Systems Analysis and Design
Prof. V. Rajaraman
Department of Super Computer Education and Research
Indian Institute of Science, Bangalore

Lecture - 14

Start of a new module, last time we looked at the feasibility study and the feasibility analysis for systems to be designed and delivered. And we said there are three main points we have to look at one is operational feasibility, then technical feasibility and economic feasibility. Operational feasibility is that, whatever you suggest solution is suggest can be operationally implemented.

That means, technology is there and so on. And technical feasibility also means that, there is a requirement in I got all the technology available. And you can actually have a system, which is reasonably well implemented. And economic feasibility is actually says that, whatever system you are going to implement is going to pay off. So, there is a benefit in terms of there is a cost benefit analysis is a primary output of the economic feasibility study.

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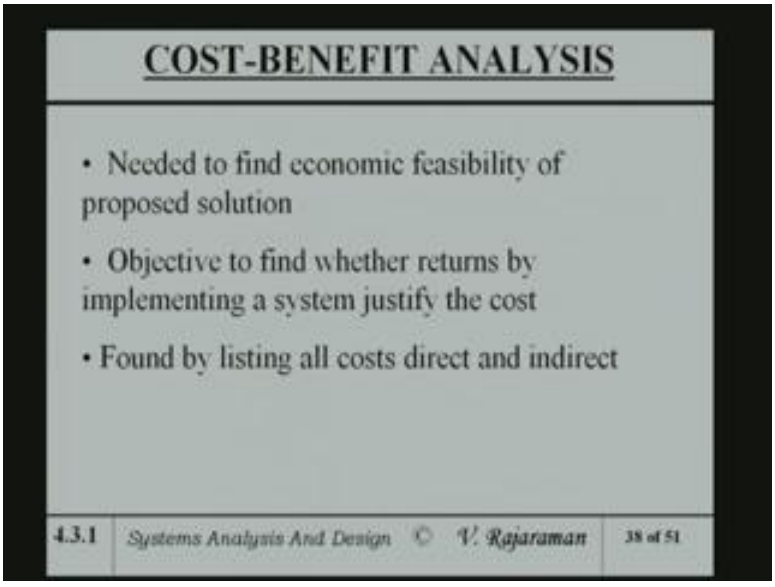

So, we need to find the economic feasibility have a proposed solution in the case of a hostel information system, which we discussed in great detail has a case study. We looked at three possible solutions. One solution is improving the manual system. The second solution was putting a single PC in the office, the third solution was a multiple

PC in a LAN. We rejected the first and last solution mainly, because the first solution is not scalable when the number of students increase.

And it is difficult to operationally implement it. And the last solution namely putting many computer on a LAN is economically not feasible. And says that, it is going to be too expensive a solution, you technically that can be done. So, we will convert on to solution B namely the putting a single PC. And so we have to look at the cost benefit analysis of this solution. That is what we will primarily discuss today, at a reasonable length.

Now, the to find out the economic feasibility, we had to find out the returns economic returns that is how much do you gain by implementing the system. And how does that compare with the cost you are going to pay. And this is because done in many other things also in real life. You kind of work it out and you do not mind the cost benefit, before you buy something even in a shop. very often you may not quantify in the economic benefit.

But, you would say that you will be having some kind of saving by doing that and go and take decision. And in the calculation in the economic benefit, you have to find out all the cost direct and indirect. And I will explain given example, what I mean by direct and indirect cost.

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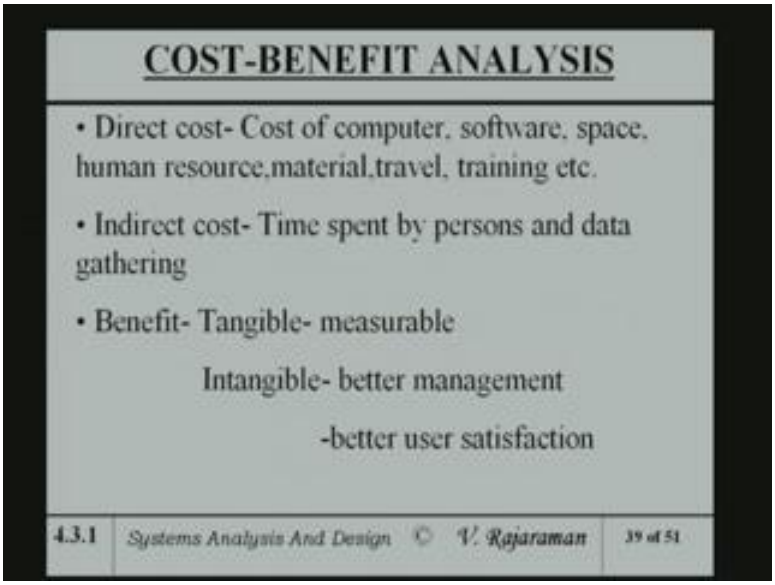

Direct cost we will within the case it will be easier for you to understand, the difference between direct cost and indirect cost. The direct cost is the cost of computer, software space human resource material travel training etcetera, which we actually talks about yesterday. Particularly talked about the fact that the space cost, may be in a very high in a place like Mumbai, where space cost is not relevant in our example, which we are looking at.

And of course, indirect cost time spend by persons and data gathering and so on. And you do not really quantify very clearly in the sense that, in the case of hostel exam for instance, the clerk any how already will be there. And you are not going to pay him extra for this. But, in some sense there is a certain amount of time he is going to spend in doing this. Later on may be you will save time. But, at the time of developing the system he has to spend some time with a analyst and programmer and so on.

And who will require to his time understand this system. And so the indirect cost including in the cost of say the wardens time and so on. Because, the fact gatherings base stage we found that one has to go through an interview lot of people. And that is ultimately like indirect cost, but does not quantify. Benefits are of both types, tangible or measurable benefit and intangible benefit. And intangible which is things like better management better user satisfaction and so on.

And very often the intangible benefit is only one people can say very clearly. But, psychologically you feel more comfortable with intangible benefit. And it is very obvious that, there is certain benefits to give an very simple example of what is, what I mean by intangible benefit is railway reservation system is implemented. The intangible benefit is that the time customers spend in a queue to book a ticket reduces considerably. And so it is an intangible benefit from the point view if railways.

