Economics, Management and Entrepreneurship
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Lecture – 15
The Master Budget

Good morning. Welcome to the 15th lecture on Economics, Management and Entrepreneurship. Today, we shall discuss a very interesting topic of how to make financial plans, rather how to convert annual plans into financial plans. This is basically called the Master Budget.

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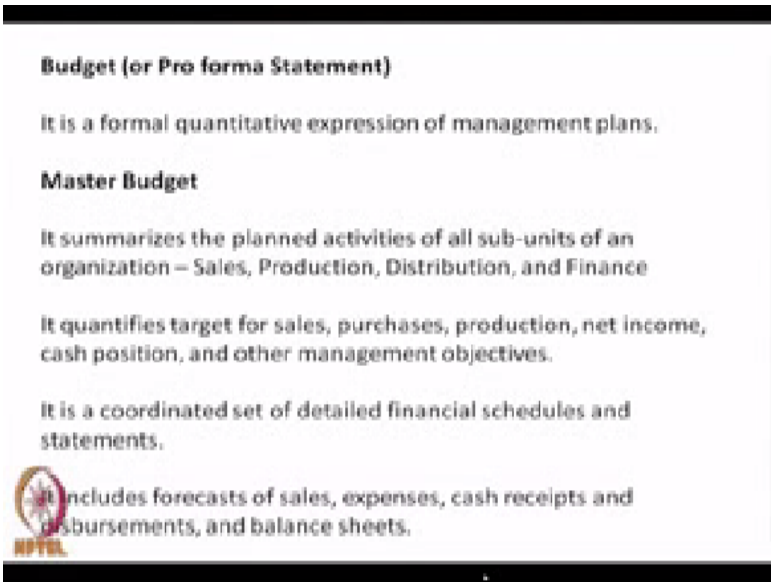

Basically the master budget which is also known as a pro forma statement. It is a formal quantitative expression of management plans and usually this quantitative expression is in the form of monetary units. The master budget summarises the planned activities of all subunits of an organisation, such as sales, production, distribution and of course finance. It quantifies target for sales, purchases, production, net income, cash position and other management objectives.

Thus it is a coordinated set of detailed financial schedules and statements and includes forecasts of sales, expenses, cash receipts, disbursements and balance sheets. Today, we shall take a particular example to tell how actually a master project is prepared and that will give enough insights as to how a master budget is actually prepared in practice.

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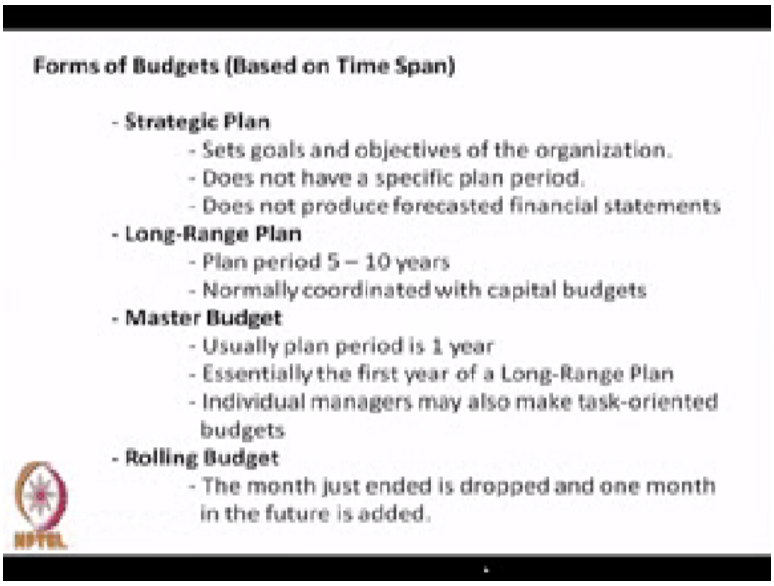

Before we do that, we first of all suggest that there can be different forms of budgets depending on the planning horizon time or the time span. It can be a strategic plan which does not have a specific plan period. Strategic plan basically sets long-term goals and short-term objectives and may not be associated with any financial steps. A the long-range plan on the other hand is usually made for a plan period of 5 to 10 years and is normally coordinated with capital budgets.

Capital budgets where large sum of money will be invested for improving the operations of the organisation. The master budget which is the subject for today is usually made for a plan period of 1 year. Sincerely the first year of a long-range plan is the period for which a master budget is prepared. Also one can make budgets for individual managers for individual tasks that he or she is supposed to carry.

In addition to these budgets, it is also possible to have a rolling budget where the plan period would be for a 1 year; however, in practice when one period lapses, 11 months remaining, one more month is added and a budget is updated or freshly prepared or prepared a fresh. This is called a rolling budget.

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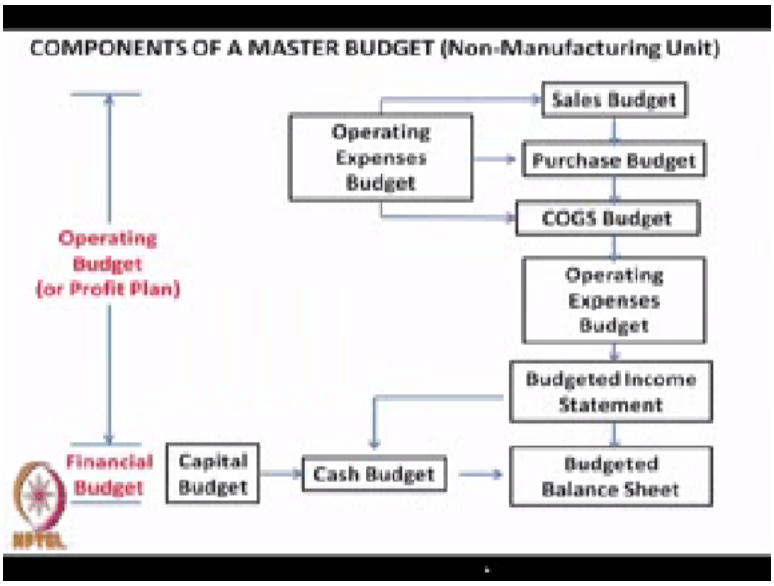

Now there are different components of a master budget. In this particular slide, we show such a budget, such components of a budget for a nonmanufacturing unit. In the nonmanufacturing unit, first of all we shall have a sales budget. Depending on the amount to be manufactured we shall have a purchase budget to purchase the materials and how much to manufacture. The cost of goods sold budget.

