Engineering Econometrics
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Lecture – 08
Exploring Data on Spreadsheets(Contd.)

Hello everybody. This is Rudra Pradhan here. Welcome to Engineering Econometrics, and today will it continue with the spreadsheet and that too the use of excel and excel operation as per the requirement of data analysis and engineering econometrics. And in fact, in the last lecture we have discussed details about the excel use and excel operations, and we have analyzed what are the you know what are the advantages behind this you know excel use or you know excel operations.

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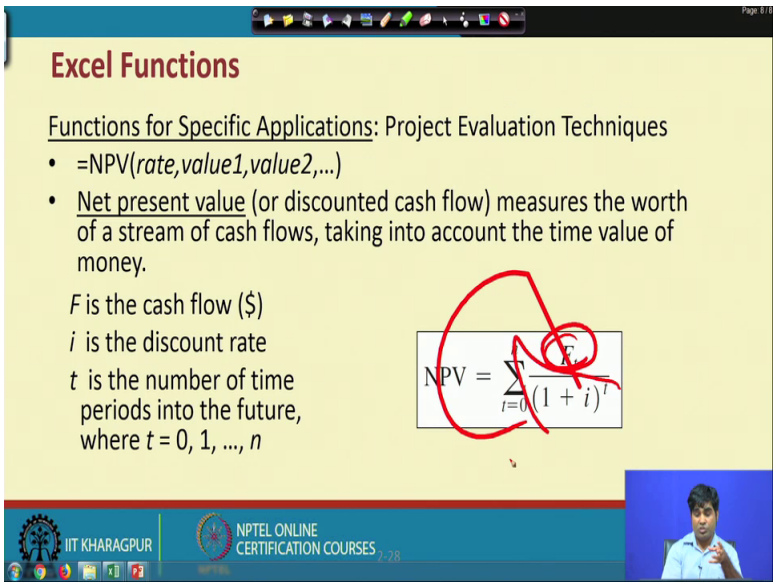

Now to continue this you know this particular you know operation what do we have earlier. So, any kind you know engineering econometrics problem or you know or engineering economics or engineering you know any kind of you know engineering. So, we need to we need to find out the kind of you know net balance while you know doing the investment and then the kind of you know expectation of returns.

So, the specific functions which we have discussed earlier is the net present value which is something you know which is something you know depends on the kind of you know investment and the kind of you know returns. It is sometimes you know more complex

you know when you connect with you know a long interval or some kind of you know more additional kind of you know integrations.

So, in this case, so return will be like this. So, means the idea behind this particular you know example is that. So, excel will be very handy to help you to know how to calculate this kind of you know operations. So, here this is a called you know the cash flows and which is the difference between investment and the kind of you know returns and since it is a long term kind of you know structures. So, it need to be discounted so that means, technically if you put this much money and it is for 20 years, 30 years down the lines.

So, every year with expectation that some return will come in to the picture and what should be the you know present valuations. So, now, this is it is something called as you know financial analysis all together. So, since the future returns we need to balance with you know present investment. So, the particular component you know need some kind of you know discounting and the down part is called you know discounting it is something mathematical formula. But it has lots of you know financial interpretation engineering interpretation so that means, simply understanding is that you know this is a net return.

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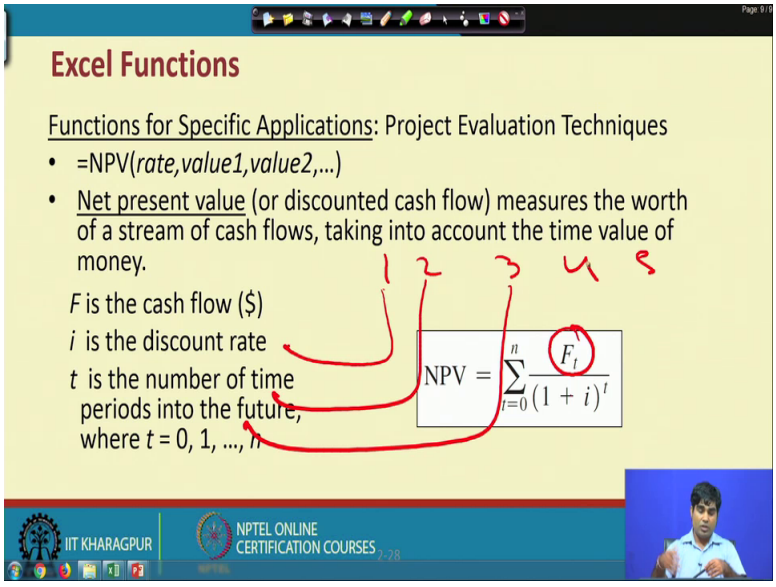

And then this will be discounted over the years. So, now, if will you simplify so it is nothing, but F 1 by 1 plus i to the 1, F 2 by 1 plus i, i square something like that you know so that means, it is a it is something called as you know timeline. So, you start with you know 1 2 3 4 5 like this.

So, now this will go to the present value, this will go to the present value, this will go to the present value so that means, when t equal to 1 then you are here, t equal to 2 you are here, t equal to 3 you are here, t equal to 4 your are here like this. So, now, ultimately at the end of the first year so how is the kind of you know balance, then at the if you continue to second year then how is the kind of you know balance.

And it will you know continue till you know means once you fix the particular you know timeline. So, so fixing a particular timeline, so you need to have you know some of the net balance and that to be discounted over the time. So, this is how the kind of you know calculations and excel has a beauty to report within you know kind of you know second as per your you know particular command and the kind of you know instructions.

So that means, at the end of the day what I like to suggest that you know excel function has a lots of you know advantages, and you know there are lots of complex problem can be solved through this a through this actually excel functions. So, now, to continue this a particular you know examples.

