Business Analysis for Engineers
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Lecture-16
Introduction to Management Accounting & Behaviour of Cost

In part 1 of the accounting we spend a lot of time on financial accounting which delt with the preparation of 3 financial statements namely the balance sheet, the income statement and cash flow statement and as I explain these financial statements are mainly for the use of share holders, creditors, bankers more external end users and obviously also useful for the management which is more internal.

But over and above these statements the management or the managers in an organisation will be more interested in knowing certain information which cannot be captured or which cannot be extracted from these 3 financial statements. In normal course of events if you look at an entity a manager would be not interested in knowing how much a particular customer owes to the organisation or how much was cash was deposited yesterday in bank or what is the new loan that the entity acquired in the last one month.

Now these of course important records in these financial statements but these facts in these records are in normal course that not relevant to from an operational perspective for a manager inside an entity. So, a manager is more interested in understanding the summary behind these records. So, if I am able to draw some summary from these records as a manager I would be interested in knowing the summary of this records.

So, management accounting is more a summary information, now I just would like to make sure that when we actually make this transition from financial accounting to management accounting. There is easy understanding and the transition is smooth and to facilitate this transition from financial accounting to management accounting I would like to give you some major differences between these 2 forms of accounting.

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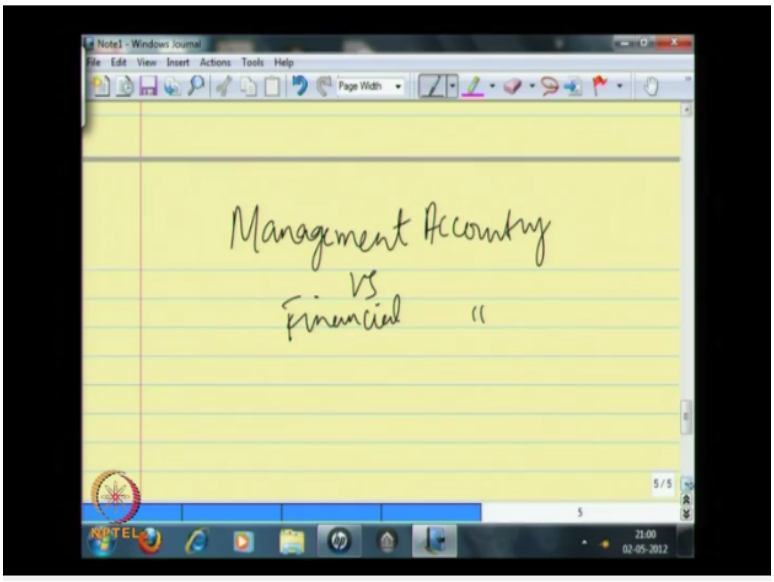

Management accounting verses financial accounting and this you will be able to appreciate better the need for management accounting.

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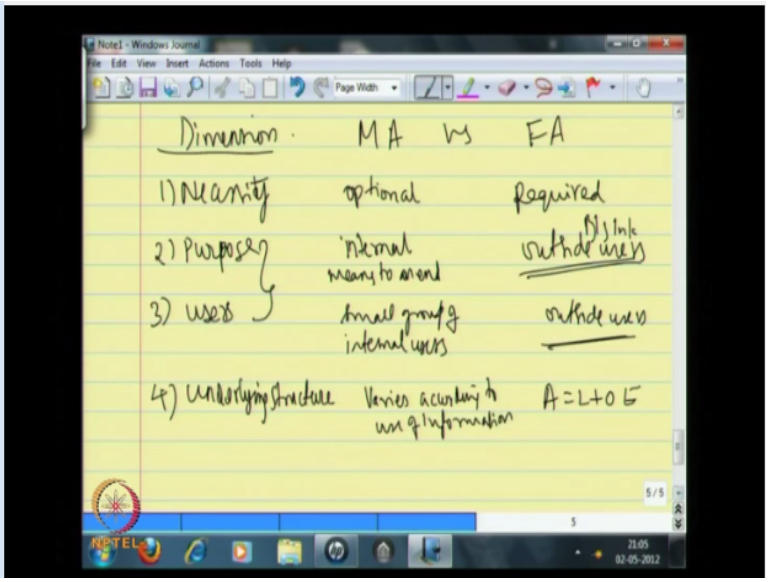

And I will give you different dimensions that actually provide this difference between management accounting and financial accounting. One is from the necessity pointer if a question is asked whether you need to prepare a financial statement whether you need to prepare a balance sheet and income statement the answer is a clear yes, there is no option otherwise. So, definitely from a necessity perspective it is required, it is mandated that an entity has a balance sheet, an income statement and a cash flow statement.