Once these 3 are prepared, we also know the expenses to be incurred and therefore, operating expenses budget can be prepared. Naturally sales budget is the main input to budget making exercise. That means the sales have to be projected in the future and on the basis of the estimated sales, one can decide how much materials to buy, how much manufacturing cost to incur, what is the operating expenses.

Once we have that, we can make the income statement and of course separately, if a company wishes to invest in long-term capital investments, then cash will have to be spent on such investments as well as to carry out the operations of the company. So this part of the budget is concerned with the operations of the company, whereas this part is concerned with the finance of the company.

So cash naturally will require the operations, to carry out the operations as well as to make capital investment. So accordingly, a cash budget can be prepared and then the balance sheet,

budgeted balance sheet can also be prepared. So this is more or less the components of a master budget in nonmanufacturing unit. Of course in a manufacturing unit, there will be more details such as inventory budget, production budget, direct labour, direct material budget and so on and so forth. We have not considered overhead expenses budget and those aspects are not shown in this particular slides.

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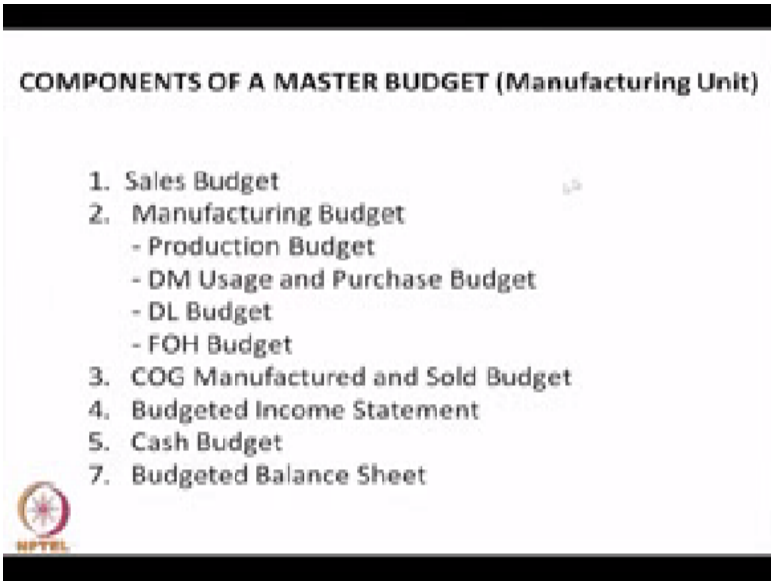

For a manufacturing unit as I was telling you in addition to whatever we had for a nonmanufacturing unit, here we shall have sales budget. The manufacturing budget itself will have different components, sub components, production budget, direct material usage and purchase budget, direct labour budget, factory overhead budget and of course cost of goods manufactured.

And cost of goods sold budget, budgeted income statement, cash budget and budgeted balance sheet. So these 3 items are common, sales budget is common but we have details of the manufacturing budget with the former production, direct material and purchase, direct labour, factory overhead and here we have cost of goods manufactured in addition to cost of goods sold.

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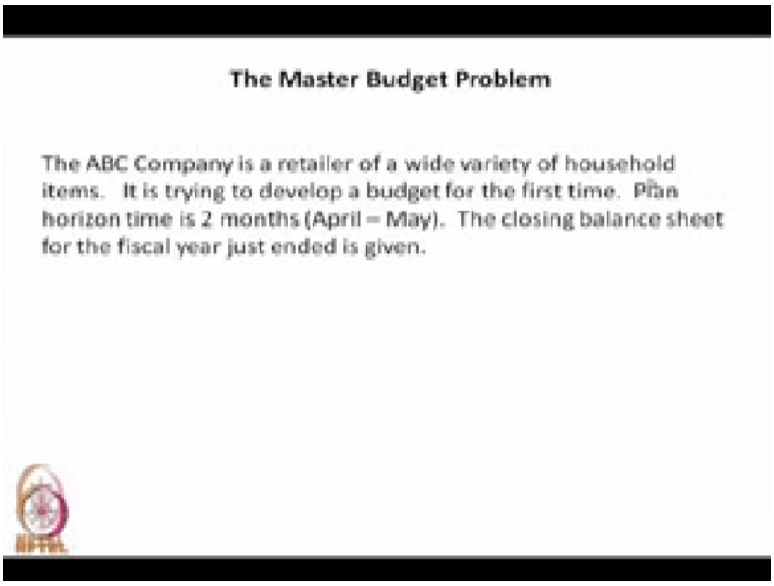

Now we take up almost a real life problem to illustrate how a master budget is prepared, what are the basic assumptions for preparing a master budget. This will be quite interesting and it will bring out to open the different assumptions on the basis of which a master budget is prepared. Statement of this mast budget background is this. The ABC company is a retailer of a wide variety of household items.

So it is basically a nonmanufacturing case. It is trying to develop a budget for the first time. Plan horizon time is for the sake of simplicity, we have taken 2 months, although normally it is 1 year. We have taken just 2 months after the financial year. It is April and May. The closing balance sheet for the fiscal year just ended, that is March 31st, end of March 31st, the balance sheet is available and is given here.

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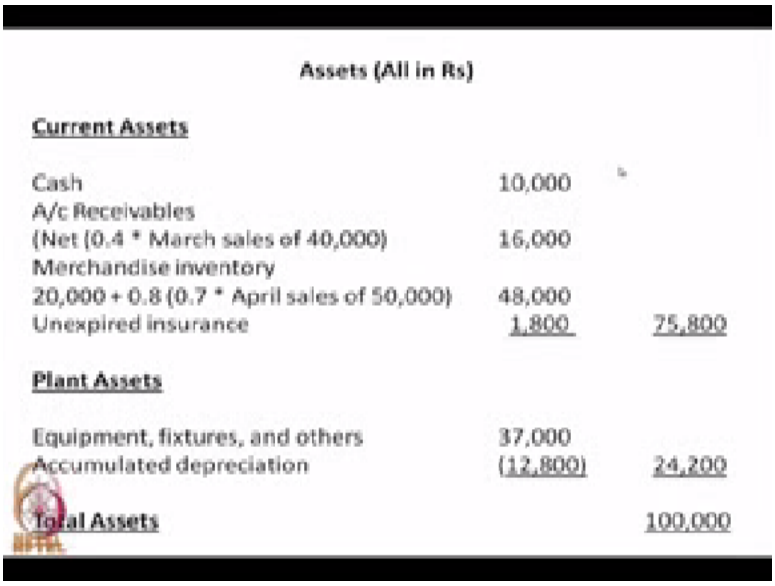