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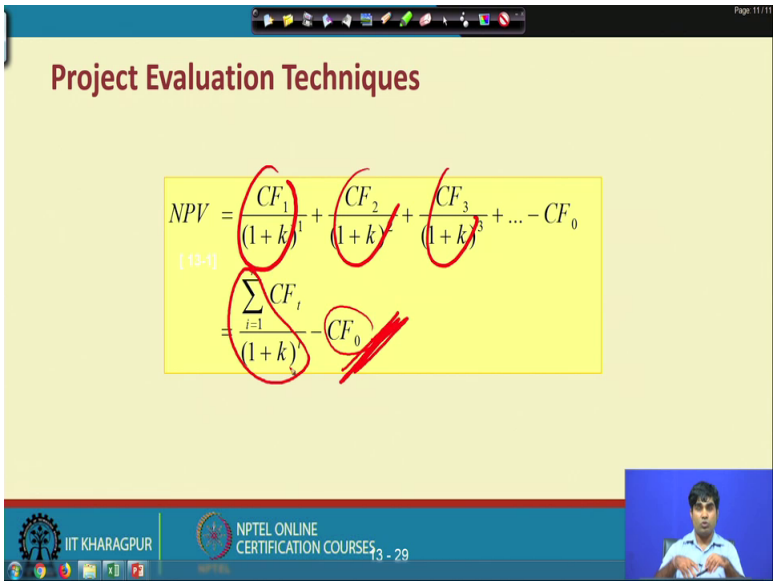

So, this is how this simple like you know elaborations.

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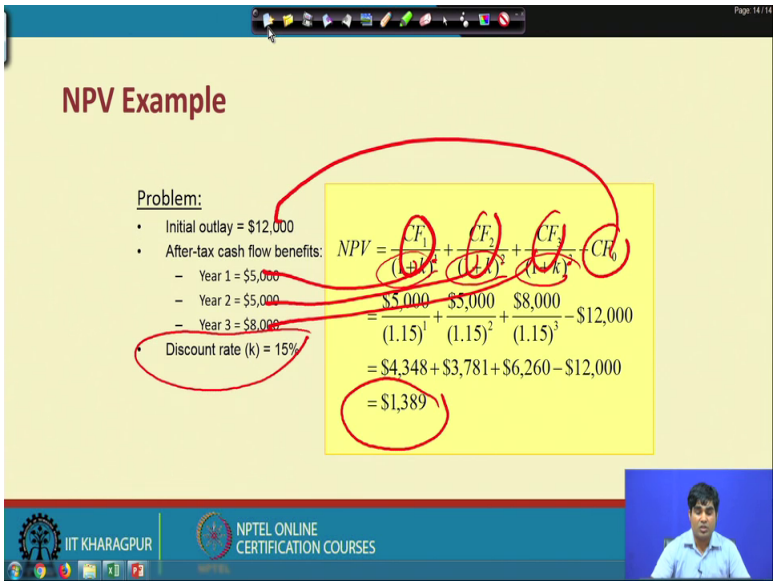

So, this is the first year component, then the kind of you know second year component, so the this technically. So, this is the first year second year third year and so on then finally, this is a initial investment and these are the future returns.

And that too discounted. So, this is actually a you know at present the kind of you know investments since these are all you know future expectations so obviously, it will be discounted through a component called as a present value of interest factors. So, these are all actually the financial term in order to know details about this things you can you know use any kind of you know, corporate finance book or any kind of you know financial modeling book.

So, to know in details, but ultimately our idea is not to you know go for financial analysis or something more than that, but the thing is that you know how excel functions can be operative as per the particular you know engineering requirement. That is the, that is how we are you know citing this examples to understand to justify that you know excel functions and excel user very really want for engineering econometrics or you know any kind you know engineering problem.

So, to continue with this particular you know examples let me give an actually a kind of you know snapshot about the excel operations. So, this is actually 12,000 is the it means technical what I can say that you know. So, this is this is actually the kind of you know

mathematical functions. So, now, to analyze this mathematical function through excel. So, you have to take a examples and the example is like this here.

So, now, initial cash flow is actually CF 0 and these are all you know future returns CF 1 is this small. So, CF 2, CF 2 is a. So, likewise that means, this is the first year, this is second year, this is third year and this is what the called as you know initial investment. So, now, this will go to here and this will go to the here, this should I go to here, this will go to here and this down part is called as a discounting factors and for that we have taken a discount rate which will be common for every year. But it will be adjust through you know the power of this particular you know component. For first year it will be 1, for second year it will be 2, third year it will be 3, then you have to simplify.

So, now mathematically you can calculate all this details, but ultimately there is no need to calculate you know manually. So, just you go to the excel spreadsheet and you give the command and financial models are there. So, in mathematical functions are also there. If you write the mathematical formula and then and then you give the command about this sum of this particular series after all this adjustments then by default excel will the report you the final valuations, what should be the financial and say you know NPV corresponding to these initial investment and the future returns and the kind of you know discounting.

So that means, technically once again I am you know strongly giving the clue that you know excel has a beauty for the data analysis and the kind of you know engineering econometrics and that to solve sum of the engineering problems as per the particular you know requirement. So, now, so if you go to the excel, just you know you just report all these things, and see some things we are you know reporting month wise information's, then there is a fixed cost and discounting rate and then you give the command.