As against in the management accounting it is optional for an entity to prepare a statement that provides information, that provides summary information of all these accounting records that you have created. So, there is no mandate, there is no statutory requirement that every entity has to have a management account information system. So, from a necessity point of view it is optional whereas in financial accounting it is definitely required.

From a purpose point of view and I will repeatedly telling you this that financial statement is used for outside users not that those inside the organisation are not using it. But the extent of use lies more outside the entity than inside for it comes to financial accounting statements, financial statements for that matter whereas in management accounting it is more internal from a control perspective it is only a means to a particular end, it is means to an end.

The end being the planning implementing and controlling functions of management and it is for that purpose management accounting is important for those internal to the organisation to improve certain process efficiencies. And for being able to properly plan, implement and control some management functions. The third is the users again these are outside users and the purpose here for financial accounting the purpose of financial accounting is only to create a balance sheet, income statement and cash flow statement.

If you ask somebody what is the purpose of financial accounting is to create income statement balance sheet and the cash flow statement. If you ask who the user for a financial statement is it will be more outside users whereas in this case it is small group of internal users these are interlinked though it might appear to be actually purpose and users more interlinked and intertwine.

If you look at the underlying structure the financial accounting is built on the fundamental equation assets is equal to liabilities+owner's equity. This is the underlying structure on which financial accounting is bit, in management accounting it varies according to the use of this information I since it is a summary of information it depends on what type of information in use. So, varies according to use of information and that is why when we spend more time on different

types of management accounting you would find that they are 3 types full cost differential cost and responsibility cost, management accounting.

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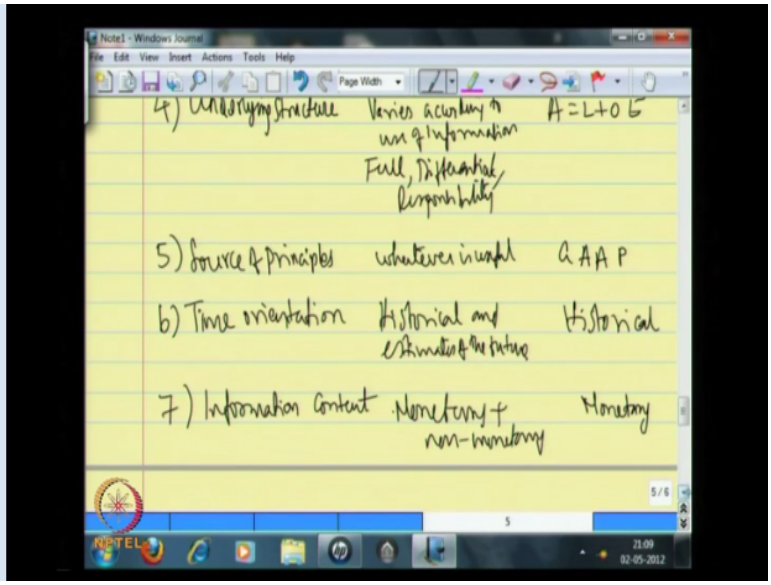

Full differential and responsibility will be spending little time on that later, if you look at the source of principles in financial accounting you have the generally accepted accounting principles whereas in management accounting in organisation can employ whatever accounting rule it finds most useful for it is own purpose which is more internal. So, whatever is useful becomes the principle on which the summary information is recorded and interpreted.

So, there is a broad setup just as we have generally accepted accounting principles in financial accounting there is it a broad setoff principles that form the underlying basis. From a time orientation if you look at you financial accounting records it reports the financial history of an organisation of an entity what has happened gets recorded, so it is more historical whereas in management accounting it is also use historical information, but to make an estimate of the future.

Historical and estimates of the future though financial statements are use to make some projections the information itself in the financial statement it is historical. The objective of financial accounting is like to tell information as what it was and not could be whereas in

management accounting you use historical information to also make an estimated for example I can say that this is the budgeted cost for a particular activity in the future.

And how do I do that some principles of management accounting that we will be discussing based on historical data I can make an estimate of the future. The information content is monitory the fundamental concept in financial accounting is the monitory concept. So, if you look at the information in a financial statement it has to be monitory whereas in management accounting it is both monitory+non-monitory.

It means that I am interested in knowing the total sales even in management accounting. But I am also interested in knowing the total number of units being sold I am interested in knowing the cost of goods sold I am also interested in knowing the conception pattern how many units, how many kgs of this raw material was consumed.