But, it is a tangible benefit from your point of view. Because, you have not wasted your time. And you have save that time, in which you could have done something else. So, cost benefit in the sense that intangible benefit in terms of user satisfaction is as important, as a tangible benefit which may be a money saving.

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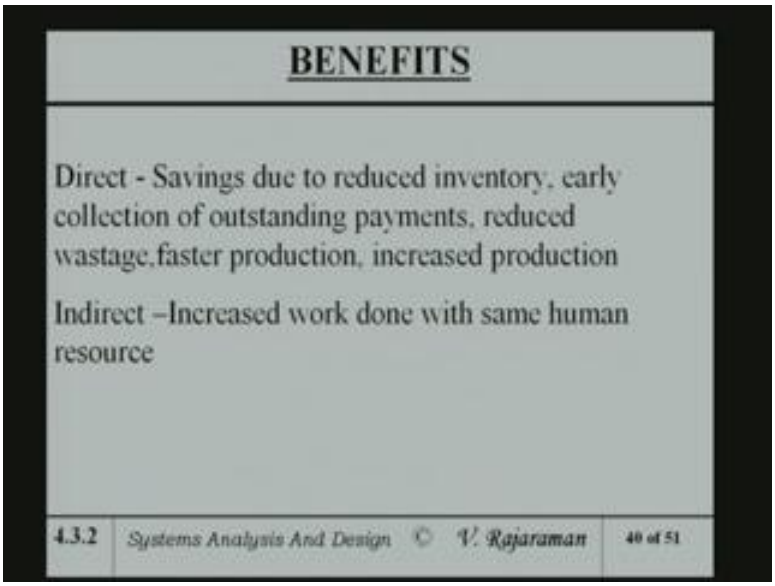

Now, direct benefits are benefits due to the reduced inventory early collection of outstanding payments, reduced wastage faster production and the increased production and we explain some of these points. Now, the one of the biggest cost many production companies as well as in hostel example is inventory cost, what is meant by inventory cost is the items you store buy and store. And which are not used up and so there is a small in the dead storage.

Dead storage is called dead inventory says that, you do not really you are not essentially using it. But, you require it. I give an example of fact that the uncertain system, you have a tendency to fill up a lots of buckets of water. When, you know this water supply is not being regular. But, that storage which you have done is really not required, if continuously water flows.

So, that storage is a waste of money. I mean waste of money in the sense that as for us your concern, it is a cost of bucket. It may not be that large. But, then if you store in a bucket for too long of time you made an empty it out that it is a waste, you already paid for the water. So, the point is the inventory cost something where you already paid the money. So, there is an interest payment or the inventory.

And in production companies there used to be situation where, they have 100 of crores of material, which are in the inventory not regularly used and the interest payment on those crores of rupees is so high, because, you already paid that 100 crores. So, your

profitability comes down, because of a fact that you have a huge inventory. So, people always try to reduce inventory. And said the Japan today, they try to have so called just in time manufacturing.

So get all the items as an when it require, so do not store it this certain. Early collection of outstanding payment. Other words, see the interest an outstanding money is one normally very large. So, one of main problem face by our small scale industries in this country, is that you do a job I am when I say small scale industry.

I also mean small software companies, which are set up by 10 people 15 people and so on. Now, what happens for them one of the most difficult things which happen to them is that, they do all the work. And then they implement the system and they are supposed to get payment as soon as the system is accepted. And of course, as per the contract they are supposed to get it early.

But, there is always a delay in payment. And delay in payment affectively means that, your money has tied up. And you have to pay your salaries for your employees and so on. And so there is always a problem. And so if you case find out some method of collecting outstanding payments very quickly. Then, you save that much of interest cost. And that is an important part, in our case the early to pay the vendor bigger the vendor will reduce our cost.

Typically, in India what happens is payments from government departments or notoriously late. And so, normally all suppliers will Jacob the price. If it is for a government supply, compare to a supply to an individual or supply to a company. Mainly, because he knows payment is going to be slow and money is going get tied up the goods are always supplied.

So, this is the kind of problem, which is which leads to an requirement for at least producing the bill fast enough as soon as you deliver. So, there you get your payments quickly. Reduce wastage in the case of the our hostel management system, if you buy too many vegetables much more than what is require for number of students, then they are going to rot.

So, you are going to waste those vegetables. So, you are paid and so you are able to exactly predict the requirement of perishable goods. And order only that much of

perishable goods. Then you can avoid wastage, and if you avoid wastage and of course, you are saving time money. And this is also true, not only in the case of hostel, but if you are running a medical shop. Medical shop many medicines of an expiry date. Beyond the expiry date, that medicine has got to be thrown in the dustbin.

So, if a medical shop stocks too many things, which is beyond expiry. Because, he did not predict properly. How much you will sell in a particular period of time. If you end up un necessarily losing money, which is also true even in the case retail shop, so on. There are certain items like for example, milk or ice cream or things of that type, where there is a expiry period. Beyond which, you cannot really keep it in the store. So, these are the issues which add to relevant reduce wastage by proper prediction of your demand.

And you store or you buy based on a prediction of demand. This course of machines can be reasonably well, computers can do that in a procedure you can measure that also. In other words, before without a computer how much would have been the wastage. With the computer by putting that program, how much have you saved.

So, this kind of a wastage is a another issue. Faster production, faster production means. Like for instance, if your items which are required to produce or available, when you need it. And you find suddenly in the store, that when a particular item is not there, when a production is stop for some for that reason. So, faster production is extremely important in a assembly line kind of a situation or in any situations.

In fact, if you are able to prevent any kind of a stopping of a production line. That, itself will save a lot of money. In fact, I remember one particular example, where I worked where there is problem in terms of a steel plant, where the steel plant was rolling hard steel and making bullets. And those bullets used to be cut to particular size. And the output bullets is to be taken away belt and convey belt.

Now, whenever you cut there is one last piece which is left which is non standard size. Because, you cannot predict very clearly ahead of time, how much or what length it will be there. And even if you cut at particular rate, it may turn out to the last piece is anon standard size. And non standard size bullet may not be usable.

So, that company what they found is last part, which is left. There is suppose to fall in to a pit. And falling in to a bit, it is used to kind of a clog up that what I would say the gap

in the pit. And so the gap was filled up by this, because longer than the normal wastage last bit. And so next time, next bullet when it is cut, last piece cannot go in to the bit. And so we have to stop the production line.