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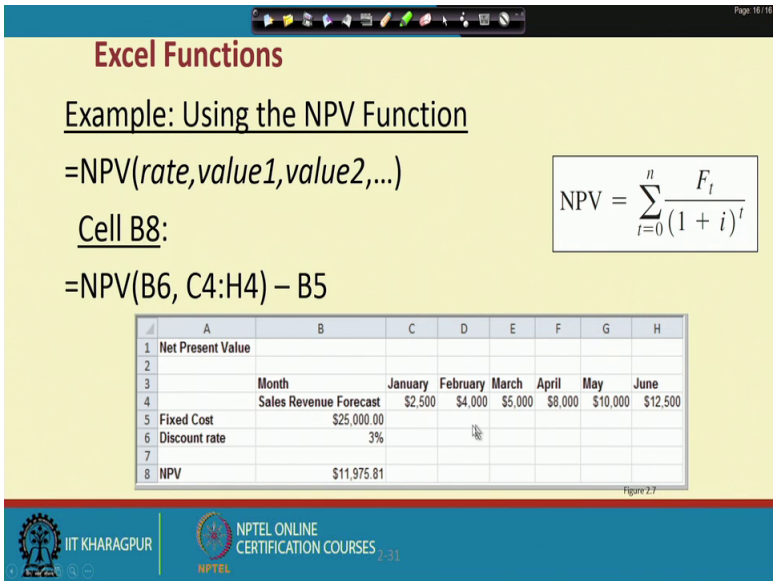

So, here actually see in the excel spreadsheet we have a command actually. So, just you enter these cells and then here with you know equality and you know mathematical formula we have to give the kind of you know results. So, automatically it means see for; the thing is that you know if you are problem is very clear and the calculation is very clear or formula you have specified then excel will help you how quickly you can get the final results as per your you know particular in particular you know requirement and the particular information basket. So, this is not so actually big deal.

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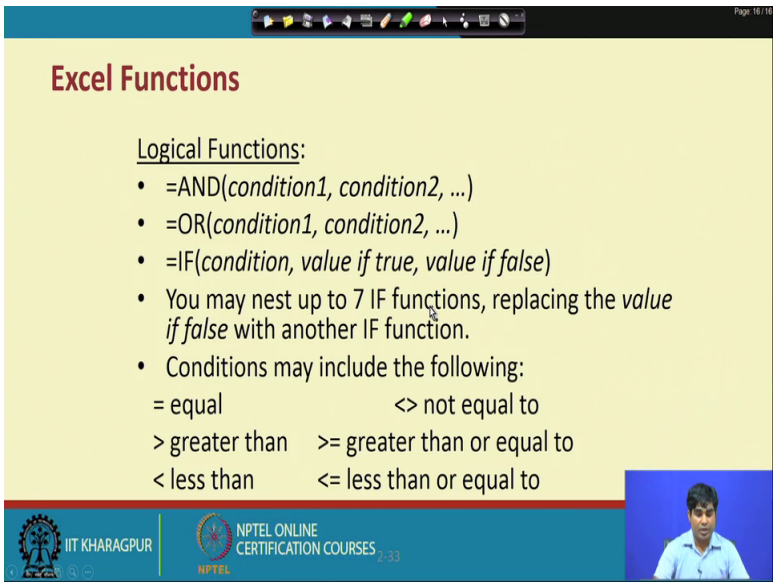

So, similarly a excel has lots of you know traditional kind of you know functions.

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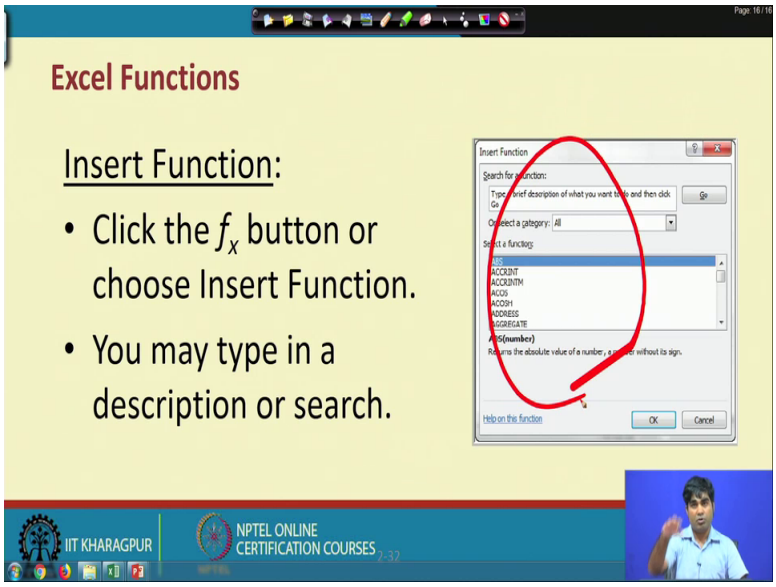

Like you know so this is how the a excel operation all together and all these operations are you know are like this. So, what I can do you I will give you the clue here how you can go for the kind of you know excel operation.

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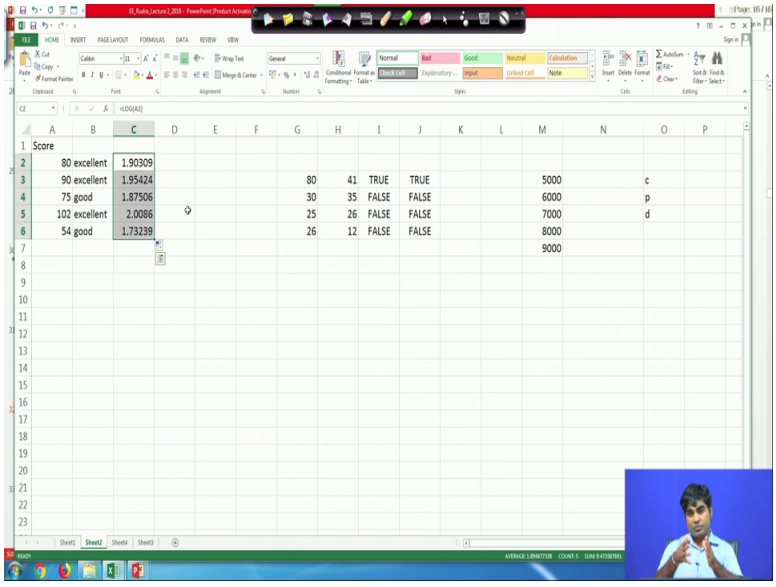