Assets (All in Rs)		
Current Assets		
Cash	10,000	
A/c Receivables (Net (0.4 * March sales of 40,000)	16,000	
Merchandise inventory 20,000 + 0.8 (0.7 * April sales of 50,000)	48,000	
Unexpired insurance	1,800	75,800
Plant Assets		
Equipment, fixtures, and others	37,000	
Accumulated depreciation	(12,800)	24,200
Total Assets		100,000

At the end of March 31st and we are required to prepare the budgets, the master budget for the months of April and May. Cash left with current assets, other assets and total assets. Cash Rs. 10,000, accounts receivables Rs. 16,000, forget about these things. We will discuss in detail the meaning of all this thing. Then inventory that is left with the company was 48,000 and insurance for which amount was paid but has not expired in advance of which this company is considered as an asset because it is an advance payment is 1800, totalling Rs. 75,800.

The plant assets which are also known as fixed assets are different equipment, fixtures and other things which comes to 37,000 but depreciation accumulated over the years are subtracted and that amounts to Rs. 12,800. This is within parenthesis meaning it is just to be subtracted from 37,000. This is the purchase price-the accumulated depreciation gives us the present value of the book value of the plant assets that comes to 24,200. The total assets of the company is Rs. 100,000.

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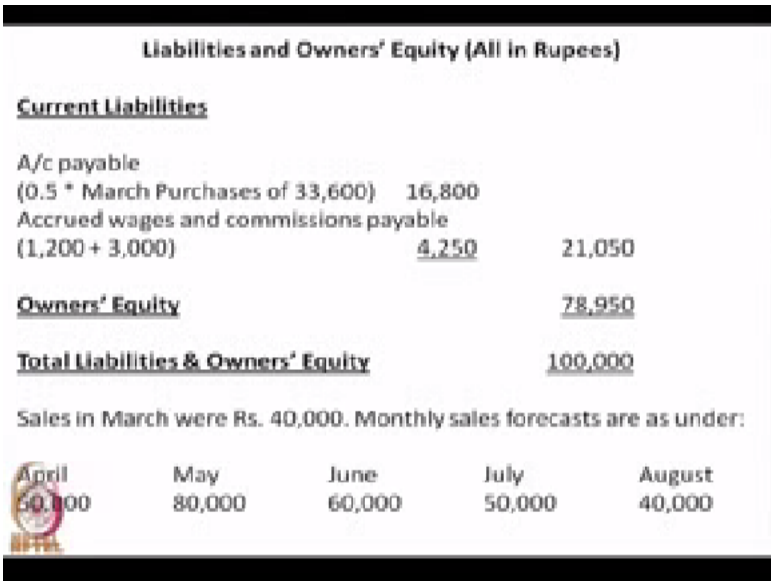

Liabilities and Owners' Equity (All in Rupees)

Current Liabilities		
A/c payable (0.5 * March Purchases of 33,600)	16,800	
Accrued wages and commissions payable (1,200 + 3,000)	4,250	21,050
Owners' Equity		78,950
Total Liabilities & Owners' Equity		100,000

Sales in March were Rs. 40,000. Monthly sales forecasts are as under:

April	May	June	July	August
60,000	80,000	60,000	50,000	40,000

Now on the liabilities and the owner's equity side, the current liabilities are accounts payable, meaning the amount that is to be paid to the suppliers of materials, it has not been paid. The purchases have been made in the form of credit. Some in the form of credit, some may have been made in cash. So accounts payable is Rs. 16,800 as on March 31st and wages and commissions also have not been paid, some of them and that amounts to total of 4250.

So together 16,000 and this, comes to Rs. 21,050 that is I think it will be better if we can write this down here. So that this was this = Rs. 21,050 and the owner's own (()) (13:06) capital + other profits that have been accumulated in the past few years amount to Rs. 78,950. Therefore, the total liabilities and owner's equity comes to 100,000. Now given this information, we have to prepare a budget, a master budget but the main thing in the master budget is to be able to make a good forecast of sales for various months in the future.

We are interested to make forecasts for April and May; however, what are given here are the forecasts for 4 months or rather 5 months April, May, June, July, August and it goes up like this, from 15,000 it goes up to 80,000 but then declines in June, July and August to figures of Rs. 60,000, Rs. 50,000 and Rs. 40,000 worth of sales. In March, the sales were Rs. 40,000. So it is almost a cyclic fluctuation.

It has gone up from March to April to May but then coming down in June, July and August. Of

course as I said we have to make a budget only for April and May and that was done for the purpose of simplicity only.

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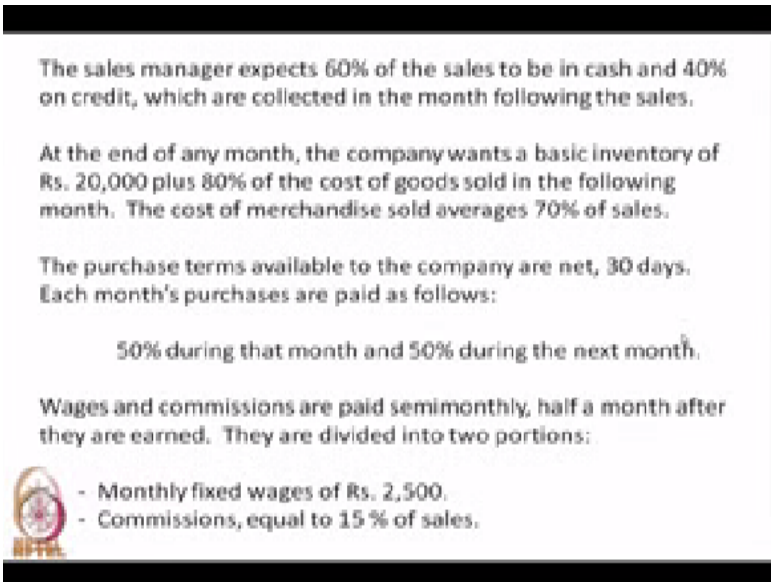

The other information that are given are actually the assumptions on the basis of which the budget has to be prepared. The sales manager expects 60% of the sales to be in cash and 40% on credit. So this had been the experience of a company that, of the total sales 60% is usually in the cash form and 40% on the credit, which are collected in the month following the sales that means in the next month, this amount is credited.