I am interested in knowing the wage expense but the same time I am also interested in knowing how many people work how many hours did they work. So, all these sorts of non monitory information is also an integral requirement for a management accountant.

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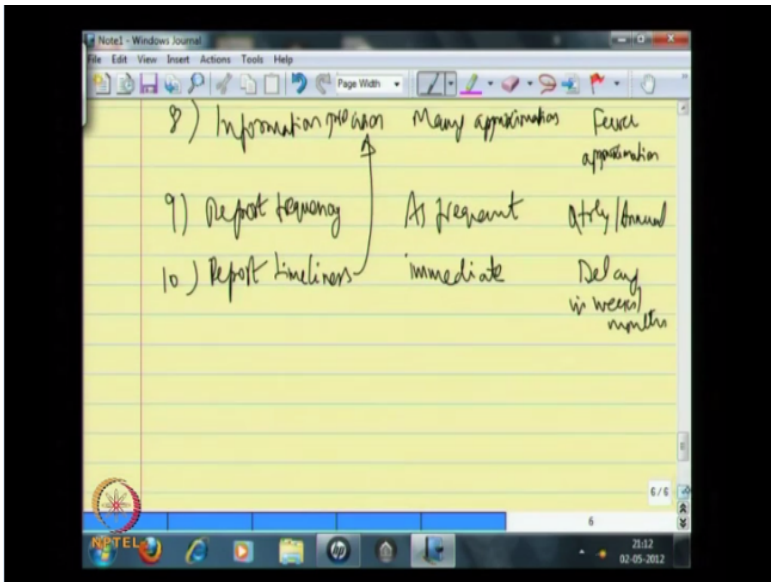

Information precision is another differentiating factor management accounting is more, since I told you this is more internal the management would be requiring a lot of information more

frequently than financial accounting statement end users demand. So, as a result of which there might be some approximations that management accountants make making management accounting less precise.

Because of it is many approximations whereas financial accounting will have only fewer approximations because it needs to be very precise. Report frequency here I have already told you that this one is more quarterly and annual this can be as frequent as you think is required depends on the managements requirement where is with purpose I need a fort nightly summary or a monthly or a quarterly.

So, it depends on the purpose for which management needs the information, the report from a report timeliness point of view, if you look at a financial statement though the year ending is march 31 of a given year you would find a lot of entities announcing the results announcing the annual income statement balance sheet even probably 2 months after the year closure. So, it is there is a considerable delay, delay in weeks or months.

And since we are not that precisely capturing information for management accounting you would find that management accounting reports are immediate, very promptly it gets delivered at the end of the period in which it actually captures this information.

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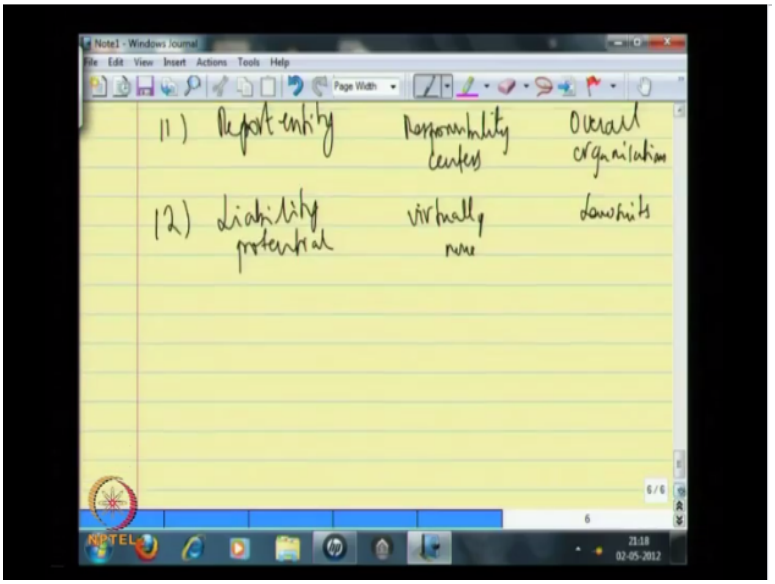

From a report entity point of view you would find that for financial accounting it is the entire organisation it is the overall organisations balance sheet and an income statement where gets reported for a management accounting that is not the case. Because management accounting I can split the organisation into various functional units and for the purpose of control understand each of the functional units as individual entities.

So, from that perspective management accounting need not be overall organisation driven, but can be towards certain responsibility centers. And lastly if you look at it from a liability potential, there is virtually none I will explain why and here you have some lost goods also. If you look at the financial accounting, if you find that the annual reports filed before the sebi or any of the statuary authorities and if you find there is information that is wrong.

