Transcript for Session 046

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Transcript:

Hi and welcome to http://chandoo.org podcast. This is session number 46. Thank you so much for tuning into http://chandoo.org podcast this week. Our podcast is dedicated to making you awesome in data analysis, charting, dashboards and VBA using Microsoft Excel.

What a week it has been. I started the week with a long cycling ride - 345 km to be precise - on two days. I am not going to bore you with all the painful but of course enjoyable details of the cycling ride. You don't have to listen to one more cycling story! As soon as I got back from the cycling trip, I found out that my book that I co-authored with Jordan is finally published and people have been receiving copies of the book. Those of you who purchased the book on an early order might have received the book. I bought my copy on September 30th but since I live in India, the book needs to be shipped from the US, and Amazon tells me that I will get it sometime in the month of November. So, fingers crossed and waiting for the book!

Here is the most exciting news of all. Finally, I have installed Excel 2016 on my laptop. Those of you who follow the Excel news know that Excel 2016 public beta has been out there for several months now and the official release from Microsoft happened on 22nd September if I am not wrong. But, I am a little sceptical when it comes to installing public beta or even private beta versions of software because I also use my computer to create a lot of demos, videos and write blog posts and I don't usually like to use the newer version of Excel until at least it is out there in the retail world. The second reason is that the bandwidth where I live is not very good. I don't want to say pathetic but it is not very good. So, downloading 2 GB of software only to realise that Microsoft has published another version 3 days later is not good. So, I don't like to download the private or public beta versions but now that the official version is out there, I downloaded a copy of that and I started playing with Excel 2016.

Let me give you a brief overview of what 2016 is like before we jump into our topic for the day. 2016, for the large part, looks and feels like 2013. In fact the Excel icon which has been changing with every version of Excel since 2003 is the same as 2013. So, if you have both versions installed on your computer you wouldn't be able to tell them apart by just looking at the application icons. Once you open, even the splash screen and the opening screen look largely similar to 2013 and you would be hard-pressed to find the differences. Apart from the UI which is vastly similar to 2013 and hence 2010, in 2016 Microsoft has

introduced a couple of really handy functions. One of them is that they took Power Query about which we talked in an earlier podcast and they folded it into Excel. So, everybody who gets Excel 2016 will have Power Query installed by default. They don't need to do anything; it is not an add-in anymore. It is part of the core Excel functionality.

The other thing is that they renamed Power Query and this is something that I am not a big fan of. I guess they wanted to make it feel more like a welcome feature rather than an advanced user feature. So, Power Query is now called Get & Transform Data. It sounds a little powerless but I guess that's what Microsoft wants and so they did it. They did a lot of background improvements to the data model capabilities and how you work with Power Pivot. But because Power Pivot is an add-in in name, you won't be able to use it unless you have the right version of Excel or you download that and install it as an upgrade.

Apart from this, they have also added a few new chart types. The main ones are waterfall charts and box plots. They have also added a sun-burst chart. I am not a big fan of that but I think it might add a little bit of wow factor to your presentations. And, we have a square hierarchy chart. I think it is called tree map. Again, it is a good one but it is a little hard to use and it gives a good overall picture like a heat map but it does not find out differences between any two points. Then they have added a few more variations to the charts but I am a big fan of the waterfall and box plot charts and I am itching to use them as soon as I get to spend more time with Excel 2016. I don't have Excel 2016 installed on my work computer as yet. I have installed it on my laptop which is what I usually use for reading the web and watching videos and stuff like that. So, that is a little bit about 2016 and I am excited about the new software and I am planning to use it a little more and start talking about various new features and powerful things that you could do with 2016 on the blog. So, watch out for 2016 tutorials in the next several months.

Now, let's talk about the topic of the day which is Gantt Charts and Project Planning using Microsoft Excel. This is one of my favorite and closest topics to my heart. First let's understand what a Gantt Chart is. If you are not a Project Management professional, i.e. you are not working in a project organization and you have never worked on a project the chances are that you have probably never heard about a Gantt Chart. Essentially, **a Gantt chart is a visual representation of a project plan**. When you hear the word project plan, you don't have to imagine a project like a retail store construction or software development or sending a rocket to the moon kind of projects. It could be as simple as setting up a small donut store outside Walmart or it could be a very simple thing like fundraising for a charity. Whatever may be the case, we human beings are always doing projects. Everything we do is essentially a project. For most of the simple things like making a peanut butter and jelly sandwich or buying a new car, we don't really do a lot of deliberation. We rely on common sense to do these things and we don't need a plan. But, for bigger things in life like constructing a new house or making a death star using lego blocks, you need a plan. That plan can be represented in many ways. It could be a bunch of items jotted on a to-do notepad or it could be a set of things listed on your phone or iPad or it could be graphical representation like a flowchart for your software. Whatever may be the case, those visual