Usually excel structural will be like this and this is how the look of you know excel. And I have given you the kind of you know structure how to understand the particular you know requirement, for instance this is how the kind of you know let us say this is a series

here and you like to you know report you know let us assume that you are doing some kind of you know grading and grading is possible you know if you know give some kind of you know conditions. And for instance here you know we put you know if conditions the kind of you know reporting here if (Refer Time: 10:09) is greater than equal to 80 then somebody will get excellent otherwise a or others are you know simply good. So, if you give the command then by default corresponding to this you know numbers 80, 90, 75, 102 and 54.

So, now if 80 get means a student will declare excellent if he or she scores 80 above. So, then otherwise he will be or she will be declared as you know good. So that means, theoretically we have a 5 scores and then this first one is 80, second one is 90, by default they will be called as a that can be declared as you know excellent because their score is 80 and above and third one is 70 which is less than 80. So, by default he will he or she will be declared good. And then 4th one is 108, so 102, so which is also more than 80. So, this will be declare excellent. And again the last one is 54 which is less than 80 and declared as a good, so that means we are doing now manually.

So, what do will do here with these corresponding you know you know information just you go to the you know excel sheet and give a command you know just you put you know equal to sign and then you got to you know if statement. And a if you give you know command like this and then by default automatically it will be coming into the pictures, so the way it is actually a reported here. So, you put you know equal to signs then if condition and then the if you scroll this once then by default you will get you know the kind of you know results.

Similarly, you know you can actually declare other kind of you know requirement here n conditions or condition or something like that. So, something a more means these are all actually basics and they are not, so you know kind of you know mandatory or useful for the engineering econometrics. So, these examples are just basic to know how beauty of beauty is that you know excel spread sheet all about.

So, I am not going in details, but I am saying that you know if your problem is like this excel can help you to get the answers very smoothly and you know a very quick time. And here you know what I what I like to say that you know this is actually series, so now, you can operate these series with the help of some kind of you know you know a

mathematical operations. So, some of kind of you know statistical operations. For instance you see here is they if you put equal to then it is not clear actually what kind of you know command you want to put, and you do not know what kind of you know formula you know excel has. So, here you see extremely let there is a box called as you know with you know average and if you just click there.

So, you will find there is a indignation of you know functions. So, just you click here. So, you will find you know there are many such indication which you have already discussed in previous slides. For instance there is average, maximum, sum, if, hyperlink, count, sin, sum, if pmt standardization and more functions so that means, a technically here is a series actually here there is a series. So, now, instead of putting equal to here, you can put equal to here corresponding to the series and then you know then you calculate whatever you requirement for instance you can calculate you know average it will be showing like this.

So, then give the indications what range to what range. So, automatically it will give the you know a requirement. For instance you put click here is then it will give you average previous. Again you change the order you put you know equal to signs and you know change the commands, so I need a maximum of the series. So, you can just put you will get the maximum of the series.

The thing is that you know here we have hide numbers and a manually we know which one is the bigger which one is smaller and what should be the average, and what is what is the conditional a statistics or conditional information, what and or information, but the thing is that you know when yours you know sample size is very big you know instead of you know 5 numbers if you the 5000, So, visual looking or you know visualization of data and the getting information quickly for calculating something very quickly it is not you know so easy.

So, in that context there is a I can say that you know mandatory requirement to use some kind of you know softwares at the you know like the excels spreadsheet to get all these answers very quickly and as per the particular you know requirement. So that means, technically, you first report the data corresponding to the, here these are all reporting these are all collages course and then you can put here the variables names so that means, the variables name is course for a particular subject and these are all course. So, that

these are all collage a data and against these data there is a variables and that variable is called as a subjects course right and a student a 80, student b 90, student c 75, student d 102, student e 54 like that this is a kind of you know reporting.

So, now, this particular lectures we like to know something more about the kind of you know excel operations. So, what I have already mentions. So, you just you know put the some command then you can get some kind of you know operation. For instance, let us say we like to transfer this series a you know. So, standardize this particular series or something like that then again you create an new very you know data spread sheet as per here you know particular you know command.

For instance, so let say this is a this is what I can write you know score is a variables right, let say score is a variables right which I have declared here. So, this is a variables. And what I do? I do the it kind of you know transformations. So, I want what should be the you know log of these particular you know series then I just go to this another kind of you know column and give the command and here the in the command I need actually log transformations. So, here you will find there is maximum, average, sum, if, hyperlink and something like that. So, log is not in sin.

So, what we can do either put click you know put option in more of functions or click a on more functions or you simply write here you know log by defaults some structure will coming in to the picture, then you just click here a log then you indicate the figures there and a close the a box then you give the enters by default. So, the particular score has you know enter you have got you have got the transformation now 80 will transfer to 1.9, 1.90309.

So, likewise you should know what is the transformation of 90, 75, 102, 54 something like that. So, no need to again go for the you know similar kind of you know common just you actually this called on this particular series by default, so every variables has a transferred and now the new series appeared here. So, this is what the beauty of you know excel spread sheet.

So that means, you know when you go for data analysis or something kind of you know econometric modeling the original data may not be very handy for the for operationalizing, operationalizing the things or something like that. So, in that context,

you need some kind of you know structuring, data transformation, data transfers then you know excel has a beauty to do the need fulls, right.

