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**Week: 12**  
**Lecture 62: Data Visualization Tableau – 5**

Dear participants, in this session, this is the fifth session of the Tableau. In this session, we will learn how to do the calculation on Tableau, right? How to use the various types of formulas on Tableau if we do not have the ready-made information in our Excel sheet. If we have ready-made information in our Excel sheet, then we can directly make some of the graphs and some of the tables right, and then we can make a decision right. So, if we do not have ready-made information, then with the available information, we can do some calculations, and then we can make ready-made graphs. Then, we can sum up the graphs and present them correctly. So, that is how we can do it.

So, let us learn in a tableau how we can do these calculations. Dear participants, in this session we will learn how to do the calculation on tableau. So, in this session we are going to do one interesting calculation on Tableau like so if you are working in the recruitment and selection department then you might have come across with this problem you are giving one particular date of joining to the individual but individuals are not joining on time. So if 0 is coming between date of joining and actual date of joining then you can say that there is no problem in the organization in term of the joining.

But if there is a huge gap is there, the date that you have given to the individual to join the organization and actual date of joining, right? If there is a huge gap, then there might be a problem for the organization. So if you want to do this analysis, right? So one date that you can subtract from the another and then you can get the days, right? Number of days, how many number of days that individual is joining late. So, for that I have created two more column to this dummy data. So one is date of joining which is given by the organization. Second one is date of actual joining.

So one date which is given by the organization. So for example, let us see this 21st January 2024 is date of joining given to an individual. But that individual joins the organization on 12th Feb. but that individual joins the organization on 12th Feb 2024. Similarly, you can see another date that is given 21st, 22nd January 2024, but 13th Feb 2024 is the actual date of joining.

So, if we want to perform this analysis on Tableau, so how we will be able to perform, that is what we will understand. So, one date that we will subtract from the another one, right. So that is what, so this is the excel sheet that you can see. So now I am going to open my tableau, right. So you will see this is the tableau that I have opened, right.

So the data is already available. So here this sheet that you have already seen. So one side you will see the all variables are there. So that variable that you can see the actual date of joining and date of joining which is given by the department or given by the organization. So now I will open this analysis part.

So two options are there. Once you can go to the analysis right and then you can click on this create calculated field. Another option is there you can go to this search and next to the search you can see one option is there you just can click and then also you will get this create calculated field right just click on this And now you will see this dialog box is coming. So in this dialog box, first you can give the title. What is the title that you want to give to this calculation? So for example, so we want to, for example, we want to give a title delay in joining.

right delay in joining right. So this is the title for that is what we want to give to this calculation. Now we can go to the next one. So all is written. So it will be difficult to search which type of function that we want to use.

So just you click. So now you can see what type of formula that you want to use. You want to use related to the number, you want to use related to the string, you want to use related to the date, that you want to use related to the logic, aggregate, table calculation whatever you want to do it that formula that you can select. So for example just I am showing only one formula so you can select. So good thing Once you will select then you will get the all formulas related to this.

So related to this date these all formulas are coming. So what we want to calculate here? We want to calculate here the date difference. So we will select here date difference. So the moment you will select this date difference you will get the definition of this formula how this formula works. So now you can see date difference is there.

Start date and date right before that date part that is written. So, in which format that result we want? We want in the in the format of day, we want in the format of month, we want in the format of year that is what we will write and then we will write the start date and end date. So, which one is going to be the start date? whichever is the earlier date. So which one is the earlier date? Date of joining which is given by the organization. So first

we will take that date of joining.

Second which one is the end date? Actual date of joining. That is the end date. As of now you can leave this and start of the week that you can leave and how you have to write it right. So that is what you can see here the example is there right date difference month and then date of required date to on which that employees are going to join and then date of actual joining and then you can see this difference is coming minus 3. So if minus 3 is there what it indicates? And what plus 3 is there what it indicates that you know minus 3 is there it indicates that the employees have joined before the date of joining.

Plus 3 is there it indicates that employees have joined after the date of joining right. So that is how you can understand, you can understand the definition of each variable which is there. So now you can read this definition and you can understand how this function works. So right, so all types of functions that you can understand in this way and then you can create it. So let us write the formula.

So what we want to calculate? We want to calculate date difference. So date difference, the moment you will write date, so date difference will come here. And now you want a result in which format? You want a result in the format of day. So just put into the inverted, single inverted comma day. And then which one is the start date? So, that date of joining which is given by the department.

So, date of joining which is given by the department. Next that date, that end date, which one is the end date? So, actual date of joining. That is the end date. Now we can close the bracket. So, now still it is showing the error.