There is a likely hood of share holders or whoever is the concern take holder to event file a lost good again is the firm for filing wrong information you know what happen the classic case of sathyam. Now as against a management accounting where since the end user is also within the organisation there is no potential for a loss suit the worse that can happen is an action can be taken against the manager for inappropriately summarise the information.

And taking decisions based on such information that is the worst that can happen not a loss hood by a share holder for fixing wrong prices, that is very unlikely such things will happen. So, from these dimensions you can understand that there is difference between management accounting and financial accounting. Now if you look at the way in which businesses are being conducted, managers have to take irrevocable decisions with inadequate information.

And the biggest decision that confronts manager especially in profit making entities and assuming that management accounting though it can be applicable to not for profit entities that more relevant for profit making entity, because it is about implementation and control and trying to increase efficiency. The biggest one of the major decisions that managers take is on pricing and once I announce this is the price of a commodity, a good or a service.

I cannot go back of course price change because of certain promotional activities, but such irrevocable decision are taken based on some information which by and large is in adequate, because management accounting is about taking this decisions with whatever information that is inadequately available based on some approximations will be do not have we cannot afford the time to have accurate information just as financial accounting has.

And we take decisions based on certain approximations and when we take such decisions we need to understand the behaviour of cost in an entity. So, that brings the issue of how cost behaves with the level of activity in an organisation. Now if an entity significantly increases the amount of goods or services that it sells or delivers. Then in some measure the amount of economic resources that the entity consumes also increases.

Suppose you sell more goods you also consume more inventories, but the question is what is the extent to which such economic resources get used with increases in the sale or delivery of such goods and services, is that a relationship between these two. And everyone can understand if more units are sold more inventories gets consumed and the cost of the economic resources also changes with more volumes to be sold.

However the percentage increase in the cost of these economic resources does it increase with the proportion with which the goods or services are being sold and delivered. Now that question can be answered only if you begin to understand how cost behave with increase in the label of economic activity in an entity for which you need to understand the behaviour of cost.

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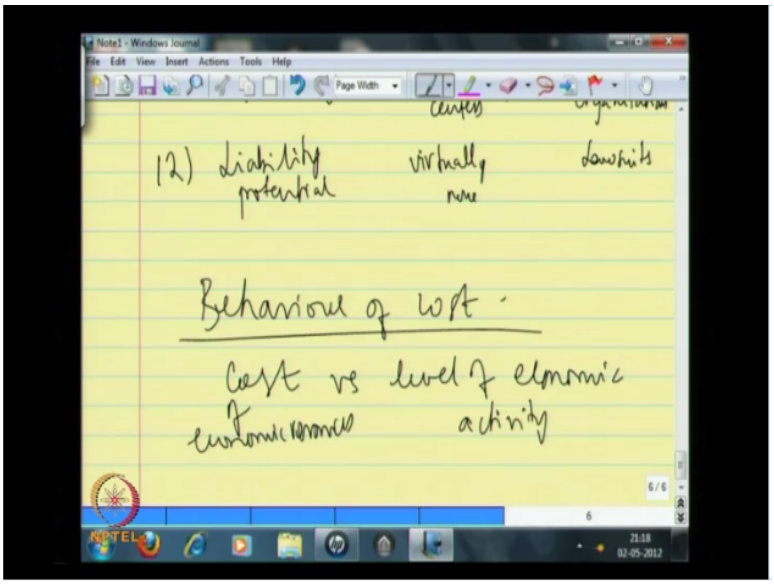

That is the fundamental to management accounting to understand how the cost versus level of economic activity, cost of economic resources consume. And invariably what will be these cost of economic resources it could be men material overhead in these are all economic resources that gets consumed because of the level of economic activity. And once you are able to understand this fundamental behaviour of cost then you will begin to appreciate the nuances of management accounting. Now this behaviour of cost is hence very fundamental to management accounting.