So, if you stop the production line assumed in the case of a hard steel rolling mill, if you have to stop. That means, it start up takes to hours with start. Because, you have to cool down everything and it is big mess. So, their consulting to find out how this kind of production problem can be solved by using a computerized system. In this case, we suggested a real time computer system, which will actually do a prediction of the length based on metallurgical factors and make sure and control the speed of the cutter.

So, that the length of the bullets or within the certain allowed tolerance plus minus x. And last bullet becomes almost 0 or very small. So, that this kind of production stoppage will not occur. And so they found that this saved them considerable amount of time, because production line did not have to be stopped.

And even they produce some bullets, which longer than necessary still it is not going to reduce their profitability. Profitability is reduced more by production stopping and so on. So, the point is that very many companies they find methods of using computer and so on, to be able to keep the production planning. Because, it is one of the biggest problems in terms of stoppage of production.

And also increase production this is case of, if you are doing a proper job. The of scheduling production, then the proper schedule is made. Then, for a same period of time you would be able to produce more. So, that is a tangible benefit in fact, direct saving. Indirect saving is in terms of increased in work done by a same human resource.

Let me take an example of what I mean by it indirect. Let us take an example of bank computerization. When, you take a bank computerization now what is happens in the banks known today is there are tellers, which are sitting there or clerks who are sitting there. And each one of them as have a computer.

The advantage is that for the ((Refer Time: 20:15)) point to the customer. The time taken to finish your transaction reduces. Secondly, same clerk can do many things now, previously you have to go to particular clerk for doing something. Some other clerk for

doing something else, because each one had a different file. But, there is a system in which is online with the connection to LAN in the server.

Then, the files are available to all the clerks. So, you can go to any clerk to get a withdrawn, you do not have to go to a particular teller to get a withdrawal. So, individual also individual clerk can do more work in the same time. Because, by just using a mouse and clicking the transaction time is considerably reduced, manual transaction time. So, the number of customers who can be catered to in a given time will go up.

So, they do not the advantage is that they do not have to open new branches, because rushes increased and so on and so forth. So, in any situation where in the case back may be what would have happened is that, they can handle it to more customers. That means, they have more accounts starting in that.

Because, if a bank gets to be loan or something where you have to waste a lot of time, people go to some other bank. So, this is indirect benefit in terms of getting better work from the same people and also they are able to do more work.

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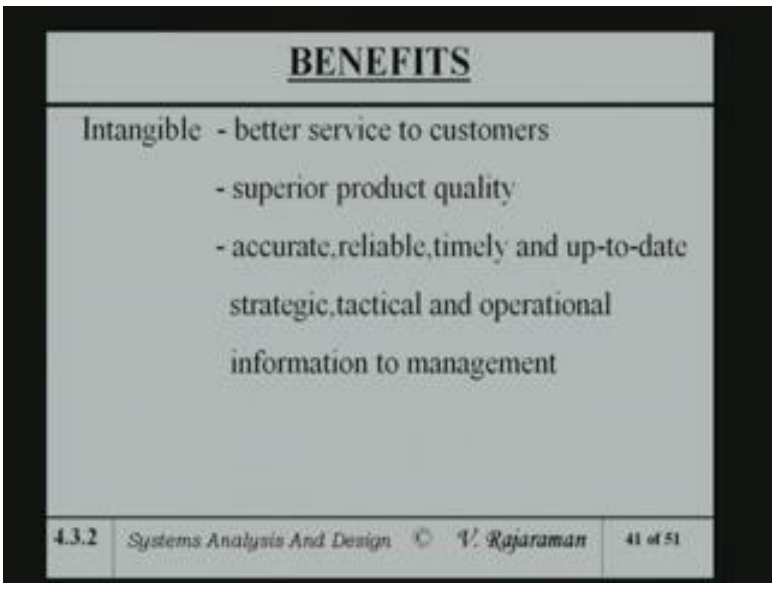

Intangible benefit as better service to customers, like in the case of a railway reservation system and bank system and so on. Superior product quality, see like the example of a steel mill I said. The bullets are of once you predict properly, you can have a correct

length, which is controlled. And which down the line that can be effectively used. So, you have superior kind of bullets coming out in your mind I might say.

And this is a example I know of it is... But, in general computer based systems, if you are able to improve the problem, they will be able to improve the product quality. In terms of the fact that they will be able to control the parameters, which affect the quality of the product. So, that is a point, that is the number of parameters which go to make up the product quality.

And so the improvement of product quality. Because of the fact that you have use machines. And let me take a very simple example again. If you are looking at the same retail stores. And if you go and you find items whichever said an expiry, as a customer you would like to buy an item, which is along as expiry.

If it expires in next 2 days, you may say that it is a you cannot consume it in 2 days. So, you will not buy it and you will look for something which is say 7 days, 8 days or whatever it is you look at the date of expiry. Similarly, if you buy a medicine you also look at that date.

So, if you are able to make sure the product has got a longer expiry period. And you do not store products in such a way, that there are too many of them which are very short expiry period. Then, that product quality indirectly is improved as far as the customers is concern.

And you have accurate, reliable, timely up to date information. Like for instance for a pass book in a bank, when you update a pass book machine based updation is normally accurate. It is also reasonably reliable I mean, you can immediately find out. And you can go to the computer and find out, if there is an inaccuracy there is a data entry error or whatever.

And it is up to date, because you know as soon as you withdraw money from your account, it gets reflected in the in your ledger, ledger is stored in the computer. So, if you go and update your passbook, you find that whatever you with draw that money is also shown in that passbook. So, you know the up to date current balance, like when you go to an ATM and withdraw money from the ATM, you get a slip which tells you the current balance.

And the current balance based on the which you whatever money you withdrew and you got certain balance. So, it is up to date in that sense and apart from that I also talked about the strategic tactical the advantage. So, far we did not talk about mostly about operational.

Operational is something, which you can measure directly. Whereas, tactical in strategic are more difficult to measure, in terms of the costing or in terms of economic benefit. But, it is possible, but it is not impossible to measure the economic benefit of a good tactical decision. There is no difficult to measure the economic benefit of a strategic decision.

Let me take an example again of what better tactical decision would do for you. Like, many airlines today, as you know there are plenty of airlines all competing. And they all competing for the same customer set of customers. And when the computer same set of customers, they would like to get the maximum number of customers. From the point of view of the airline, the profitability depends upon on what they call on load factor.