So, we need to check where is the error still it is showing the error. So, just let us check where is the error. So now you can see this calculation field is valid. So I had forgot to put this commas. So now I have put the commas and you can see that calculation field is valid.

So now I can apply. So the moment I will apply you can see this new variable that has come below the line. So it indicates that it is in numeric in nature right. So delay in so days that we have gone so days in a number so that is numeric in nature. So now we can perform this variable will behave like any other variable. So now if you want to know city wise How many people are come joining late from so now I can put the city into the columns and date delay in joining I can put into the rows.

Now you can see what is there? It is sum but sum may not be useful so we will go to the

average. So, fortunately that you can see that the average is coming 22 because this is the dummy data it is not the actual so it is could be possible it could be the same thing is coming same average number of average delay is the same in term of the days. So, now this bar graph that I have put. And you want to put it into in this format, so this format also you can table, you can put it into the table.

So this format let us take. So how we can play with this format? What you can do? This colour is there, you can go to the added colour, select to the automatic and now you can see whichever colour that you want to give. So for example you want to give red, green. right and reverse it if you want so red to green that you want to give and now you want to put a limit right. So, let us assume you are giving a limit of 16 right then you will see the all colours will get change. So, what is happening? That is how you can put a limit, 16, 20, 22, 25.

So, whatever is limit like acceptable limit, if you believe that in your organization 25 days is acceptable, you put a limit of 25 days and then see how many organizations from which city people are joining late. from which city people are joining late right there is a delay and from which city people are joining on time. So, some of the cities color that you will see in green, some of the cities color you will see in a red. So, the red color indicates that there is a problem.

So, you can highlight that right. So, here all are showing green color because because the average date for the all cities, average number of days for all cities are same, right. Similarly, you can calculate for departments also, right. Similarly, you can calculate for the departments also, right. Just let me remove and then I will put the departments, right, city wise that you have understood. So, now let me put department wise also.

So, departments are average delay in columns. So, you can see. So, it is coming sum. So, again I need to convert into the average.

So, average is the same. So, again it will come same. So, now you can see department wise you can see. city wise, you can see education wise, you can see gender wise. So, that is how you can calculate the additional variable and then you can make the various type of graph. So, you can see this information was not given in the excel sheet, but whatever information that was there by using this calculated field create calculated field we have created the another variable and now on that particular variable we can perform the various types of the test.

We can by using that particular variable we can make various types of the graph. related to this variable also. So, now you can source of application, status of interview, right,

gender, department, city, right. So, any demographic variable like any in a previous sessions that we have discussed you can use it and you can analyze the delay in the joining, in which department, in which gender, in which, at which education level, in which city there is a problem related to the date, the date of joining that is what you can analyze, right. So, that is how you can use, use this calculated field and create new variables, right? Calculation that you can do in term of the numbers as well as in term of the string data also, right? So that I already explained.

The moment you will click on this calculated field, this is coming. So all, so if you want to do number related calculation, you can select number and then you can see which type of calculation you want to do. If you want to find out this let us do, you want to do square. So now you can see how, what is the meaning of this square, right? So what do you need to do? Just you need to write square 5, right? And you will get 20, 25. So how you have to apply the formulas that also you can understand by reading the definition of these formulas, right? So dear participant In the last session of the tableau, we have learned how to make the calculation related to various variable, right.

If variable is type is number, then we can perform the number related calculation, if variable type is string. Date, right, so whichever variable is there accordingly you can perform the calculation, create a new variable in the tableau and then you like, so once you will create, do the calculation so then you will get the output either in the form of text or you will get in the form of number. So if it is a number then you will get the variable below the line, if it is text then you will get the above the line, right. And then the variable will behave in a similar way and then you can perform the, then you can make the various types of the graphs in order to understand that particular variable in detail or in detail you can understand the variable and then you can take a decision related to that particular variable as we have seen how to calculate the date function in this session.

So, thank you. I hope you would have learned how to use the Tableau in this session. I would like to convey my sincere thanks to our director IIT Roorkee, Professor KK Panth, head of the department, Professor Rajat Agrawal, NPTEL and team, also the e-learning center coordinator and team with Mr. Pankaj Saini and all the members from the e-learning center, especially the teaching assistant Mohit Pahava, Prashant Mishra and Rishabh Tripathi. And now the co-coordinator of the course will convey the thanks to you. In addition to this, I would like to thank my director, IIM Rohtak, Professor Dheeraj Sharma, who has supported me, guided me to develop this course for the practitioners.

So, I hope you will enjoy this course. Thank you. At the end, I will say. Thank you very much for joining this course.