The amount that is sold on credit is actually collected next month. So this will give us an example, give us an idea as to how to make a cash budget and how to make accounts receivable budget. Now at the end of any month, the company wants a basic inventory of Rs. 20,000 worth of materials+80% of the cost of goods sold in the following month. So a company has to have an inventory policy.

How much inventory it would have today to be able to sell this month is very important and it has a policy that it should have something like a safety stock of Rs. 20,000 worth of materials + the expected sales in the following month and the corresponding cost of goods sold, 80% of that should also be in the inventory and the cost of goods sold averages 70% of the sales. So from here one can also estimate the cost of goods sold.

Next about purchases. The purchase terms available to the company are net 30 days. Each month's purchases are paid as follows: 50% during that month and 50% during the next month. Net 30 days' means, one month's requirement is purchased at one time and for which half the amount is paid in cash, is paid that month that is in cash but the other half is on credit. Therefore, the payment is made for that credit purchase in the next month.

Wages and commissions are paid semi-monthly, that is within every 15 days. Half a month after they are earned and they are divided into 2 portions. A fixed wage of Rs. 2500 and a commission equalling 15% of the sales. So wages and commissions, this is the historical, these are the historical values.

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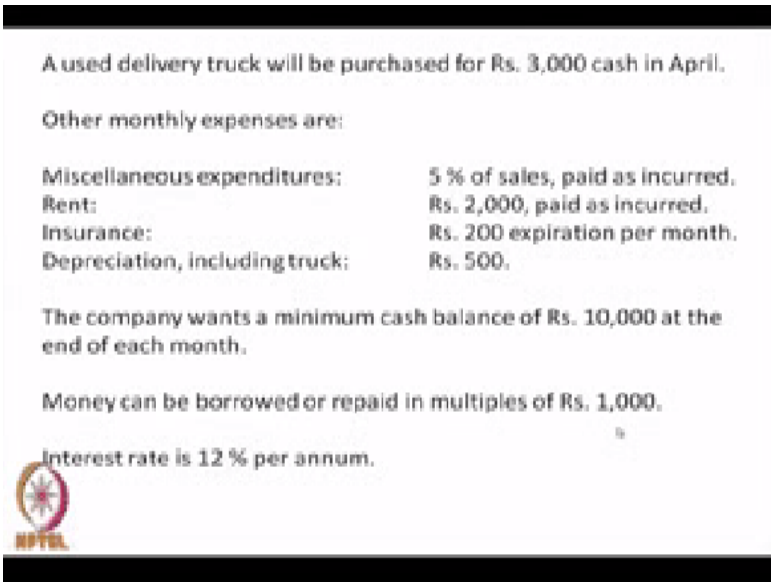

Next, in April a delivery truck will be purchased for Rs. 3000 or hired you can say, for Rs. 3000. Other monthly expenses are miscellaneous expenditure 5% of sales paid as incurred meaning in cash, rent 2000 paid as incurred meaning in cash, no credit. Insurance Rs. 200 expiration per month, recall that there was an unexpired insurance amount meaning that advance payment was made for insurance.

For every month Rs. 200 is to be credited to that and depreciation including truck is Rs. 500. The company wants to have a minimum cash balance of Rs. 10,000 for liquidity at the end of every

month. Money can be borrowed or repaid in multiples of Rs. 1000 and the interest rate at which money can be borrowed or repaid is 12% per annum. This set of information is naturally to be collected to be able to proceed.

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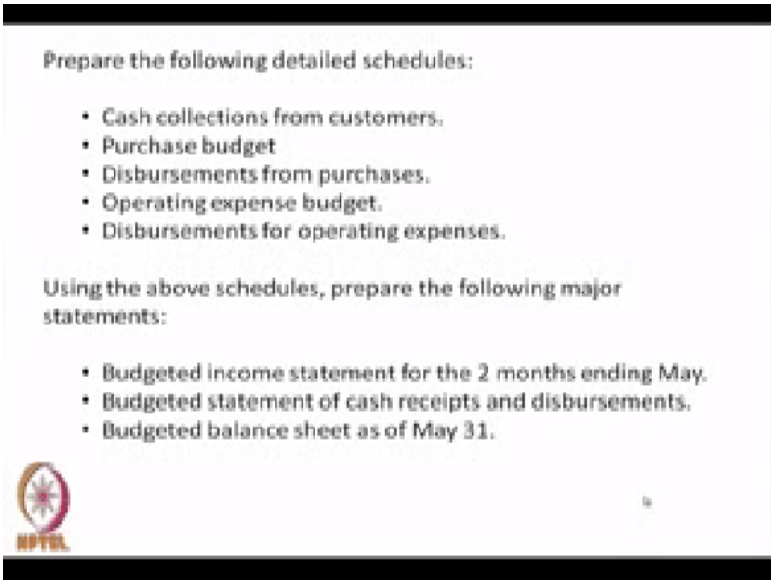

What we are required to do is to prepare the following detailed schedules. Cash collections from customers, purchase budget, disbursements from purchases, operating expense budget, disbursements from operating expenses, disbursements for operating expenses and using the above schedules, prepare the following major statements. Budgeted income statement, budgeted income statement for 2 months ending May and budgeted balance sheet as of May 31.