So, there is suppose there are 100 seats in a plane and you are able to fill up 85 to 90 seats, then only 10 seats are empty, then you make a lot of money. But, 100 seats are there and only 20 passengers are going, then you are losing money. Because, any how you petrol cost is same and the pilot cost is same everything is same.

So, you higher the load factor the more is the profitability. So, the tactical decision would be based on the fact, that there is certain kind of prediction of based on past experience about the load factor, which is expected depending upon the timing of the flight.

So, if you are flying in the load factor goes down for afternoon flights, weather it goes out for morning flight and evening flights, which you can calculate based on statistical parameters. Then, you can decide to increase the number of morning flights. In fact, that is essentially what is happened now, because people like to go in the morning, finish their work and come in the evening.

So, morning and evening flights normally many airlines try to give. And of course, they also try to find a gain, when those they start giving it that there is competition. So, load factor even in those they think the load factor will go up it may not go up. So, the method

of kind of tactical decision they take is that, if a person books way ahead of time I will give a concession and that is what is happened in the India today.

Many of the airline, if you book 2 months ahead of time on a particular flight, we are given a much lower rate, than if you book 1 week ahead of time. And again just before the departure of flight, they will empty the seats and you go and book, they will reduce the cost it entire you to go. So, that the load factors go up.

So, these are tactical decision. And tactical decision like this, in the case of they have to decide how much to charge. If you book 2 months ahead of time, how much the charge come in the last minute and things like that see. So, these are management decisions. And they also lead to certain kind of improvement in profitability.

So, these are issues which are tactical decision. Another interesting tactical decision, which some of the airlines took apparently with in fact, the pioneer in this was a company in UK. And what this company did was it calculated how much does it cost to give all those meals and so on in the flight.

Now, where they go to a flight you get a free food and you get free juice and stuff like that. So, I did not the plane is late something like that, you also given free lunch coupons and so on. So, you can go and eat in the restaurant. Now, what is the total cost of all this meals. Meals cost apart from the actual cost of meal, in the lot of logistics involve.

What I mean by logistics involved is, is suppose a plane is got only 80 passengers and a 100 passengers plane. There is no point in ordering 100 meals, 20 meals are wasted. So, you cannot predict exactly 80 meals ahead of time. So, this company took a decision that they will not give any meals.

So, they save a lot of money, because they do not have to tactical decision and how much to order and so on and there is no cost involved. The plane is late they do not have to give coupons and so on. So, they save a lot of money. So, tactical decision was that by saving this kind of money, in any case in the plane itself I will give on payment to the customer.

Suppose he is hungry he wants to eat, he will have some sandwiches or some simple forks which will be available on payment. That, because he is not guaranteeing food, he

does not have to predict and store a lot of stuff and so on he normally store only thing which are not perishable that much.

Like, you know you have a pack of cashew nuts or things like that. But, you will charge for that and some cold drinks, stuff like that. So, the point is by doing this tactical decision, the company was able to reduce to cost of the ticket by almost about 30 to 40 percent compare the other airlines.

And so this called a cheap air line and Indian o f course, Deccan airways has done that same tactical decision they have taken. That is some extend they may ((Refer Time: 33:07)) strategy that I am going to have a cheaper flight. And so the point the Deccan airways managing director tries to make has a strategic decision. As I said is that, I would like to make my plane ticket not much more expensive, than second class A/C ticket on the train.

So, I will try to entice the second A/C passengers from the train to the airlines. And of course, airline are lot more comfortable it is not shorter going from Bangalore to Delhi by train takes you almost 48 hours. Whereas, in a plane you are going to take in 2 and half hours. So, that is if the cost is not much higher, than one would definitely prefer to go by air.

So, these are the points which are in terms of you might say even though I listed them as intangible, there is a certain tangible benefit which you can actually compute. Now, let us come back to the our hostel example and looking at the cost benefit analysis of the system.

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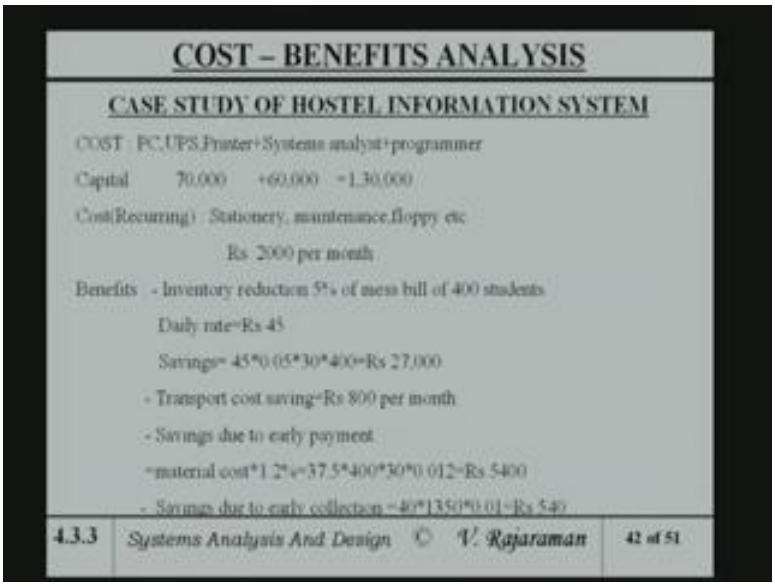

Now, cost benefit analysis is based when I said the total cost, which is both direct cost and indirect cost and recurring cost. In the case of a solution, which we looked at there is a single computer solution. The capital cost is the cost of the computer plus the software, which you want to put.

That is 70,000 rupees is what we calculate plus 60,000 rupees is the cost of the system a analysis programming and so on which will pay to an external agencies to implement the system for you. So, the total cost I am assuming is 1,30,000. Now, there is besides that they have recurring cost, in terms of stationary, maintenance, floppy disc, other storage and so on.

And I am assuming 2000 rupees per month as a recurring cost. And so total cost is both capital cost and recurring cost. Recurring means, month after month I have to pay that kind of money. And benefits I calculate here I have to make certain assumptions. The assumptions which I make is that, there is reduction in inventory of 5 percent.

Because, the fact that I am able to predict the numbers the students who are going to take the meals. And based on the prediction I am able to clearly find out, how much is required. So, I hope I conservatively I am saying I reduce it by at least 5 percent. So, if the 5 percent reduction in the inventory, the daily rate is 45 rupees a day.

