be borne by the company.

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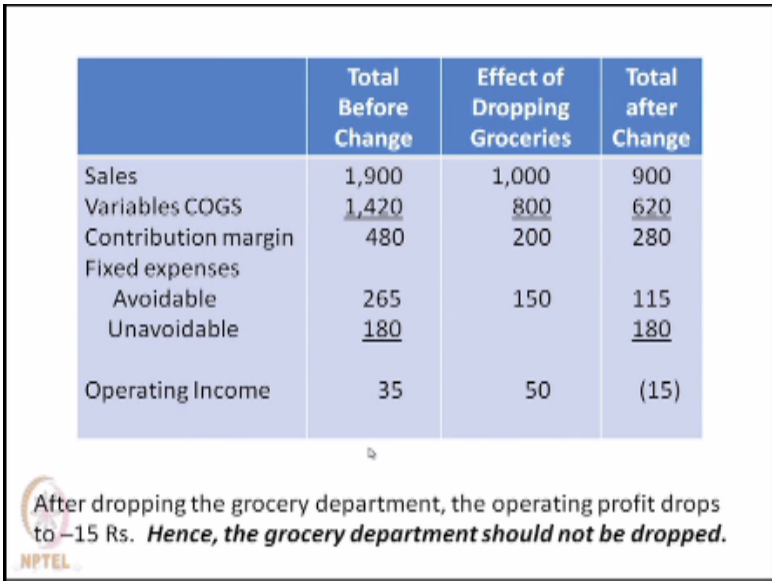

So that is not therefore a very obvious choice to close or drop groceries, now we here we so that before we bring in any change, this is a summary thing, the total operating income for the company for the whole departmental store, for all the 3 departments is 35, total revenue was 1 million 900,000 rupees, total variable cost of goods sold was that, total contribution margin is this, etc.

Now, suppose that we drop groceries, then what can happen? Unavoidable will continue to remain 180, continue to remain the same, it will not change, what will change will be the other values. In the other values, the sales that we had from groceries, which was 1 million rupees, 1000; 1000; 1 million rupees of sales we will not be able to achieve and therefore, the revenue will come down to 900.

And like this if we see finally, we see that because of that 60 unavoidable cost which will be continued to be borne, we will have a net loss of 15, if we drop groceries, which means dropping groceries is not a good decision. After dropping the grocery department, the operating profit drops to -15 rupees, hence the grocery department should not be dropped on the basis of this, this data; this this set of information, we cannot decide to drop groceries.

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Example 4: Example 3 Modified

Suppose in Example 3, the company thinks to drop Groceries but utilize the space so created by expanding the General Merchandising that would increase sales by Rs. 500,000, but would incur avoidable fixed costs of Rs. 70,000.

Additional sales	= 500,000 Rs.
Variable costs associated with the additional sales = (560/800)(500,000)	= 350,000 Rs.
Avoidable fixed expenses	= 70,000 Rs.
Increase in operating income	= 80,000 Rs.

A gain of Rs. 80,000 is better than the loss of Rs. 50,000 due to grocery department. Hence, this alternative is better.

However, let us consider a modification of the last example, suppose in example 3, the company thinks to drop groceries but utilize the space so created by expanding the general merchandise department that would increase sales by rupees 500,000 but would incur avoidable fixed cost of rupees 70. Now, it says that suppose that we decide to drop groceries, certain space will be vacated and that space can be utilized to expand the general merchandise department.

And that would require a fixed cost of 70,000, which is avoidable of course, but it will also increase sales by this amount. Now, because it is avoidable, this is relevant and this is also relevant, this also is relevant because they differ between the 2 alternatives of whether to drop

the groceries or not drop the groceries. We make an incremental analysis here; we say that the additional sales is rupees 500,000.

The variable costs associated with the additional sales, there is a variable manufacturing cost, you can look at the groceries, general merchandise; general merchandise was if the sales were 800, the variable cost of goods sold was 560, so this ratio says that if sales go up by this ratio, the variable COGs should also go up, so that is what is shown there; 560/ 800 is that ratio of cost of goods sold divided by the sales revenue, multiplication this additional sales revenue.

So, this is the additional variable costs associated with the additional sales, the avoidable fixed expense now becomes relevant therefore, it has to be added 70,000 and this leads to 500 - 350 is 150,000 – 70,000, so the increase in operating income becomes 80,000. Now, again of rupees 80,000 is better than the loss of rupees 50,000 due to the grocery department, when we drop the grocery department we are losing sale of operating income of 50,000.