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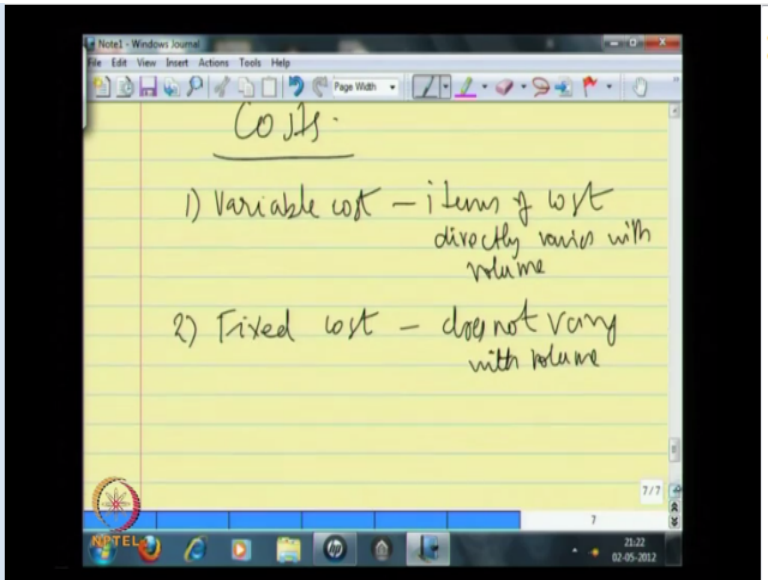

Now to understand this in need to understand the different types of costs, See costs is a very tricky terminology that is used. People just use cost like that top of an hat say the cost of this is expansion. Any of them do not really understand what they mean by cost some people mistake

expenses to be cost. So, there is something more to this very word cost it is not as simple as people think it is.

We need to understand that there is something some building blocks were aggregated together actually represents the total cost. One such is a variable cost what are variable cost, now variable cost means that items within a cost structure that varies proportionately with volume that directly varies with volume and I will give you some examples and will graphically also represent for you to understand.

So, if volume increases by 10% the total amount of variable cost also increases by 10%, example suppose you an entity manufactures computers and that the cost of a monitor is 5000 rupees. Then if you manufacture 100 computers you need 100 monitors, so the total variable cost is 5000 times 100 please note that the unit variable cost that is 5000 per monitor does not change we changes in volume of computers being manufactured.

So, variable cost means the total cost gets changed with volume directly as a proportion to volume, so the more computers you manufacture the more cost that you will incur by way of fitting monitors, so each monitor cost 5000 rupees, postage the more letters envelops that you send my mail the more you will have to stamps. So, if you have 100 envelops to send and each of them requiring 5 rupees stamp, 500 is your total variable cost.

If you have to send 500 letters 500*5 becomes your total variable cost. So, variable cost is 1 that changes with volume, now there is something called variable cost then definitely there is something called fixed cost and directly you can say that it does not vary with volume. Classic example you are manufacturing computer again the electricity the rent the wages that you spend for administrative staff.

The cost of transportation assuming that you know a truck can 1000 computer and whether you transport 500 computers or 600 computers or 1000 computers in that truck the cost of transportation does not change, that is a fixed cost. So, there are certain cost of an entity that does not change with volume and it is fixed whether that is an economic activity or not that cost

will be incurred by the entity. And please have this in mind, because we are going to revisit the concept of fixed cost and **var** variable cost sometime later.

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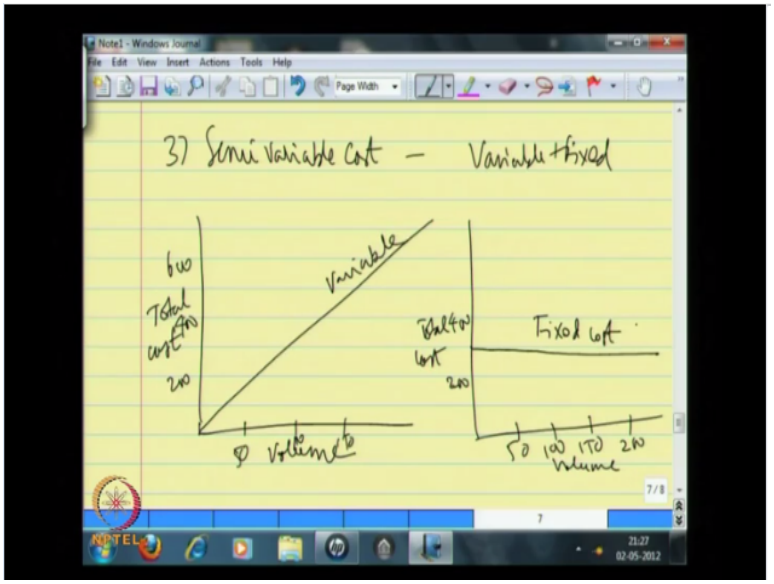

But it is also something called a semi variable cost which is both variable+fixed cost component in it. So, it has something that is variable and also has something that is fixed, for example if you take the cost of a operating an automobile with respect to the number of miles it covers that semi variable, because the cost of petrol or diesel the cost of replacing your tires, the servicing cost these all keep changing with the miles or the kilometres that the automobile travels.