Again what I like to say suppose you just put you know equal to any where ok, and then you get to know what are the functions are they are within you know in the excel you know for the lemons somebody has no idea you know what is the beauty of you know excel spread sheet. What are the functions are they are in the statistical side and mathematical side something like that, and you just putout equal to yes data analysis package is something different and excel start is something again different.

But before you go to the data analysis in a excel start package means it is add-ons in excel and here in the simples without putting add-ons for data analysis pack or you know excel start. But you can start with you know simple excel operations we will you find some of this a mathematical functions are there, some of the statistical functions are there still you will find some kind of you know a analysis.

So, here so what will you find is, you will just put equal to and you put click here you know formulas. So, you refine plenty of you know options here. You see insert functions in the extreme corners you will find you know insert function you find, large number of you know of a some here maximum, average, sums something like that more simply use these are all in see here. So, it is you know this particular box will you give you the complete message about the excel spread sheet how beauties that see here. So, all financial, then mathematical, then statistical look up data base text some things you know now you know text mining, something you know data mining. So, excel has a beauty actually.

So, many things are they are, so you know you need actually to you know you need to know the use of you know excels. Sometimes you know you know some variables are having qualitative information and would do not know, what are the variables through which the engineering problems can be analyzed. So, we need to know some of the qualitative techniques.

Now, for instance here text components are they are so just what you need to you put the text component, then you know excel will help you to a quantify it then transfer into some form of you know coding and that will you very handy for again further or you know data analysis and the kind of you know engineering econometric requirement.

So, now some of the engineering operations are also in build they are. So, logical information, engineering, text, database, look ups, statistical, mathematical, financial, so that means, you will have you know plenty of you know verity plenty of variety. So, now, if you typically go to let us say stata or sarso, minitaps something like that. So, you will not find such kind of you know a extensive you know package or extensive features through which you know blue some kind of you know engineering a engineering econometrics analysis or engineering econometrics problem.

So, these particular package knowing this particular you know a package that is the excel spreadsheet. So, it will not be very helpful for engineering econometrics the you know data analysis, it will be having for you know other kinds of you know requirement like you what I mentioned you know there is a financial modules, there is engineering modules, there is a kind of you know data mining modules. So, different you know features are there, and all these features are very handy and they are all you know requires for any kind of you know data analysis, analyzing the engineering problem, and analyzing the financial problem, analyzing the data mining something like that.

And then for hard core, hard core you know quantity analysis something like you know data analysis and the kind of you know text you know visualizations something signal processing. So, I image processing something like that so that means, these are all operational things are there, and sometimes you know what is happening here. So, if the package is not available, you put in add on and then that will be stolen then you can you not do the do the kind of you know operations. So, technically what I like to say that you know it is a beautiful kind of you know, kind of you know component and the kind of you know infrastructure for the engineering econometrics.

So, or you know for any kind of you know engineering problem to analyze the engineering issues or either in a kind of you know quantitative sorry you know kind of you know quantitative modes. Ultimately it is as per the particular you know a requirement. So, a excel spread sheet will help you lot to analyze the problem and do the data analysis and as per the particular you know need and you know the kind of you know requirement.

So, now, with this against we move to the a particular you know structures. So, that is means what have a ready highlighted in the ok. So, in the excel spread sheet. So, I like to

show you that you know this is a beautiful structure, what I have already shown you this particular you know figure here. So, this is have the operationalize, so this particular picture I have already highlighted. So, we have lots of you know pictures just you put all then everything will you comes.

So, you just select statistical then statistical operation will come in to it you select here is mathematical then all mathematical operation. You put you know financial then financial operations will be there, it is like in NPV, then you know IRR something like that. And then again you put you know engineering then we will finds some of the engineering structure will be there, components will be there and then we analyze as per here you know requirement.

So that means, you just think or you just imagine that you know what is the beauty of this particular you know package all together or the use of you know spread sheet. So, by default you should you know no all these things and it is not the kind of you know overall requirement and it is the mandatory requirement of you know the engineering econometrics and when we do for you know some of the advance analysis here something like that that time. So, the use of spread sheet is a kind of you know mandatory requirement or mandatory need.

So, now what there are many such you know functionality. So, we have like you know what I have already mention AND option, IR option, If options. So, you can put all these things and they what do you have already highlighted in the previous example.

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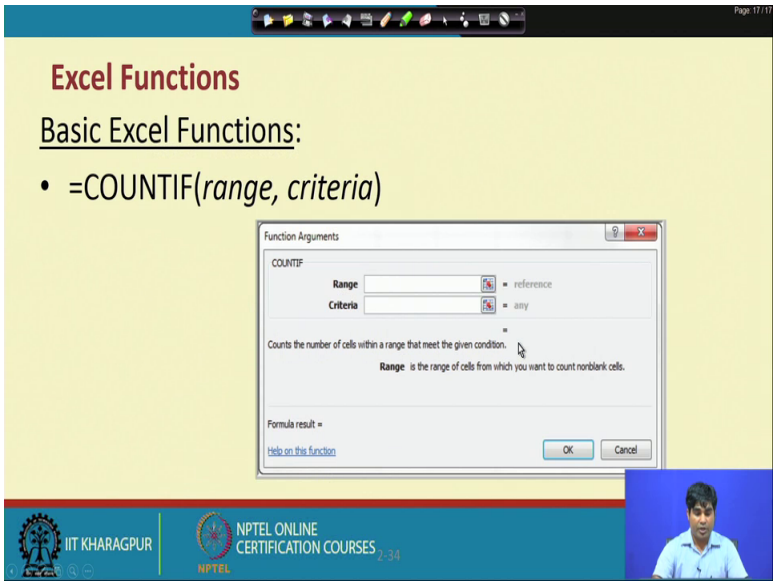

And again so just you give the indicate the a range with respective the entry then give the command after putting the equality signs then this itself as per the you know command, how to give the command, how to give the instruction. Sometimes you just find out that command and connect with that command it will give you the kind of you know results or else you can write a the kind of you know mathematical formula and as the excel spread sheet to help you to get the a answers or these a the a generation of the data. So, automatically excel will help you to head these figures. So, likewise we have lots of you know this is actually if of sums and the COUNTIF of sums.