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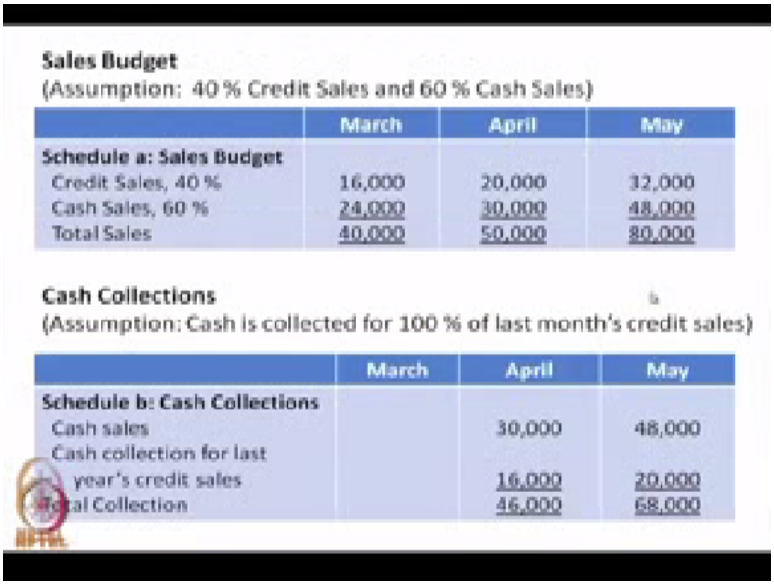

Now let us proceed with our budget making exercise. First the sales budget. The basic assumptions of a sales budget are that of the total requirement, total sales, 40% will be on credit and 60% will be in cash. Now recall that in March, the month that just ended, Rs. 40,000 worth of goods were sold and the forecasts sales for April was 50,000 and for May, it was 80,000. This was the forecast made, this was the forecast made, sales in March were Rs. 40,000 and sales forecast for April and May were 50,000 and 80,000 respectively.

Now naturally whatever was credit sales in March, that was 40% of March's sale which was 40,000, so that came to 16,000 and cash sales was 24,000. We require this information because whatever was credit sales in the month of March, after 1 month, this will come in the form of cash, this will be collected back, that is why we had to had this column. For the month of April, 40% of 50,000 is 20,000 and 60% of 50,000 is 30,000.

So this is the expected credit sales and cash sales in April. Similarly, we found out credit and cash sales for May by multiplying 40% of 80,000, 40% with 80,000 giving 32,000 and 60% of 80,000 giving 48,000. So this is the schedule A and this is basically sales budget. Next we prepare cash collections. Cash collection is not a budget. Firstly, we are writing only collections, then we will give disbursements, then only the cash budget can be prepared.

Now collection is cash is collected for 100% of last month's credit sales, that means March's credit sale war 16,000, that will be collected in the month of April and will be available with the company in April, that is what we have written. So 16,000 that was due to be obtained from the customers is now available in April. In addition, in April there is a cash sale of 60% that came to 30,000.

So 30,000 will also be collected in April from out of its April sales and this is the credit sale of last month. Together they will give 46,000 cash in April. Similar calculation is done for May where cash sales of May is 48,000 and a credit sales of April, this 20,000 to be collected in the month of May giving a total of 68,000. So we can therefore estimate the cash that can be collected in the month of April and in the month of May.

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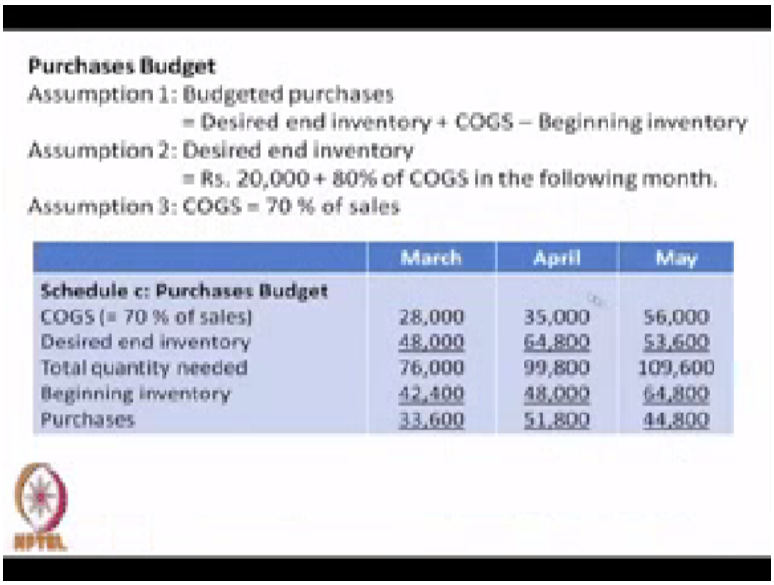

Now go to purchases budget. Now here you see how much to buy. How much to buy will depend on what is the desired end inventory that we would like to live with. At the end of this month, how much inventory we will be leaving, how much we started with and what will be our cost of goods sold. So desired end inventory basically budget amount to be bought or purchased will be equal to the amount of inventory that we will be leaving behind at the end of the month + the cost of goods that will be sold-the beginning inventory.

Whereas desired end inventory according to our assumption was that Rs. 20,000 worth of goods we should have something like a safety stock + 80% of COGS in the following month and COGS is 70% of sales. Now sales so we write down the purchase budget now. In the purchase budget, 70% of sales, so March sales was 40,000, 70% of that is 28,000. April was 50,000, 70% of that is 35,000.

May was 80,000, 70% of that is 56,000. That is the COGS. So now that we know COGS, we can now calculate the desired end inventory. Its equal to 20,000+80% of COGS in the following month, that means if we are interested for April, the following month's COGS is 50,600, 80% of that+20,000 would give us the value of desired end inventory in April. So similar calculations have been done using this particular formula to get the desired end inventory positions for different months.

Now come here. Total quantity needed therefore is the sum of this 2, that is desired end inventory + COGS. Desired inventory + COGS, that is I am calling it total quantity needed. This addition of these 2 items, subtract from that the beginning inventory. From the balance sheet, the inventory position was 42,400, inventory position was this. So this I have now subtracted, 48,000 was subtracted in April.

So we started with an initial inventory of 48,000, total quantity needed was this+this; therefore, the amount to be purchased was 51,800 and similar calculations are made for May. So basically as we see that these are different assumptions on the basis of which these budgets are prepared. Therefore, it is very important to see whether these assumptions are actually holding in practice.