representation of projects will help us understand what to do and how to plan and what activities need to be done, how they are interlinked and how much time it takes to complete them. So, a Gantt chart is a very powerful, time-tested and reliable way to visually represent a project plan and is an effective tool to manage a project. So, anybody working in a project organization, especially people working as Analysts or Managers within a project organization, project leaders and people like that rely heavily on Gantt charts to plan their projects efficiently and workforce and all the resources. That is what a project plan Gantt chart is. Excel is naturally a very good tool to create these kinds of charts. Of course there are other tools like Microsoft Project which are professional tools that you can use to create project plans but they are a bit costly and the learning curve is pretty steep. On the other hand Excel is something that you are all familiar with and we feel comfortable when we see Excel and we can create a project plan using Excel as well. So, in this podcast, I am going to share some of the insights, process and ideas to create such Gantt charts using Microsoft Excel.

Let me first share a simple story. This is something that happened at the early stages of my career and this when I kind of actually fell in love with Excel. Until that point, I was using Excel more or less like an amusing tool but once this thing happened, I kind of had a transformation. This was back around June 2009. Around that time I was working as a Business Analyst in USA at that time particularly in Columbus, Ohio. I was working at a client organization as a consultant and one day my manager walked to me and told me that I had to take up a temporary position at one of the other projects within the same company. So, I moved into that division and started working. It was a Data Warehouse & Business Intelligence solution implementation project and he wanted me to lead that project until somebody could join the team from somewhere else in the company. So, it was a temporary role and I started working on the project. The first day that I was there I realised that the team was doing a lot of things but they were not following any plan and this was creating a lot of tension between the customer and our company.

So, on the second day, I spent some time talking to various constituents in the team and I created a project plan. Now, it was a very simple plan. It had maybe ten activities and some dates and information like that and as soon as I created it, I thought that if I just show these things to the client, it is not going to be enough. It needs to be visual and so that's when I implemented a Gantt chart. Until that time, I saw my managers do these Gantt charts but I had never personally done such a Gantt chart. So, I created a Gantt chart using Microsoft Excel and I created that plan as a Gantt chart and I took it to the client organization. The customer saw it and just fell in love with it. They said that it gave them a lot of clarity and they knew where we are going and what struggles we have and that it is helpful. They immediately said they wanted me to join this project permanently and work there instead of at the other project. Of course, I couldn't promise anything but later on my manager told me that that was not going to happen because they already found a Project Manager to lead that project. But, essentially, at that point when the client loved it, I realised how powerful Excel can be and how if we use it right, we can get a lot of mileage for one's career. So, a Gantt chart is where it all began for me at least. That's when I also started writing about Gantt charts on http://chandoo.org and one thing lead to another and I will talk more about that in another podcast. That is what a good project plan can do. If you have a plan

but if you only have it in your head then nobody can understand it. Projects are essentially team efforts. You need to work in a team. Other people need to work together and a plan that is displayed in a consistent, visual manner helps everybody understand how things are supposed to be done, where everybody is and the kind of effort that is needed. That is what a Gantt chart is.

What is a Gantt chart essentially? How does it help us as a Project Manager? Well, a Gantt chart provides visual depiction as I said. But, what does it visually depict? In a project you usually have various activities. So, a Gantt chart at the lowest level depicts those activities. Let's say that you have 100 activities in a project. So, the Gantt chart will have 100 line items; each item for one activity. Against the activity name, the Gantt chart will also show information like the date on which the activity should have been. Usually in a project environment you don't do an activity on a single date alone and hence these dates will have a range from start date to end date. So, the project plan activity name (Activity 1 for example) starts on 10th October and finished on 21st October. So, it will have a duration and start and end dates. Many times, in real life projects, you plan for a certain set of dates but the actual performance might differ. So, you might say that you want to do this activity from the 10th to 21st but the actual thing might be different. You might start this on the 9th and you might finish it on the 27th. So, many times in a project plan Gantt chart, you find two sets of dates instead of a single set of dates - the planned dates and the actual dates. Sometimes you might even have forecast dates. So, you have activities and planned and actual dates.

Apart from the activities and dates, you will also have some kind of indication of the kind of effort that is required. This could be the number of resources needed to complete that activity or the budget allocated to complete that activity or anything else like how many parts are required to complete that activity or at which factory or company location the activity is going to happen and those kinds of things. Essentially, it is a mapping to the resources. Some activities may not require any resource at all but some other activities may require a lot of resources.