While the registration fee or the insurance that you pay for the automobile is fixed, so form the overall cost of operating this automobile vehicle you would find that this cost of operating this automobile vehicle is semi variable. So, you can understand that if you are interested in analysing the cost structure then there are 3 important elements to it, variable cost, fixed cost and the semi variable cost.

And for the purpose of convenience we actually deal with variable and fixed cost alone, because since a semi variable cost includes variables as well as fixed the relevant portion gets extracted and accommodated in the fixed cost. In the relevance variable cost and the semi variable cost is also captured in the variable cost. So, the purpose of or discussion we will assume that we are

going to take only 2 types of cost variable and fixed cost after having accommodated the variable and fixed cost components in semi variable cost accordingly.

Now we need to understand the relationship between the variable cost, the fixed cost with volume, now I told you that the very definition of variable cost is that it keeps changing with volume. Let us say 50 units, 100 units, 150 units it is keeps on changing as against fixed cost which remains unchanged with volume, so if volume keeps on increasing my fixed cost let us say 200, 400.

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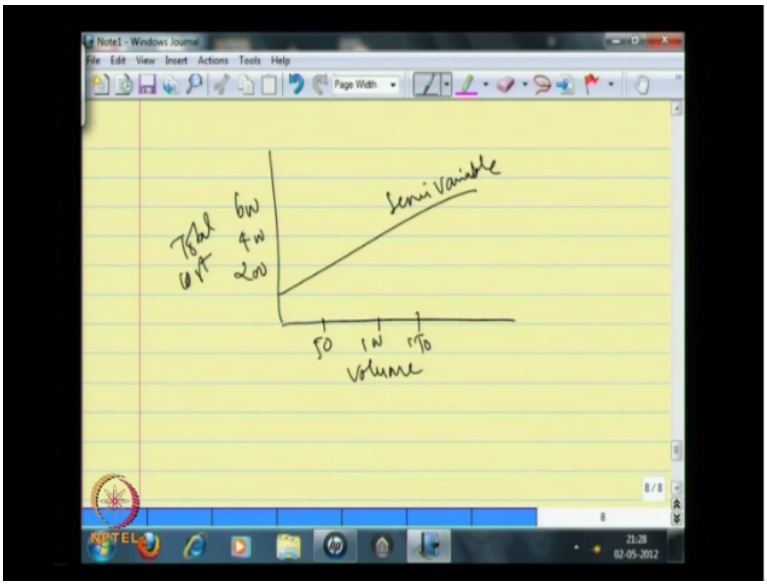

And then a semi variable cost this case this is a fixed cost, semi variable cost has both a fixed cost component as well as a variable cost component. Now if you look at the cost volume relationship. And you can imagine that this all these are straight lines and suppose I want to find the total cost then I have to merge all these 3 relationship, because each cost structure will have a fixed cost component, a variable cost component, a semi variable cost component.

And suppose you look at the first equation and I am graphically trying to represent this, I am trying to represent this graph through an equation. Then you will find that the total cost from a variable cost perspective is 4 time volume, let us say X is the volume.

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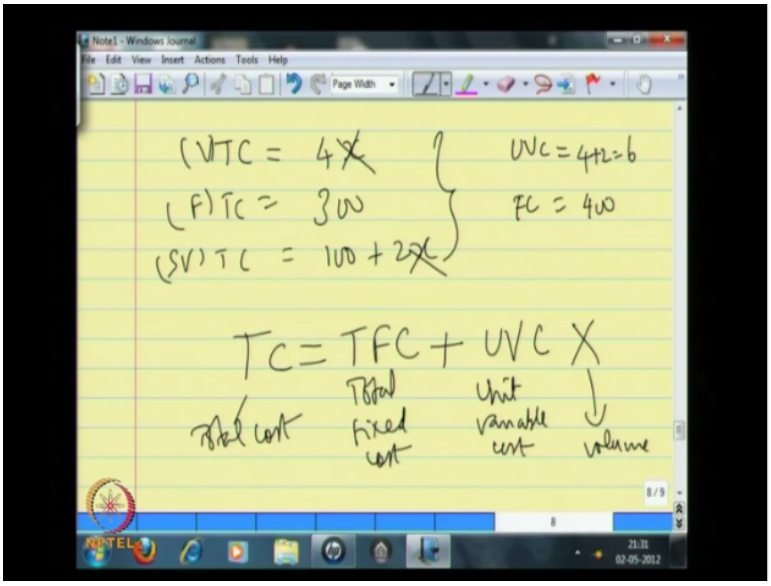

And the total cost this is from a variable cost, variable total cost this is from a fixed cost it is 300, it is just a line parallel to the x axis and from semi variable cost perspective the total cost is 100+2 times X. Now suppose I want to find the total cost of the total cost behaviour which includes the variable cost, the fixed cost and the semi variable cost and we know that this follows a straight line equation and x as I told you is the volume that is involved in this.