But because of utilizing the space to expand the general merchandise department, we are gaining 80,000, so obviously the net gain is positive and hence the department; grocery department should be dropped and general merchandise should be expanded. So, this is a decision that we could take on the basis of the concept of relevant information.

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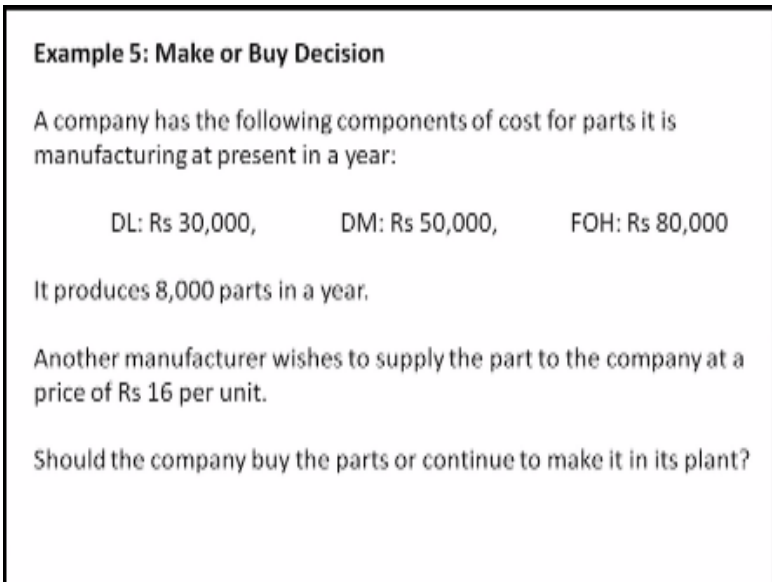

Now, we come to yet another example, the example of either making or buying parts from outside, making the parts in house or buying the parts from an outside supplier. Now, this particular problem is the following; a company has the following components of cost for parts it

is manufacturing at present in a year and the 3 components are the direct labour, direct material and factory overhead.

the annual direct labour cost is rupees 30,000, annual direct material cost is rupees 50,000 and the total fixed overhead is rupees 80,000, the company is producing 8000 parts in a year, another manufacturer wishes to supply the part to this company at a price of rupees 16 per unit. The question is should the company buy the parts from this outside manufacturer or should it continue to make the parts in its own plant?

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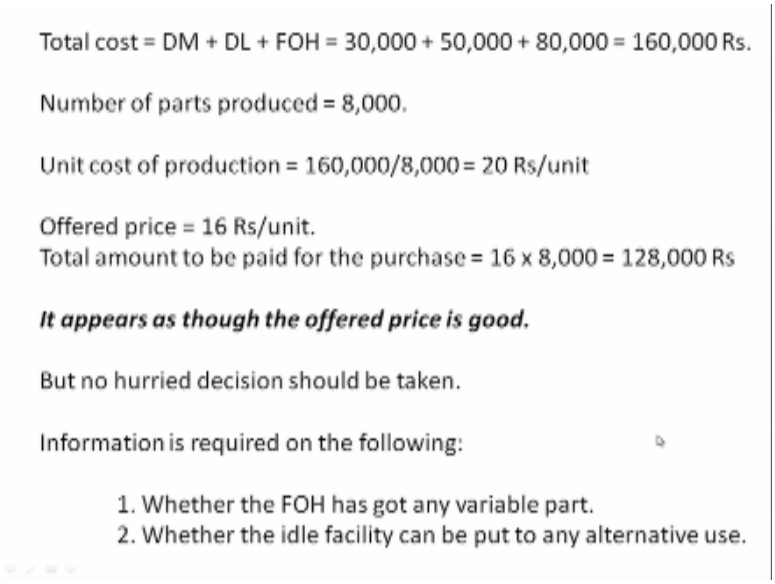

As you can see the total cost comes to 30,000 + 50,000 + 80,000, which is 116,000, so we will see how it is working out. The total cost for producing the 8000 parts is the total direct material cost, direct labour costs and the factory overhead costs that come to 160,000 rupees. Number of parts produced is 8000, therefore the unit cost of production comes to 20 rupees per unit, the offered price by the outside manufacturer is only 16 rupees per unit.