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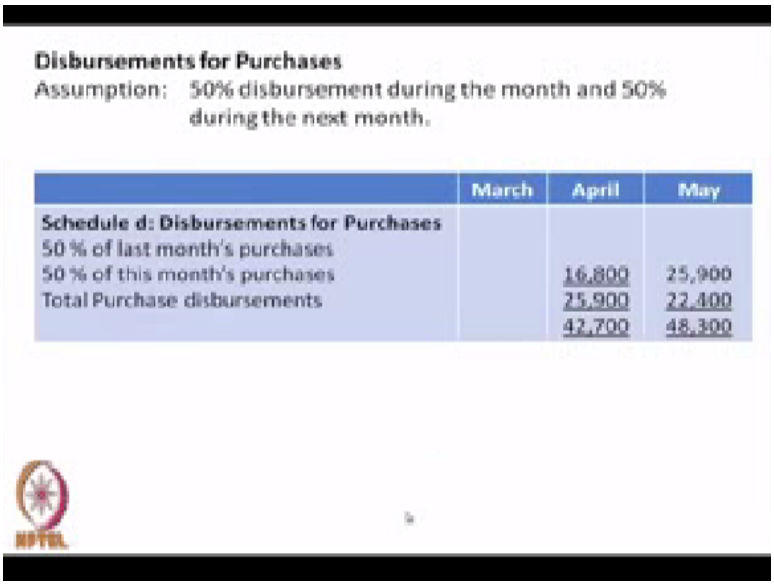

Now that we know the purchases, we can go for disbursements for purchases. The past experience shows that 50% cash payment has to be made for every purchase but 50% can be made on credit to be sold to be paid in the next month. Therefore, 50% of last month's purchases, last month's purchases, purchases to last month was Rs. 33,600.

So 50% of that comes to Rs. 16,800 for which the payment has to be made, last month's credit sales and this month's sale, sorry credit purchases, and this month's purchases 50% of that is cash sales, cash purchases and that was 51,800, 50% of that is cash purchase, that comes to 25,900. Therefore, the total cash payment or disbursement towards purchase of items, last month as well

as this month, is 42,700. By this amount, the cash position comes down.

Cash has to be paid for purchases of last month's credit sale and this month's cash sale and similarly also one can estimate the cash disbursements for May.

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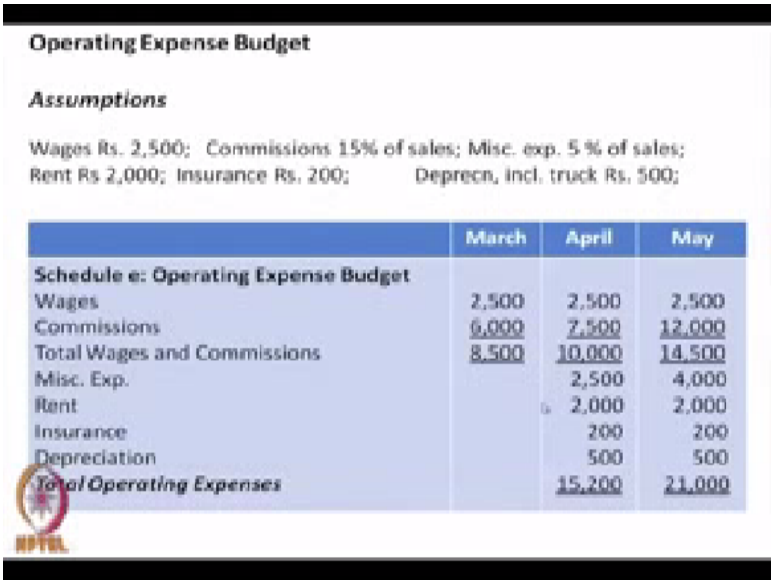

Now come to Operating Expense Budget. The assumptions are here, written down here. Wages 2500, so wages 2500 here appears for March, April and May without any problem straight away. Commissions 15% of sales. So commissions, it was 40,000 in March. So 15% of March sales comes to 6000, here it was 50,000, so 15% of 50,000 is 7500, 15% of 80,000 is 12,000. So commissions can also be estimated following this commissions, 15% of sales.

Miscellaneous expense is 5% of sales. So 5% of we are interested in sorry, wages and commissions total comes to therefore addition of these 2 columns, these 2 rows. So 2+12, 14,500, 2,500+7500, 10,000 etc. Miscellaneous expenses are 5% of sales. So 50,000*5% is 2500, 80,000*5% is 4000. Rent is constant at 2000. Insurance is 2000 and depreciation is 500. So this is very straightforward. Total operating expenses therefore in April, we are interested for April, it is 15,200 and for May, it is Rs. 21,000.

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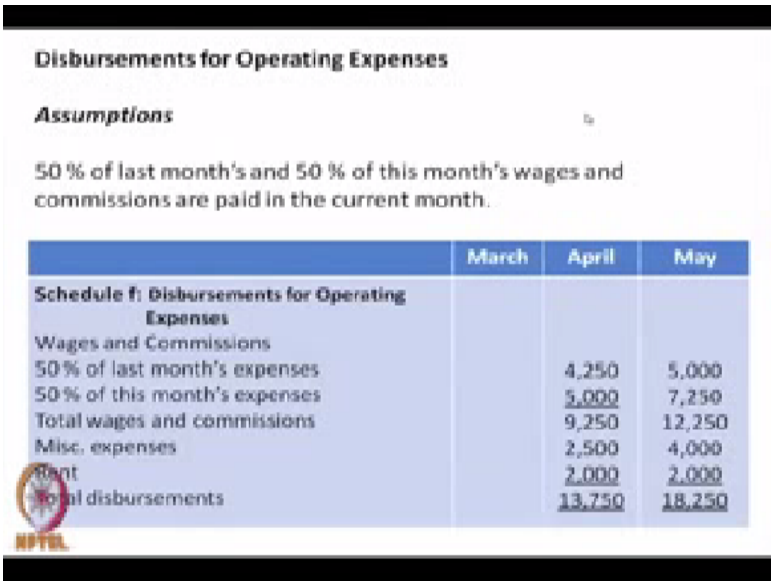

Now we have to make payment. For preparing cash budget, we have to know how much we have to disburse on account of operating expense. Here the assumption is that wages and commissions are paid in this manner, 50% of the last month's wages and commissions and 50% of this month's wages and commissions are paid in the current month. So accordingly 50% of wages and commissions are calculated here but the miscellaneous expenses and rent are also put here which was for April 2500 and 2,000. 2500 and 2000, they are put there.

Insurance and depreciation, they are not coming in this particular thing because insurance have already been paid for; therefore, no cash disbursement is taking place there and depreciation we shall study later. No amount actually is paid, is a non-cash concept and it involves no cash disbursement. Therefore, insurance and depreciation do not come in this particular schedule. So in April, they amount to 13,750 and in May, it is 18,250. So these are the operating expenses, how they are disbursed in the form of cash, basically cash disbursements.