So, that actually is getting that is the critical requirement and the total cost is Y. The rate at which the change is the volume is the slope and there is a constant fixed cost which is your vertical intercept. So, if you can just imagine that this again represents a straight line and then your total cost hence becomes your total fixed cost+your unit variable cost times your volume in this case is X, X, X.

So, this is your total cost, total fixed cost, unit variable cost, X is the volume and what sits here is I just mathematically represented the graph that is there which means the unit variable cost is 4 and there is a 2 rupee variable cost component in the semi variable cost. So, the total unit variable cost hence becomes 6 and fixed cost is 300 likewise there is 100 fixed cost component in the semi variable cost, so the total fixed cost is 400.

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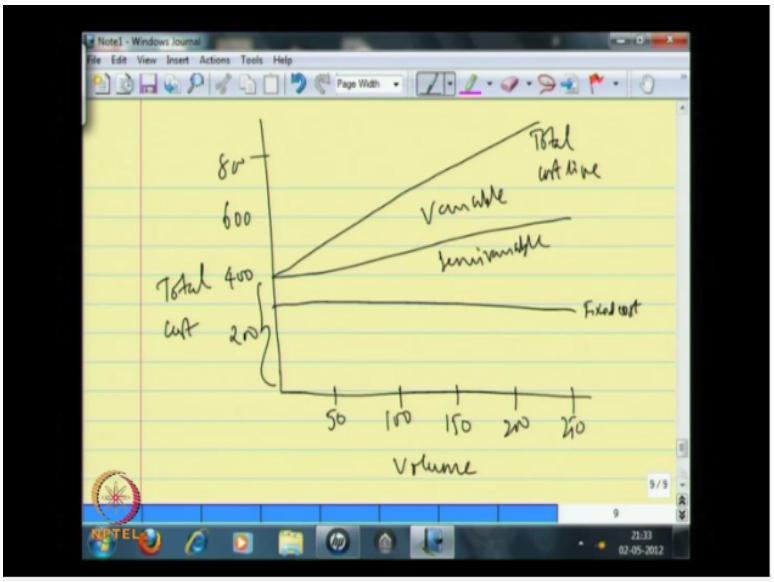

So, if I decide to merge all the 3 graphs and represent 1 graph that captures this relationship, very simple relationship to understand but then it is better to capture it graphically for easy understanding. So, the X axis is the volume, the total cost behaviour with volume it is a it is keeps on increasing this way, this your fixed cost line. So, if you look at the total cost you will have a fixed cost component of 400.

And then a unit variable cost that keeps on increasing with volume. So, now if you reconstruct this equation just for easy understanding.

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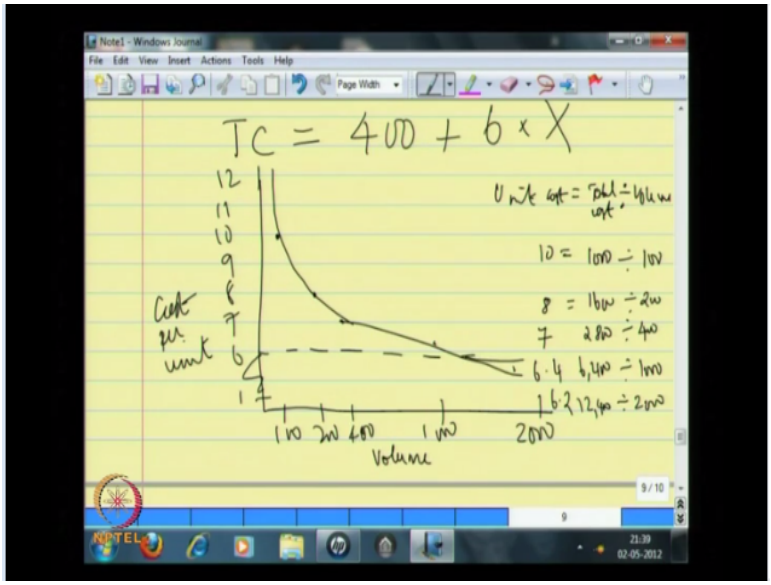

Then you will know that the total cost is your fixed cost of 400+a unit variable cost times your volume. So, which means if you go into manufacture 200 units then 200 times 6000, 200, 1600 will be your total cost. So, as the number of units that gets manufactured increases the cost keeps increasing with the number of units. Now if you just need to find the average cost per unit we just have to divide it by the total volume to find the average cost per unit.