The total amount for the purchase comes to 16 rupees per unit * 8000, which is 128,000 rupees obviously, 16 rupees is < 20 rupees, the total cost for buying 128,000 rupees is less than the total manufacturing cost, which is 160,000 rupees. Therefore, it appears as though the offered price is good and that the company should buy the parts from outside rather than make it in the plant; in its own plant.

Now, before this decision is taken hurriedly, we need to have some more information, it is whether the factory overhead, which is 80,000 rupees has got any variable part and whether any idle facility can be put to other alternative use.

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The following accounting information was available:

Fixed FOH = Rs. 40,000, Variable FOH = Rs 40,000

Fixed FOH is not relevant, because it will be continued to be incurred even if the decision is to buy the parts.

Total Relevant Cost = DM + DL + Variable FOH = Rs 120,000.

The relevant manufacturing cost per unit
= 120,000/8,000 = 15 Rs/unit.

The offered price is not encouraging. Making is better than buying.

Now, the following accounting information was available, it was found that out of the total factory overhead of rupees 80,000, 50% was fixed overhead and 50% was variable overhead. If you recall fixed overhead is whether or not, we manufacture the parts, these overheads will be continued to be borne. Whereas, if we stop manufacturing the parts in the plant then, this overhead will disappear.

So, if this is not changing then this cost is not relevant, whereas since this is going to change in the future as per our guideline, this then becomes the relevant costs. So, the total relevant manufacturing cost then becomes the direct material, the direct labour and only the variable component of the factory overhead not the fixed factory overhead component, which means it is 120,000 and not 160,000.

Therefore, the relevant manufacturing costs look at the word relevant; the relevant manufacturing cost per unit becomes 15 rupees per unit compared to 16 rupees per unit at which the items are going to be supplied. So, on the basis of this analysis, we can say that the offered price is not encouraging and that the company should continue to make the product in the plant itself rather than buying it from the outside supplier.

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A second piece of information was available:

> The supervisor engaged for making the parts can be transferred to another shop without any difficulty.

The supervisory salary (fixed cost) was Rs 20,000. This cost is relevant as it will vanish if the company decides to buy the parts. Hence we cannot ignore this cost for computing the relevant cost.

Hence, the total relevant cost = 120,000 + 20,000 = 140,000 Rs

Relevant manufacturing cost per unit
= 140,000/8,000 = 17.5 Rs/unit

The offered price is 16 Rs/unit.

Hence, buying is better than making.

Now, a second piece of information was also available, it was that the supervisor engaged for making the parts can be transferred to another shop without any difficulty. Now, the supervisor salary was basically a fixed cost, which we have neglected thinking that it is not relevant because it is not changing however, this piece of information that said that the supervisor engaged for making the parts can be transferred to another shop without any difficulty changes the scenario.

This may be a fixed cost but it is relevant and that was 20,000 rupees, now this cost is relevant as it will vanish, if the company decides to buy the parts hence we cannot ignore this cost for computing the relevant costs. Hence, the total relevant manufacturing cost is not just 120,000 rupees that we had found out earlier but also this 20,000 to be added to it and that makes it 140,000 rupees.

Hence, the relevant manufacturing cost per unit becomes 140,000/ 8000 which is 17.5 rupees per unit. the offered price is 16 rupees and the relevant manufacturing cost per unit is higher and therefore it appears that making is not a good alternative, you should; the company should go for buying the parts and use the supervisor effectively for some other activity. So, you can see here that as new information is coming, the decision to be taken changes.

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A third piece of information was available:

It was also found out that the idle space and facilities can be used by another manufacturing facility to yield Rs.40,000 as additional contribution to profit.

This revenue is relevant. It reduces the relevant cost of manufacturing the parts.

The relevant manufacturing cost
= 140,000 – 40,000 = 100,000 Rs
= 100,000/8,000 = 12.50 Rs/unit

In this situation, making the parts is better than buying.

Because certain other cost becomes relevant, now we go; now suppose that we have a third piece of information that says that if we buy the facility by the parts from outside, then there is some idle space and facilities and such idle space and facilities can be used by another manufacturing facility and that can yield rupees 40,000 as additional contribution to profit. Now, naturally this revenue; additional revenue of 40,000 becomes relevant.

And it reduces therefore, the relevant cost of manufacturing the parts, the relevant manufacturing costs then becomes 140,000 – 40,000 making it 100,000 rupees and making the cost of manufacturing; relevant cost of manufacturing as 12.50, which is much lower than 16 rupees, which is offered by the outside manufacturer. So, in this situation making the parts in the plant is better than buying.