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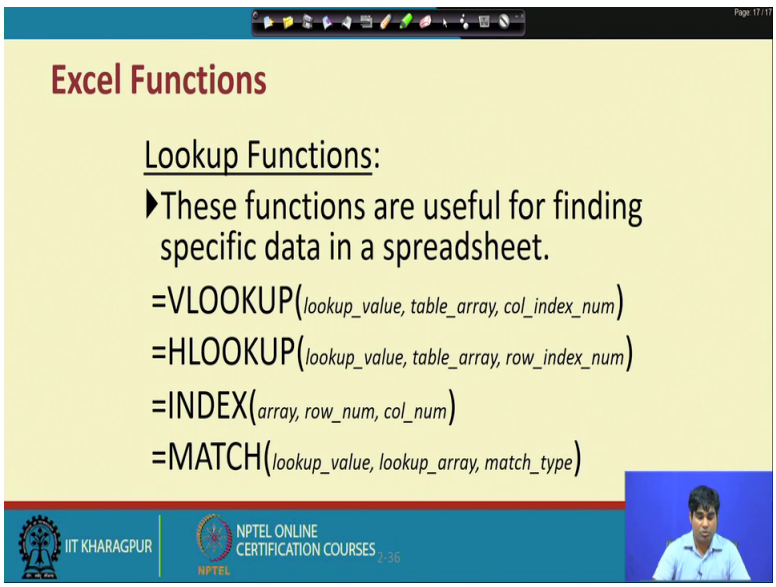

Then there are lots of you know advance function like you know VLOOKUP, HLOOKUP, INDEX, MATCH. So, when these are all various kind of you know matching functions or something you know additional functions are there in the spread sheet excel spread sheet and. So, knowing a excel spread sheet or in some is a kind of you know requirement and that to not only for the data analysis or the kind of you know engineering econometrics it is with a for you know multi usual or you know multi requirement. So, if you know all this things then it will be very handy for you know advance data analysis and that is why it must we very careful.

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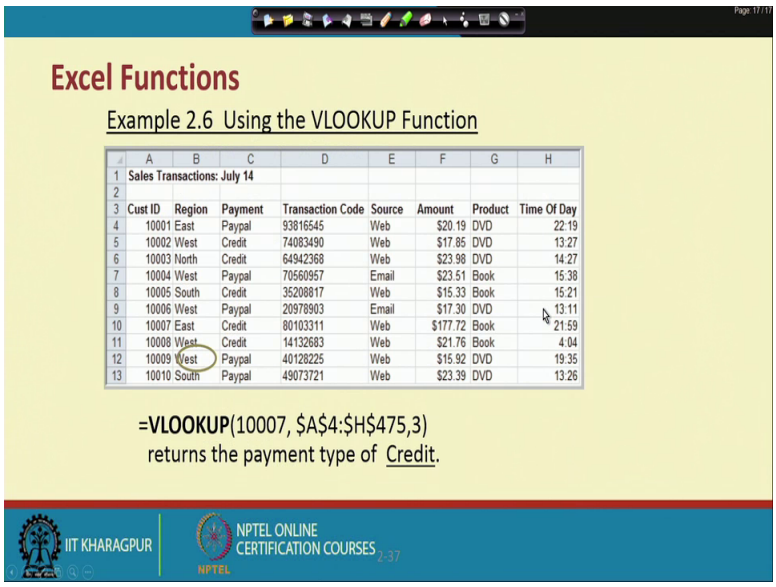

So, this is actually bigger spread sheet and how you to go for you know v lookup operation. You need not do anything else where just you put the equality sign and then if give the command, automatically from the spread sheet it will we it will be connected and then a it will give you the kind of you know results as per you know requirement is a match functions.

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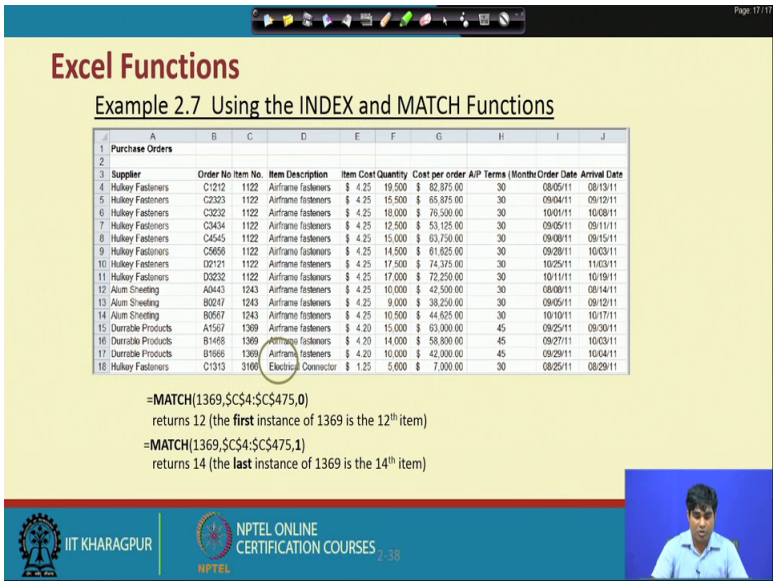