And that is also an assumption. And there are 400 students in the hostel and 30 days in a month average. And so if I take 5 percent of 400 rupees tells 45 rupees and 30 days in a month. The total savings is 27,000 rupees that is a savings due to inventory reduction. Then, there is a transport cost saving as I said that consolidating the requirements number of times, you go to the market to buying cartages and so on.

And I am assuming conservatively 800 rupees per month is saved. And savings due to early payment. What I mean by is that is that the vendor I am able to pay earlier today now. Because, I am creating a bill very quickly. And then, I am going to pay him right away rather than delaying it, which is there in the manual system.

So, if you assumed that material cost is 37.5 rupees out of total 45 rupees daily rate. Because, you know daily rate included not only material rate cost. But, also the other cost I mean people cost and so on. But, one might question now, why did I use 45 in the inventory in 37 here you see.

The reason is that, I am assuming that the actual material cost is the lower than the daily rate. Secondly, of course the any how only what I would say estimate making a guess and making a estimate. So, it is not the only thing is, it is got to be smaller than 45. And I increase it multiply by 400 students and 30 days and I am assuming, that I am saving 1.2 percent in the bills by doing that per month.

That means 1.2 percent per month saving is turns out to be almost 15 percent per year is not a bad kind of a interest payment. Because, as you know on your the rate contract and so on to delay payment by a month, how much they charge you, they charge you 2 and half percent per month.

Some many of the credit cards and another credit card company may charge 2 percent per month, nobody will charge you no money at all are things like that will charge you. But, they make most of the money in terms of the interest, which you pay by delaying payments. So, this is the kind of... So, interest payments are fairly high.

So, there is also saving due to yearly collection. What you mean by early collection is? Previously students some students were not paying in time. And so the student does not pay in time peoples late he is being subsidized by the other students for this total cost.

So, by giving a bill earlier enough 5 days after the end of the month. And giving him certain number of days to clear, you are essentially getting an early payment from him.

So, per month I am assuming only about 1 percent saving due to this. That is not how to the 400 students only about of 40 students are late. And I am saving about 10 percent on that total. So, it is 540 rupees it is small amount. Anyhow for on and out then, there is I add 27,000 plus 800 plus 5400 plus 540 it is all added I can do it mentally I can say 27,000 plus 5000, 32,000 400 plus 800 is a 33,200 plus 540, 33740.

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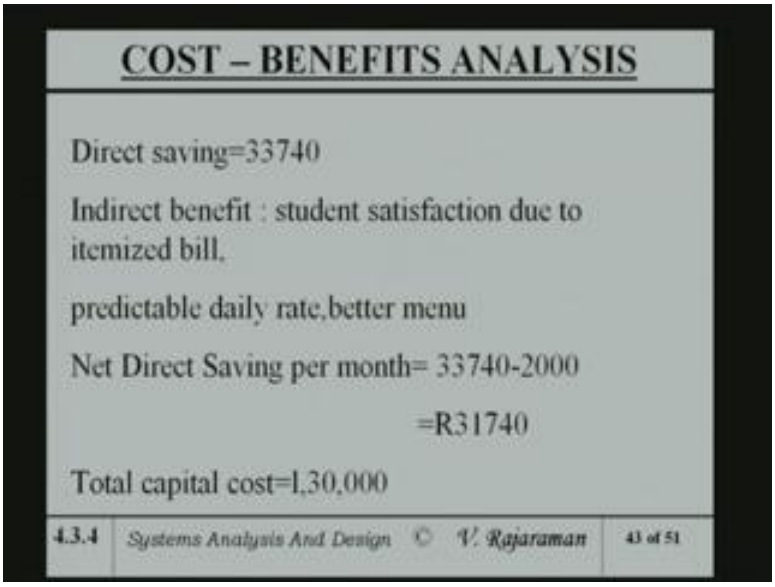

And I do not have a calculator see. So, like most of you will do immediately that, that is you know I am reasonably good at mental arithmetic you get 33,740 and indirect benefit of course, a student satisfaction due to itemized bills and so on. They know exactly extras and guests and when they brought guest and so on all that kind of stuff.

And predictable daily rate, but better menu and all that that is all intangible I am not taking in to that account in the cost benefit analysis. So, in the cost benefit analysis I get net direct savings per month is 33740 per month. But, it 2000 rupees is recurring expense, which I calculate it that is I said there is a recurring expense stationary, maintenance and things like that.

So, that I am reducing from 33,740 and 31,740 is the economic benefit or money saved. And that is this money is saved every month and total capital cost is 1,30,000 for very

simple minded cost benefit analysis cost benefit analysis is something called a payback period.

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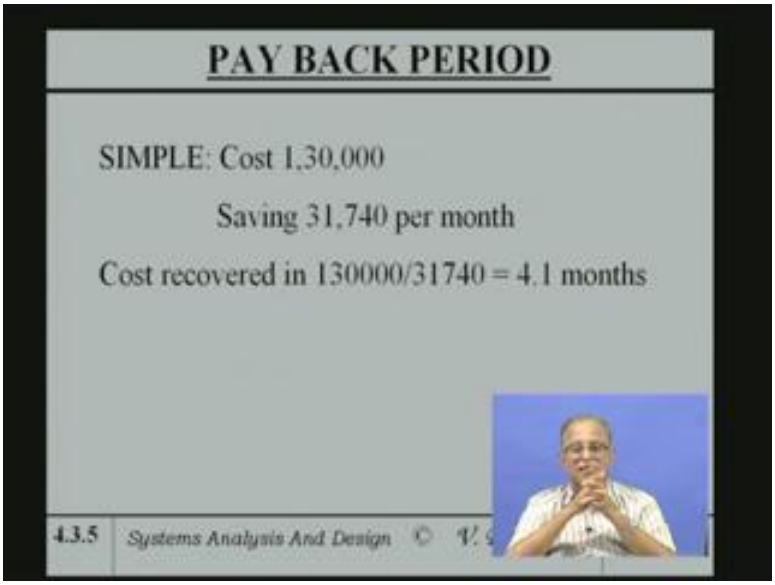

That means, what you meant by payback period is I paid certain amount of money or found I am going to save such certain amount of money. The capitol cost divided by the benefit. In this case per month, the number of months in which the capital cost will paid back is called payback period. So, the cost is 1,30,000 the cost is required in 4 and 4.1 months if I divided by 31,740.