But there is a small behaviour in this that I want you to understand the total fixed cost is a fixed cost component sorry total cost is the fixed cost component+a variable cost component. The fixed cost component does not change with volume that easy to understand. A unit fixed cost changes with volume why because it represents the average. So, the more number of units it gets manufactured the fixed cost gets distributed across more number of units.

Now contrast this with the behaviour of variable cost, the total variable cost keeps changing with volume the more and more you manufacture the more and more you incur as variable cost. But the unit variable cost does not change with volume, because it remains the same is the unit variable cost. Now this you need to understand because always in capital intensive entities it is always a challenge to ensure that there is substance to volume across which fixed cost are spread.

And that is why when you when somebody says that I the total cost to produce this is 100 rupees. In the next question that you will have to ask is at what volume is this total cost 100, because volume place a very very critical role in the behaviour of cost and you will understand if I just in the same illustration that I gave you this is cost per unit and this is volume 100, 200, 400, 1000, 2000 units say I have just break this scaling here 1, 6, 7, 8, 9, 10, 11, 12.

And let us say we need to calculate the unit cost what is unit cost the total cost divided by the volume. Now suppose the volume is 100, the total cost is 100 times 6+400 it is 1000. So, unit cost is total cost divided by volume, volume is 100, total cost is 1000, unit cost is 10. Suppose the volume was 200, total cost is 1600, unit cost is 8 suppose the volume becomes 400, total cost is 2800 becomes 7.

Suppose it is 1000, total cost is 6400, 6.4 is 2000 total cost is 12400, unit cost is 6.2. So, you will notice that as keeps on increasing at 100 it was 10, at 200 it was 8, at 400 it was 7, at 1000 somewhere 6.4, 2000 somewhere here. The average fixed cost per unit will start to approach to 0 as volume keeps on increasing limitlessly. In fact you will that even goes beyond the unit variable cost.

This is an interesting behaviour of cost especially fixed cost, because as volume keeps increasing the fixed cost gets spread over that relevant volume and the unit cost gets reduced as volume keeps increasing. And when you have a selling price that is fixed and that you are able to generate enough volumes that drives down the unit cost what happens is your gross margin increases.

And from a management accounting perspective I would like to see how effectively I am able to spread the fixed cost and that is why I said the fundamental to this understanding is the behaviour of cost these are the volume. And how do I use this relationship I know that for every activity that ends up producing some good or service that ultimately gets sold. There is a cost that is built in and has to be recovered by a reasonable selling price.

But I need to know how much number of units that I have to sell, so that I recover this cost both fixed as well as variable cost and the total cost as a result of that. Now how can you use this cost volume relationship to take decisions concerning fixing price or setting a target as to how many units I have to sell, so that my cost is recovered. Now all these are questions that managers take for which we have to answer when they take this decisions what could be selling price, how many number of units I have to sell..

So, that I have make sure that this is a profitable sale, so that my total cost is recovered. This is what will form the next part of our class where I will be explaining to you how do calculate break event sales what is unit contribution margin. Now whether at this cost structure can I afford to sell 1000 units at times you would find that you know people gets excited because they have 1000 units of order, 2000 units of order.

But then you have to ensure that the volume of order that is being serviced a substantive enough to cover the cost that is incurred in actually producing this volume and this I will know only if I understand the behaviour of cost and how we changes with volume. So, break event sale or unit contribution margin these are important management accounting terminologies that you need to know how to calculate quantify these terminologies and how this is being used in decision making by manager.

So, next class we will be talking about how break event sales is being calculated what is the significance of a contribution margin and then we will spend a little time on variance analysis that actually since management accounting is about also control an efficiency. We will know what is the standard or budgeted cost estimate and what actually the entity expensed and what is the difference between the budget in the actual why this variance whether this variance is favourable or unfavourable.

And how do we re-alter alter our decisions based on this variance analysis. So, our classes for management accounting will predominately cover these 2 concepts variance analysis and how to use the cost volume relationship in calculating the break event volume and with is in the prices for the goods and services. And these are the 2 main concepts that I would be covering of course this by a subject is very vast.

There is activity based costing, there are other different types of management accounting mechanisms that I are available. But I am not going to spend a lot of time on that, because I thought it would be better if you have more inputs on financial accounting and relevant inputs on management accounting.

So, that you can make good sense both an income statement balance sheet and also some management account information that you have in hand when you understand the behaviour of cost with volume. So, next class we will try to understand this cost volume behaviour thank you.