	A	B	C	D	E	F	G	H	I	J
1	Purchase Orders									
2										
3	Supplier	Order No	Item No.	Item Description	Item Cost	Quantity	Cost per order	A/P Terms (Months	Order Date	Arrival Date
4	Hulkey Fasteners	C1212	1122	Airframe fasteners	$ 4.25	19,500	$ 82,875.00	30	08/05/11	08/13/11
5	Hulkey Fasteners	C2323	1122	Airframe fasteners	$ 4.25	15,500	$ 65,875.00	30	09/04/11	09/12/11
6	Hulkey Fasteners	C3232	1122	Airframe fasteners	$ 4.25	18,000	$ 76,500.00	30	10/01/11	10/08/11
7	Hulkey Fasteners	C3434	1122	Airframe fasteners	$ 4.25	12,500	$ 53,125.00	30	09/05/11	09/11/11
8	Hulkey Fasteners	C4545	1122	Airframe fasteners	$ 4.25	15,000	$ 63,750.00	30	09/08/11	09/15/11
9	Hulkey Fasteners	C5656	1122	Airframe fasteners	$ 4.25	14,500	$ 61,625.00	30	09/28/11	10/03/11
10	Hulkey Fasteners	D2121	1122	Airframe fasteners	$ 4.25	17,500	$ 74,375.00	30	10/25/11	11/03/11
11	Hulkey Fasteners	D3232	1122	Airframe fasteners	$ 4.25	17,000	$ 72,250.00	30	10/11/11	10/19/11
12	Alum Sheeting	A0443	1243	Airframe fasteners	$ 4.25	10,000	$ 42,500.00	30	08/08/11	08/14/11
13	Alum Sheeting	B0247	1243	Airframe fasteners	$ 4.25	9,000	$ 38,250.00	30	09/05/11	09/12/11
14	Alum Sheeting	B0567	1243	Airframe fasteners	$ 4.25	10,500	$ 44,625.00	30	10/10/11	10/17/11
15	Durrable Products	A1567	1369	Airframe fasteners	$ 4.20	15,000	$ 63,000.00	45	09/25/11	09/30/11
16	Durrable Products	B1468	1369	Airframe fasteners	$ 4.20	14,000	$ 58,800.00	45	09/27/11	10/03/11
17	Durrable Products	B1666	1369	Airframe fasteners	$ 4.20	10,000	$ 42,000.00	45	09/29/11	10/04/11
18	Hulkey Fasteners	C1313	3160	Electrical Connector	$ 1.25	5,600	$ 7,000.00	30	08/25/11	08/29/11

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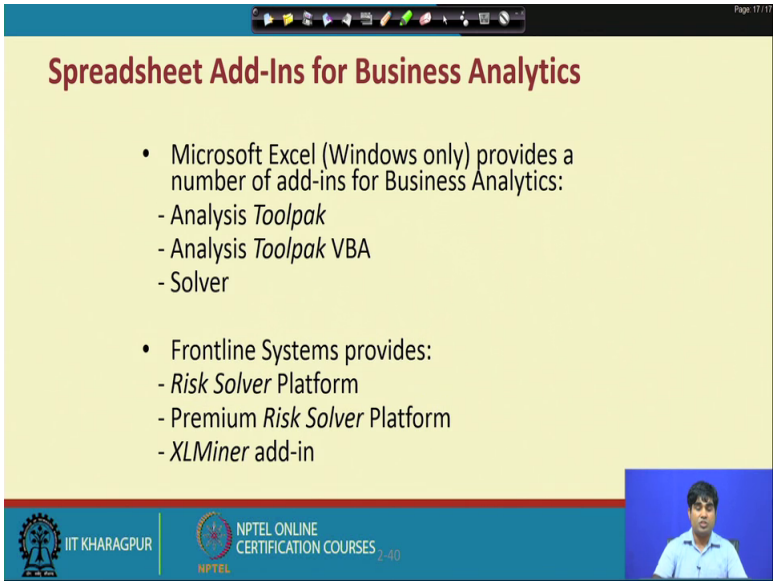

Then some of the spread sheet you know tried you know business analytics or you know engineering econometrics like you know Microsoft Excel, Analysis Toolpak, Analysis Toolpak VBA, Solvers and then a plenty of system provides also risk solver platform premium, risk solver platform, XLMiner adder add-in. So that means, technically what I like to say that you know we have lots and lots you know kind of you know advantages and pictures oh in the use of you know excel spread sheet.

So, my suggestion is that you know you must be very familiar with you know excel sheet. I am very serious nowadays those who are doing engineering. So, they have knowledge on you know excel, but knowing excel is one part of the game. But knowing all the functionality and operation of you know excel is another part of the game, but just knowing the excel how to enter the data or how to report the data. So, this is actually very easy and it is kind of you know oh we can called as you know very simple job, but you know knowing all these functions and how to use all these operations and how to you know calculate something with the a particular you know information so that is the beauty of you know you know excel package all together.

So, now, you know the requirement is that you know it is not that only you know the excel spread sheet you should know all the operations of you know excel spread sheet, and that is one of the a big requirement and you know significant requirement of data analysis and the kind of you know engineering econometrics. Because some of the advance and complex modeling there are lots and lots of you know data transformations data structuring, data visualizations, and excel has the beauty to do all these things and then in fact, for you know advance kind of you know molding or complex kind of you know molding.

So, these are these are all actually is something called as you know basics you know data visualization data structuring data transformations, but ultimately the need is something different the requirement is something different. But if your first and information and first and structure is not clear and how to operate all these things then you cannot you know go for you know complex kind of you know environment or complex kind of you know molding.

So, that is why you must know how to operate all these things as per here you know particular requirement and the kind of you know need or something like that. So that means, technically a excel package has lots of you know modules, starting with you know mathematical, statistical, financial, engineering, text mining, something like that you know and these are all essential nowadays we are talking about you know big data.