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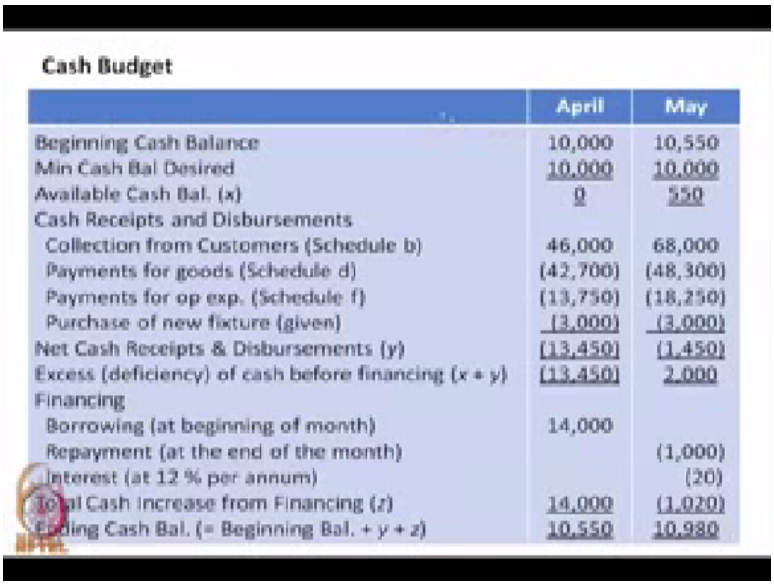

Cash Budget

	April	May
Beginning Cash Balance	10,000	10,550
Min Cash Bal Desired	10,000	10,000
Available Cash Bal. (x)	0	550
Cash Receipts and Disbursements		
Collection from Customers (Schedule b)	46,000	68,000
Payments for goods (Schedule d)	(42,700)	(48,300)
Payments for op exp. (Schedule f)	(13,750)	(18,250)
Purchase of new fixture (given)	(3,000)	(3,000)
Net Cash Receipts & Disbursements (y)	(13,450)	(1,450)
Excess (deficiency) of cash before financing (x + y)	(13,450)	2,000
Financing		
Borrowing (at beginning of month)	14,000	
Repayment (at the end of the month)		(1,000)
Interest (at 12 % per annum)		(20)
Total Cash Increase from Financing (z)	14,000	(1,020)
Ending Cash Bal. (= Beginning Bal. + y + z)	10,550	10,980

Now that we know the cash that we have received and the cash that we have disbursed, we can now prepare a cash budget. First of all, we have to understand the beginning cash balance. Beginning cash balance in April is the end of cash balance in March. Cash balance in March if you look at the balance sheet that was given earlier in the question, cash was Rs. 10,000, thus that was the end of March cash position.

Therefore, the initial cash position in April is Rs. 10,000. That is the cash balance and after the budget whatever cash balance you will be left with at the end of April, will be the initial cash balance in the beginning of May. So first of all this column has to be items values have to be found out and totalled and then this will come here and similar thing has to be done for May. Now the minimum cash balance desired is Rs. 10,000 that is given in the question.

The available cash balances are therefore this-this which is 0. Now look at the cash receipts and disbursements. In April, from the customer's schedule b gives 46,000. Let us see schedule b. Schedule b gives a total collection of cash in April as 46,000. That is what it has come here. Payment for goods schedule d will give, we can similarly go to schedule d and find out. This is 42,700.

This is a collection; therefore, it is 46,000 but payment is a negative value. So it is put in parenthesis. Payment for operating expenses schedule f 13,750, that is just what we have seen

here, 13,750. So that is written down here. Purchases of a new fixture is given as Rs. 3000. Net cash receipts and disbursements will be 46-this-this-this and that comes to -13,450. So it is negative balance and we have available cash balance is 0.

Therefore, 0-this is -this. So it is a deficiency of cash. This is x, this is y; therefore, x+y is this. Now look at financing. The company can borrow. It can borrow in multiples of Rs. 1000. So if it requires Rs. 13,450, it can borrow 14,000 and this has to do at the beginning of the month of April and repayment at the end of the month with an interest rate of 12%. Now the payment is made at the rate of Rs. 1000.

14,000 and interest, so at this time it is not making any payment and therefore, the total cash balance becomes 13,000, that is negative item. Total cash increased from financing is 14,000 and that leaves a beginning balance of 10,000 and the y is -13,450 and z, the amount that it is borrowing as 14,000. This gives us a value of 10,550. So ending cash balance in April will be 10,550 but it has to borrow an amount of Rs. 14,000.

Interest and repayments will be done in the next month. So they are not coming in the month of April. Now this amount becomes the initial value, initial cash balance in the month of May and similar calculations are made here. Only the repayment is made at the end of the month. It is Rs. 1000 and 12% is Rs. 20. So that comes to 1020 and the ending cash balance becomes once again beginning balance + y + z gives us 10,980. So this is how a cash budget is prepared.

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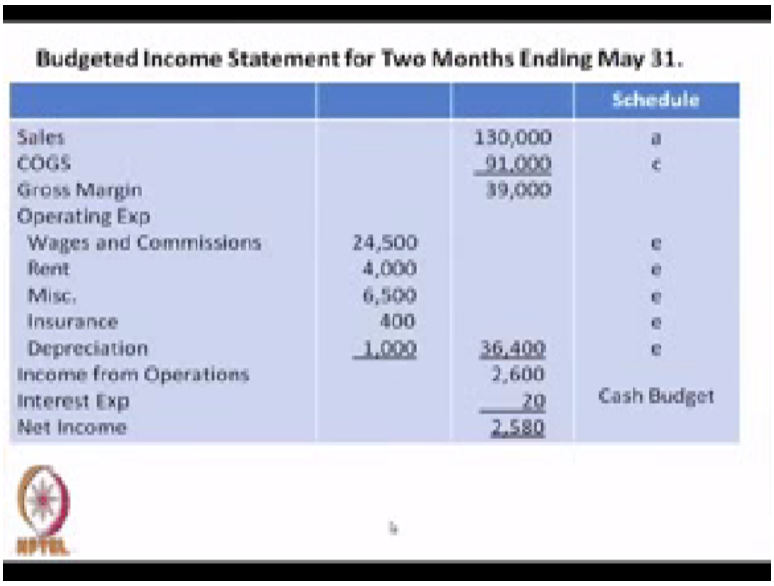

Now that we have made various statements or various budgets, we can now make budgeted income statement for 2 months ending May 31. Now here are the schedules from where this data is collected. Sales is known already, 50+80, total of April and May, becomes 130,000. Total of COGS can be similarly calculated as 91,000. Gross margin is therefore this-this which is Rs. 39,000.