So; that means, ((Refer Time: 42:48)) about 5 month 4.1 months in this case I am able to recover the capital cost. This is very kind of a ((Refer Time: 42:56)) after that whatever savings I make is net saving. The point of a payback period is that, if the payback period is very long.

That means, the economic benefits are not very good the payback period is very short that much better. So, the point is that the shorter the payback period, the better of the more economy benefit it is. So, this is a simple minded calculation.

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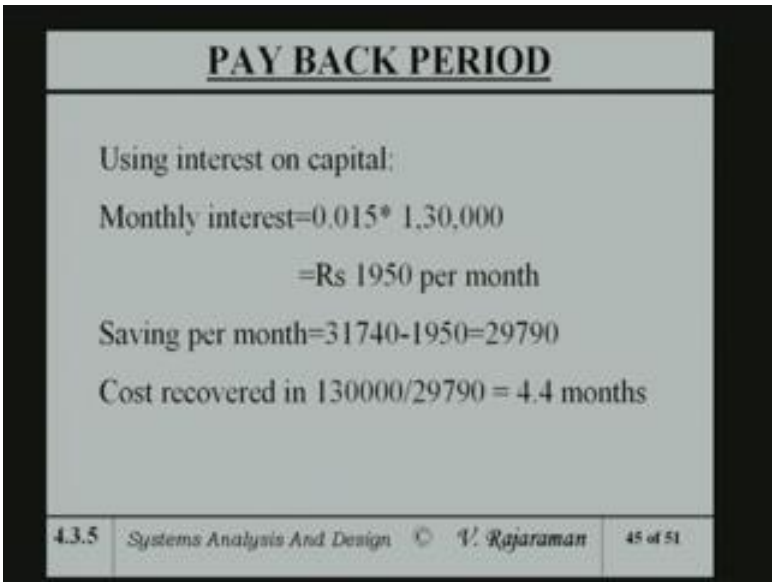

But, this is not a very good calculation, because there is also an interest in capital. If I pay 1,30,000 rupees for a computer in the case, cause in the case of a hostel you may not worry too much about interest rate and so on. But, in a company's interest rate is very, very important in terms of their finding out their profitability. Because, as I said interest rates are reasonably high in many situations.

So, in the case of I am assuming 1.5 percent monthly interest on the capital. So, there is a monthly interest payment of 1950. So, your saving is not 31,740. But, it has to reduce by the interest payment I have to make it on the capital, which already spent. And so there is if I do that net benefit is 29,790 and cost recovered that is payback period now is 4.4 months. That means, the payback period increases to 4.4 months.

Even this accountants will not agree, this is the right method. Because, the money today whatever money is going to ((Refer Time: 45:03)) few months from today is not as valuable as money today. Whatever, mean by this is suppose some you know somebody pays you for an item cash of 10,000. But, they say that I will give you credit and you can pay after 5 months, he will not give you for 10,000 rupees.

He will increase the price, corresponding to the interest he has to pay, that is one on aspect. The other aspect is all countries have so called inflation, a money today the value of the money today is not the same as the value of the money 1 year from today. In India today the inflation rate is 4 percent approximately 4 and 5 percent.

That means, 100 rupees today is equivalent to 96 rupees on a year from now. That means, the value of rupees going down in that sense. And there was a time when the inflation rate is something like 12 percent, very high. As the inflation rate goes up the interest rates also go up. So, the advance countries the inflation rate is normally try to kept, they keep it to about 2 and a half to 3 percent now we are reasonably all right.

And of course, the inflation rate will depends upon how strong your economies... What is meant by stronger how strong an economy is as, if you are it is like your home problem you know if you spend more money, than you get. Then, you are always in debt and most countries are always in debt and the country is in debt, the inflation goes up. The country has does too much of debt, the inflation comes down.

So, this is somewhat it is a economic theory I might say. But, the point is that apart from interest there is also inflation, one has to be concern about.

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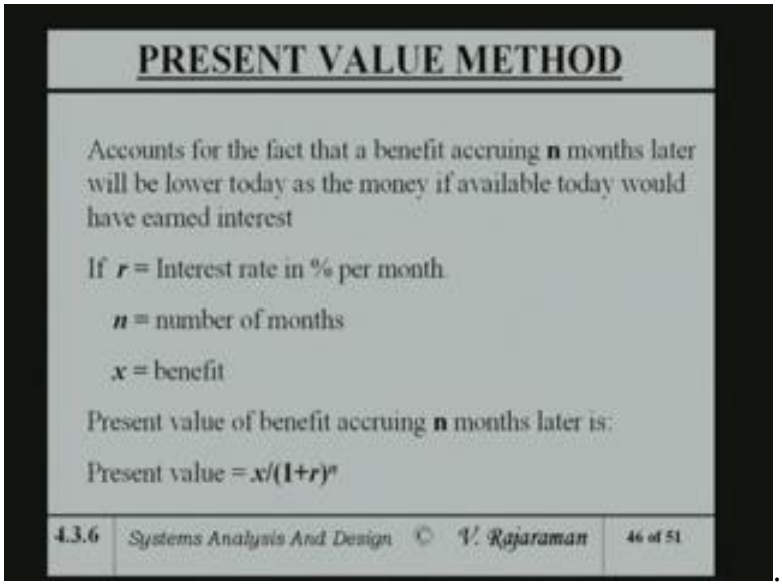

So, there is a present value of method, the present value of method the general idea is that the present value of the rupee is higher than the value of that same rupee on a year from now. As I pointed out 100 rupees today is better than 100 from 1 year from now. So, that is essentially the idea in this present value method.

So, I am using or interest rate or percent interest rate, n is a number of months and x is the benefit, the present value of benefit it accrues n months later. See, ((Refer Time:

48:01)) what exact amount I remember let see was 35,700 look at that 31,740 was the saving every month. But, that saving in every month. So, saving 5 months from now of 31,740 is not equal to the money value today.

So, you have to reduce it the saving is x rupees, it reduce it by 1 plus r to the power n is a interest calculation, compound interest as usual. And the larger the value r, the lesser to the present value. And r normally if it is a long periods of time not months. But, years one has to kind of look at inflation also, the inflation index.