So, you will go to any kind of you know engineering we will we find plenty of data as there plenty of data as are there and plenty of you know remarks and observations are there, plenty of complexity is are they are and plenty of objective can be sighted. But

now to steam and process to make this things operative or something like that. So, data analysis and the use of engineering econometrics are the basics or you know mandatory requirements first are you know a forgetting the kind of you know hence have to here you know objectives or the kind of you know need for you know objectives and the kind of you know requirement. So, it is not so easy in fact.

You know what I have already highlighted the structure called as you know simple use of you know excels that to you know just enter the data and integrate these data with different statistical function and mathematical functions which I have already shown you. Just you enter the data with you know a simple structure and complex structure with single variables or multiple variables something like that, and then with the different you know operations, mathematical operation, and statistical operations, financial operation and engineering operations.

So, you your expecting something in more something you know you know kind of you know quantifications which can give you some kind of you know new insights to the engineering problem. And the kind of you know requirement and then you can solve the problems as per the need of the you know objectives and the kind of you know goals.

But the means, the more important is you know the most important is the use of you know data analysis pack and the use of you know what we can called as you know excel start. Excel start is the newer versions and advance analytics analytical packages or analytical tools where will you find you know plenty of you know quantity tools are they are not only engineering econometric tools, but also I like you know machine learnings, you know data mining, and you know some kind of you know complex problems like you know neural networks, web lets something like that. So, you will find you know plenty of advance tools are also there.

So, knowing excel and the data analysis pack and a excel start nowadays is a kind of you know mandatory requirement. Of course, you will restrict our self in the context of you know engineering econometrics tools only which may not actually directly go to like you know machine learnings neural network or web let us something like that off course some of the things are connected to neural network or web let us some. But you know will concentrate only the engineering econometrics models which itself is actually be can

you know very interesting and very you know kind of you know handy to solve some of the engineering problems as per the particular requirement.

So that means, a what I like to you know you know say or I will put like this that you know engineering econometrics is a kind of you know potato where you can apply and you know expect some kind of you know a new insights and new results which can help you lot to analyze the engineering problems as per the organizational need the sectoral need, and the kind of you are you know requirement.

So, that a, so we should know how these engineering econometrics can help to analyze these engineering problems and for that is it is not the understanding of the engineering problem, it is not the understanding of the data you should know the basic requirements for this analysis like you know the use of you know excel spread sheet, the use of softwares and the integration of you know econometrics modeling something like that. And to get you know means extinctive pictures something kind of you know more and more insights and you if you know more about you know process or the kind of you know enquiry options. Then obviously, you will get you know better results and better insights as per you know particular requirement.

And if you are expecting you know a new insights or you know better kind of you know explorations and better kind of you know requirements then you are bound to know all these things you must have data, you must have the kind of you know softwares and you should know the use of the softwares. You should understand the models and you should know what kind of you know models and what kind of you know softwares for that models, what kind of you know data for that particular you know model.

So, every details all together you should know you know before you start these kind of you know process. Of course, we have not started at all the modeling part, which the do a just after you know under two unit you know discussion. But in the mean times these are all basics and a these are all mandatory requirements. If you know if you do not know all these basics and the kind of you know requirements in the later stage you will repays lots of difficulty to proceed and to analyze the problem as per the particular you know requirement. So, obviously, you have to be very careful about this.

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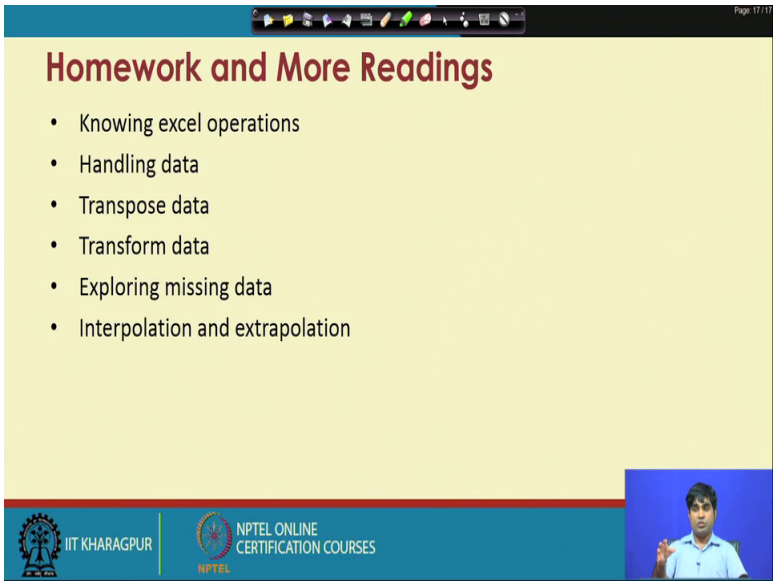

And so, now, with this I like to highlight that you know some of the structure will be like this that you know you must be you must be do the home work. So, knowing excel operations, how to open the file, how to close the file, how to set the file, how to import the file, how to export the file, these are all basics everybody means I can do this.

But what is need more you know more important is that you should know the excel operations you know by using mathematical functions, statistical functions and do some kind of you know data analysis within the available data and after the transformations, after the manipulations or something like that. And then you come with a kind of you know results which can actually give you some kind of you know new insights as per here you know expectations and as per here you know requirement.

We need something new, you need something you know something you know different to analyze the problem and engineering econometrics will help you to get such kind of you know situation or some kind of you know environment. So, where will get you know better inference, better insights may be very innovative may be something called as you know new to analyze the problem and put the problem in differently. And for that you know you should know or you should be acquainted with these particular you know systems.

So that means, a up to this you know lectures my suggestion or my instruction is the you do some kind of you know homework to know the you know or you should be

acquainted with you know excel, use excel operations as per the particular you know engineering requirement and engineering econometrics requirement. With these we will stop here.

Thank you very much have a nice day.