Operating expenses, these are all sum of March, sorry April and May. For example, rent is 2000+2000 is 4000. Insurance 200+200 is 400. Depreciation 500+500 is 1000. So these are all sum of, total of expenses, operating expenses in the months of April and May. All of them come together as 36,400. So subtracting operating expenses from gross margin leave us with an income of 2600. The interest expense has to be subtracted leaving a net income of Rs. 2580. Various schedules from where these values are actually collected are given here.

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Budgeted Balance Sheet May 31

Assets (All in Rs)

Current Assets		
Cash (Cash Budget)	10,980	
A/c Receivables		
(Net (0.4 * May sales of 80,000)	32,000	
Merchandise inventory		
20,000 + 0.8 (0.7 * June sales of 60,000)	53,600	
Unexpired insurance (1800 – 400)	1,400	97,980
Plant Assets		
Equipment, fixtures, and others		
(37,000 + 3,000)	40,000	
Accumulated depreciation (12,800 + 1,000)	13,800	26,200
Total Assets		124,180

Now we can make the balance sheet for May and you can get it from different schedules as well. Cash, cash budget, it gives Rs. 10,980, already we have prepared the cash budget for May for example we can see the cash budget for May is here, ending cash balance. So that is what we are writing there, Rs. 10,980. Accounts receivables, this is the assumption in the question formulation is that net of 40% of May sales.

May sale is 80,000, 40% of that is 32,000. So we are assuming that this amount will be on credit sales and they will be accounts receivables in the next month. Inventory, according to our assumption Rs. 20,000 safety stock+80% of COGS. So June sales, COGS in May is 70% of June sales, sorry COGS of June is 70% of June sales. June sales is 60,000, 70% of that is COGS of June sales*0.8+20,000 brings it to 53,600.

Unexpired insurance for 2 Months Rs. 400 we have paid. Rs. 200 for every month, April and May. Total unexpired insurance was 1800-400 is 1400. Therefore, the current assets total equals Rs. 97,98.0 Client assets will be initial purchase price 37,000 that appear in the March balance sheet + Rs. 3000 worth of goods were purchased making it 40,000 but then accumulated depreciation will be additionally Rs. 1000 because Rs. 500 every month. For 2 months, it is Rs. 1000, totalling 13,800. So the plant assets and net becomes 26,200. The total assets become this + this Rs. 124,180.

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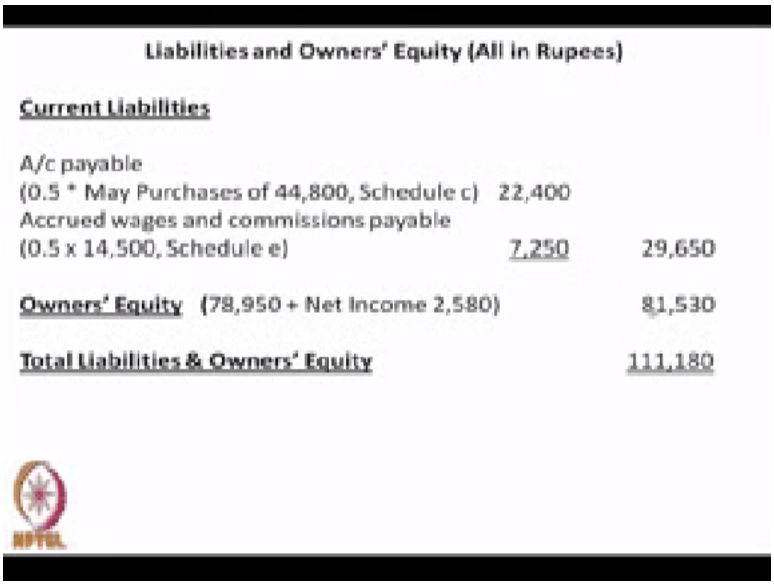

Now we can make the liabilities and the owner's equity accounts payable according to the assumption, it is 50% of May purchases of 44,800, schedule c is giving, that comes to 22,400. Accrued wages and commissions payable is 50% of the amount that is given in schedule e, that comes to 7250 and these 2 add up to 29,650. Owner's equity is the previous equity + the net income in the 2 months, March and April, that comes to Rs. 2580.

And therefore, the owner's equity has increased from 78,950 given in March end balance sheet and now it is 81,530. The total liabilities and owner's equity therefore is the sum of the 2 that is Rs. 111,180. This equals, there is a difference, the total assets and the total liabilities, they do not match. So there is some errors, estimation errors that the accountants actually take into consideration and make corresponding changes.

So friends we have gone through a particular example to illustrate how a master budget is prepared. First of all, let us understand that the basic input to preparation of a master budget is the forecast of sales in the next few years. If the sales can be projected with great amount of accuracy, then the budget is likely to be accurately prepared. Also important is the set of assumptions that are to be prepared or that are to be followed for preparing each item in a master budget and these assumptions are not hypothetical.

They are based on practical past experience. For example, that of the sales, 40% will be cash and

60% will be on credit, is basically the experience of the company in the past. Similarly, that 50% purchases will be on cash and 50% purchases will be on credit is also based on past experience. Similarly cost of goods sold that it is a function of the sales, 70% of the sales and this also is based on past experience. In addition, inventory policies, how much inventory one will keep.

In this particular case, we had taken a safety inventory of 20,000+80% of COGS of next month's sale. This is a policy that the company had been following in the past. Naturally this has to be now put in our master's budget. Unless these assumptions are validated, accepted and actually used by the managers in practice, budgets will stand nowhere. Therefore, in order to repair budgets, financial managers need to know from production managers, from inventory control managers, from purchase department and from others, the assumptions or the policies they had been following.

And once these policies are put in mathematical terms, it is easy to prepare a budget and the budget is basically an implementation, a financial implementation of the actual plan in future. Therefore, it provides a guideline and in our next lecture, we shall see how these guidelines are actually maintained and if there are variations from these guidelines, then who one should account for, who should be responsible for these variances.

Therefore, master budgets basically prepare the set goals in financial terms, translates management policies and plans into financial figures or financial goals and it is expected that these goals will be maintained. If there are variations, then we should see or we should find out the amount of variations and why such variations occur. This we shall discuss in our next lecture. Thank you.