Add to the rate, the inflation index, some extend you might say interest rate is inflation or somewhat related. And the Reserve Bank of India also declared. So, called into bank rates and somewhat like that, but as far as we have concerned I am assuming that r is something which is consolidate. I if you talk an economists you might say there is too simple minded or on account it. But, it is reasonable for our purposes, better than just dividing, the benefit by the savings which you in the very first one.

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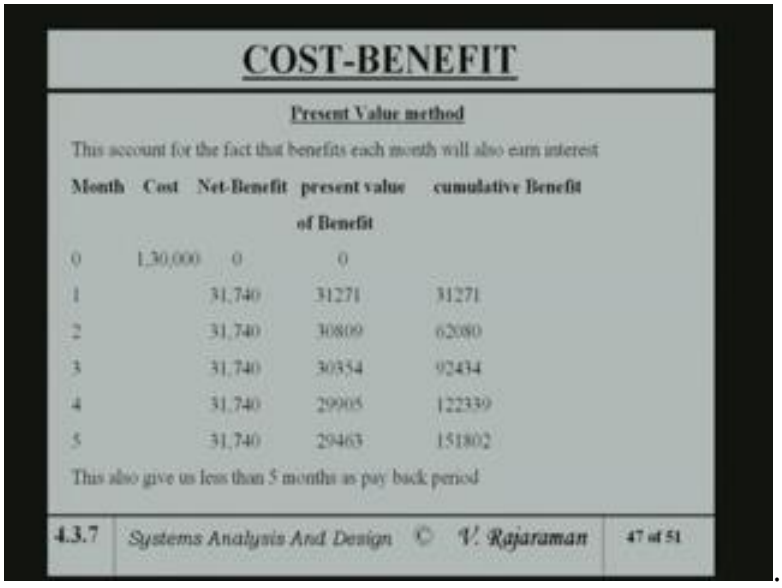

So, if I do that than 1,30,000 is the total cost, the benefit is started towing only from the next months, this month nothing no benefit. So, 31,740 next month is equal to 31,271 rupees today. That means, 1 over 31,740 divided 1 plus whatever is the you know interest rate to multiplied by to power in this case minus 1.

So, effectively calculate step by step. And of course, this calculation can be done as spread sheet or look at quick table of compound interest and you can calculate it. But, spread sheet are very simple to use. And so you find out the benefits and you go on accumulating, there is you see that the first month benefit, the benefit of saving of 31,740 in the present value 31,271.

Because, 1,30,000 present money already spend. So, the next month I will get little lesser amount. And if I added it the cumulative benefit and again third month, it reduces further and cumulative benefit is this much. And so you go on accumulating the benefit present value the benefit. And you find that, at the end of 5 months you are having your exceeding 1,30,000. The current value, that means somewhere between 4 months and 5 months you recover the cost on the present value method also.

So, the present value method is the one which is use by accountants and so on. But, by and large in this case, it turns out the present value method will give you something little larger than may be 4.4. But, it will be lesser than 5 months, any case of very reasonable payback period within 6 months, within this case 5 months the requiring of the cost.

So, this is a cost benefit in terms of economic benefit is quite good and so you are you should be able to convince the management.

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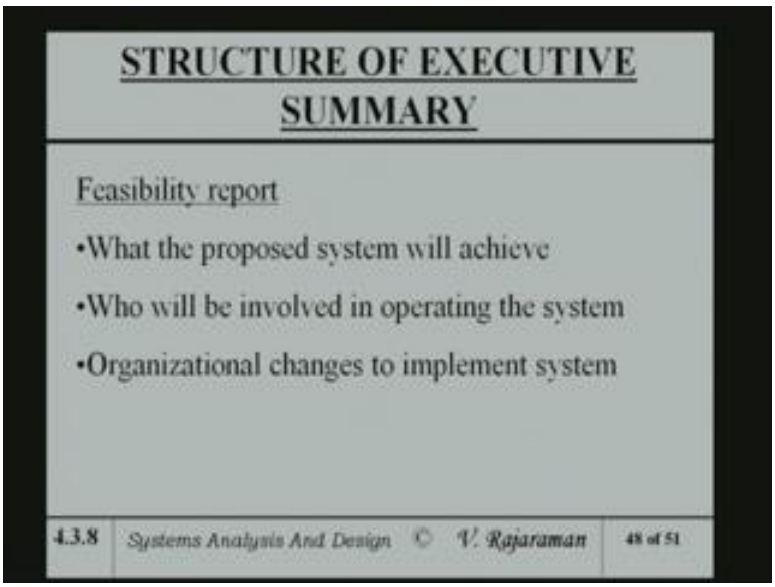

So, at the end of all this you have to prepare a feasibility report, which you are giving to the management. And feasibility report is something very important. Because, that is what which is going to convince the management to implement the system, which you are going to give. And you have to spend a little time in carefully riding it.

If there is in all reports, you have something called an executive summary. This is a something like abstract or one page, if I see of what you are going to say. Because, top managers do not have too much time. And if you give report of 150 pages, they will not even read it.

Because, 150 pages first of all it puts me off I read 150 pages and digest that 150 it is going to take me time and they will not even look at it. So, most companies you have two parts, one is the executive summary of maximum 1 page or 2 pages maximum 1 page in fact. I will go to executive summary is per see of what you are going to say, in 1 page, which is persuasive enough to persuade the management. That you have a reasonable, feasible system.

Providing of course, you are having a feasible system. The executive summary also may be negative saying that, system is not feasible for the following reasons. So, you may not look at implementing this. So, what I meant to say that feasibility does not necessarily be always be positive may be both negative and positive.

But, the point is that it should be short, it should not very the execute summary should not be short. What the propose system will achieve in the case of a hostel system is that the propose system will achieve, where you give a better inventory control, itemized bill and students, reduce the cost and reduce the long outstanding payments. And so 4, 5 lines you say, exactly what the proposed system will achieve.

Who will be involved in operating system. Because, the system will be operated with the existing staff. You do not have to recruit new staff, only the cost of the clerk has got to be train in using the computer for data entry and so on. So, who will be operating the system. Organization changes to implement the system, what changes you have to bring in to the organization.

So, in this case there is simple there is not really any major organization change. Except that your making your procedures much more systematic. And some that is other cases there may be requirement for changing the wear and which the organization works.