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Example

Bala Mills has a machine that it bought some years ago for Rs 100,000.

The machine could be used to produce either product 1 or product 2.

Producing product 1 involves a revenue of Rs 500,000 and a variable (outlay) cost of Rs 400,000 (excluding the cost of the machine), yielding a contribution margin of Rs100,000.

Producing product 2 gives a contribution margin of Rs60,000.

The machine, of course, can be sold for Rs 50,000.

Make an analysis and suggest what the management should do.

And a variable cost which is an outlay cost of rupees 400,000 that does not include the cost of the machine, yielding a contribution margin of the difference between the 2, the revenue is 500,000 and the variable which is outlay cost is 400,000, the difference is the contribution margin of rupees 100,000. Now, producing product 2 gives the contribution margin of rupees 60,000, the machine can of course be sold for rupees 50,000.

Although, it was bought for 100,000, the problem is to make an analysis and suggest what the management should do? Now, there are 3 alternatives; produce product 1, produce product 2, do not produce sell it out for rupees 50,000; 3 alternatives are present here.

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The purchase price of the machine is a sunk cost. It does not differ among the alternatives and is not relevant.

	Produce Product 1	Produce Product 2	Sell the machine
Revenue	500,000	60,000	50,000
Outlay cost	400,000	-	-
Opportunity cost	60,000	100,000	100,000
Net Financial Benefit	40,000	(40,000)	(50,000)

Use the machine for producing product 1.

Now, purchase price is a past cost, it does not influence the future, it is not relevant, it is normally called a sunk cost, it does not differ among the alternatives and is also not relevant because it is a past cost. Now, the 3 alternative certain down here in this table; produce product 1, produce product 2, sell the machine. The associated revenue on costs are written here, here you will see revenue is a net receipt producing product 1 gives 500,000 rupees.

Producing product 2 gives 60,000 rupees, selling the machine gives 50,000 rupees, outlay cost for producing product 1 is 400,000 rupees and this of course, this 60,000 is of course the difference because this is the contribution margin, this is the contribution margin which means it is the revenue minus the outlay cost that is 60,000, so 60,000 should be the difference between this.

And if the machine is sold out, there is no outlay cost but there is an opportunity cost involved for each of these alternatives. If I go for; if the company goes for producing product 1 then these are the 2 alternatives that are forgone and the highest among them the difference 60,000 is the revenue here for product 2 and the revenue here is 50,000, the higher of the 2 is the maximum profit that is forgone, if the alternative of product 1; producing product one is accepted.

So, the higher of the 2 is 60,000 that is the opportunity cost that is added along with the outlay cost, so this then becomes 460 subtracted from 500 makes it 40,000, if the company on the other hand decides to produce product 2 then it is not taking this alternative and not taking this alternative also. The contribution margin here is 50,000 or the income is 50,000 and here the income is 500 – 400, which is 100,000, higher of the 2 is 100, 000.

So, it is unable to get 100,000 that is the opportunity cost, if product 2 is produced and not product 1 and not for; not this alternative, so that is the opportunity cost that is also the opportunity cost if the machine is sold out because the difference here 100,000 is higher than 60,000, so that is written down here as the opportunity cost. If you add this is the revenue and this is the cost, this is a loss shown in parentheses basically 50,000 rupees' loss.

Here, in parentheses it is 40,000, so 60 -100 is – 40,000, it is a loss, written in this manner, it is a loss and here it is 500 - 400 - 60 that is 40,000, so from here we conclude that the first alternative is the best alternative and therefore, the company should continue to produce product 1. So, here this example tells us what we mean by opportunity cost, it is the loss incurred; the maximum loss incurred the maximum loss forgone; maximum profit forgone, when a few alternatives are not taken.

So, once again I will repeat that if I go for producing product 1, then these 2 profits, I am losing, so the maximum or the higher value of these 2 is 60,000 and that is the opportunity cost here. If I go for producing product 2 then the benefit here was 50,000, the benefit here was 100,000, the higher of the 2 is 100,000 and that is the opportunity cost. So, outlay cost is the actual out of pocket expenses, where cost is dispersed.

Whereas opportunity cost is implicit, it only tells how much profit, how much maximum profit you have forgone or you will forgo, if a particular alternative is accepted. Now, so we stop here today, we will take up other aspects of economics in our next lecture. Thank you.