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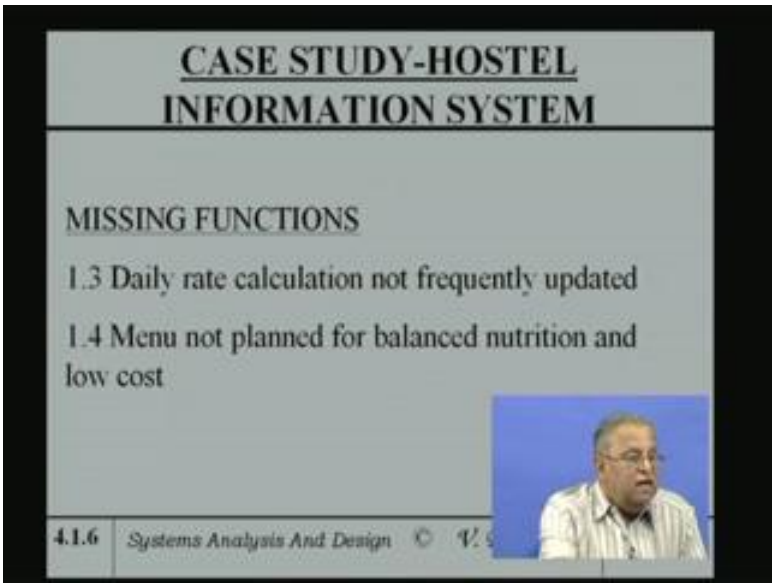

So, there is something which and feasibility report, list of benefits to the system. As I said both tangible and intangible cost of the system. There is a executive summary you are going the benefits, the cost and cost benefit analysis.

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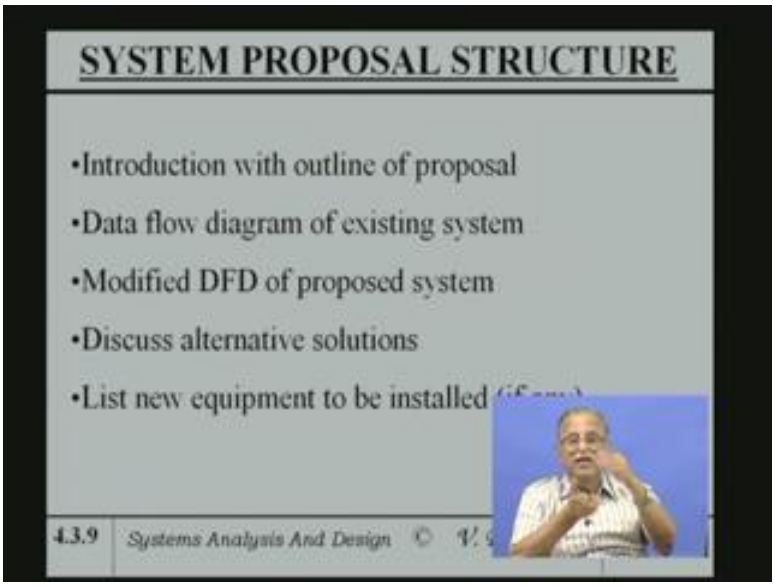

After giving this, the cost benefit analysis as I said will give both tangible and intangible benefits. And of course, and you can quantify nicely. So, within 1 page in fact whatever hostel information system I talked about, you can definitely write it up in one page executive summary. Then, will give you details, details are intended for actual later on implementing and so on.

So, this will be looked at by other people, as may be the people in the computer section or people who are going to be actually in the case of a hostel system. We will looked at by the students may be the clerks and wardens and so on. So, it can be more detail giving details of introduction, without outline proposal, dataflow diagram of existing system. How does the data flow an documents flow in the existing system, modified data flow diagram.

In fact, I am going to talk about data flow diagrams, in much greater length in the next lecture. Discuss alternative solutions, what are all the case for instance I gave A, B, C in the case of hostel information system. So, discuss all the alternatives and say, why you picked a particular alternative. List of new equipment to be installed, this case I say add it is all the computer.

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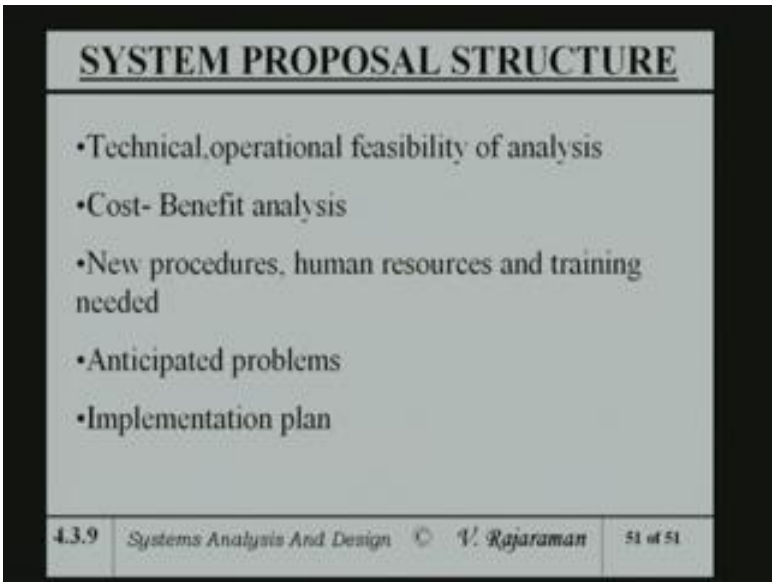

And technical, operational feasibility analysis. And then, economic feasibility, cost benefit analysis. In greater length, like the present value method all that can be used. The executive summary only say, that the pay pack period is less than 5 month, that is

sufficient there. New procedures, human resources training needed. Anticipated problem, because no system gets implemented without in the problem.

So, anticipate it will that be human resistance or is that going to be delay implementation plan. And so this kind of complains to your report, executive summary with the great amount of detail about the feasibility report. Most important thing, you should remember is that one of the most ignore parts in any system is to give a good report.

And a fair amount of time is spend in riding good report. And many people do not realize that and floppy reports are written. So, apart from oral communication skills is very important for you to also have good written communication skills. Write it very preciously, nicely and so on. So, the other people can understand what you have written.

So, I think it is good report writing is as important as good programming. As for us implementing systems are concerned. So, this kind of conclude this particular module. And I look at the dataflow diagrams the next modules in greater detail.

Thank you very much.