Apart from these things, a Gantt chart will also provide an indication of how much progress he's made either at the overall level or at individual activity level. And, this is the bare minimum stuff that goes into the Gantt chart. Apart from this, Gantt charts can usually contain stuff like activity grouping. This is where you not only have one activity at a time but you can say that these five activities form one group or these seven activities form another group. A common way to understand this is that let's say that you are building some software. In software development although there are these multiple activities that need to be done, they are grouped into several modules so that each module can be worked on in isolation and they can be developed in parallel so that the development time can be reduced. This is one way of the hierarchy in activities. You have some activities and they are grouped together into higher levels. These activity groups could be modules for software development, they could be rooms in a house development or they could be modules in a rocket launch scenario. So, the hierarchy will also be there. Likewise, sometimes there are dependencies between activities. For example, if you are building a house and this is a multi-storey house and it has a ground floor, first floor and second floor then you

can't construct the second floor until the first floor is complete. Likewise, you can't construct the first floor until the ground floor is complete or at least till the bare structure is complete because you can't hang stuff in air. So, there is a dependency between these activities. You can't start activity number 3 until activity 2 is completed. So, those kinds of dependencies are also possible.

Once you have all these dependencies, another common thing that many people do with project plans is that they analyze what is called as a critical path. **A critical path is a path that is drawn from one activity to another activity all the way through the end that'll give you an indication of the minimum time required to complete the project**. If every activity is sequential - let's say that you have to do four activities and you can only start one activity after the other activity is completed - then your duration is the sum of all four activities. But, what if there could be a bit of parallel processing that can happen? For example, activity 1 and 2 can start on the same day and they can go in parallel. In this case, your total duration to complete the project is not just the sum of those four numbers; it is less than the sum. So, what is that minimum duration required? That is where the critical path analysis comes into the picture. You analyze the critical path and you analyze the bottlenecks in the project and then you find out how much time it takes to complete the project. To explain the process behind critical path analysis and the logic for calculating the project duration is a little too hard and it is not suitable to do this kind of thing on an audio podcast and so I am not going to attempt that. But, keep the words critical path in your mind and you can go to Google and search for that and you might find some solutions for that.

Alternatively, a professional project planning software like MS Project offers critical path analysis at a button click. You set up your project plan and then ask MS Project to calculate the critical path and it will be able to do that for you. When you do something like this in Excel, it is very tricky to do this kind of critical path analysis and dependency analysis in Excel because of the nature of what Excel can do. There are no formulas to calculate critical path. The formulas can get very complex. You might have to come up with VBA in which case there will be other problems like scalability and performance.

That's what a Gantt chart really is. It help you understand the activities, the start and end dates for those activities, the kinds of resources that are required, the progress that has been made, if there are any dependencies between the activities, whether the activities are grouped into chunks and the kind of critical path or minimum duration required to complete the project. This is what a Gantt chart or project plan does.

Now let's talk a little bit about how you can create such Gantt charts in Excel. When I say such Gantt charts, I mean Gantt charts that provide the visual depiction and not all the additional analysis like dependency tracking or critical path analysis because those kinds of things are very hard to do with an Excel kind of a set up in my opinion. You require professional software to handle these in a more elegant and less time consuming manner.

So, how do we create a Gantt chart? There are many ways in which you can create Gantt charts in Excel. I am going to suggest three alternatives to you. The first alternative is that if you look at a Gantt chart and if you zoom out - if you have a Gantt chart on your computer monitor and if you walk about 25 feet away from your monitor and if you look at it - the Gantt chart essentially looks like a poorly drawn bar chart. In bar charts, you have bars going all the way from 0 to the right whereas in Gantt charts, the bars are going but there are some gaps in between. So, a Gantt chart looks like a bar chat with invisible series. That's the first alternative. You can create a Gantt chart by using your bar chart in Excel. Set up the activities and have a bar for each activity and if the activity starts on the 0th day, the bar starts from 0. If the activity starts on the 7th day, the bar starts from 7. But, how do you make the bar start from 7? Well, you don't make anything like that. You insert a dummy series that goes from 0 to 7 and then the activity series starts from there. So, the Gantt chart by using a bar chart is done by adding a dummy helper series that kind of moves or offsets or pushes the bars further into the right of the screen by adding the dummy series. Once you set it up like that, the dummy series will be blue and the bar chart could be green. Then, we select the dummy series (the blue one) and make it invisible by filling it with white color and white border or filling it with no color so that it is not visible and you get this floating bar effect which is essentially what a Gantt chart is. That's the first technique. Again, on http://chandoo.org, I have written a tutorial about this particular technique a while ago. Please visit http://chandoo.org/session46 which is the link for this podcast where you will find a link to the Gantt chart using bar chart technique article in the resources section. You can go there, read the article, download the template and play with it to understand.

The second technique is that you can use conditional formatting and formulas to create Gantt charts. That technique is a little hard to explain in an audio podcast so I am going to again ask you to visit http://chandoo.org/session46 where you can find a resource link for that information. The conditional formatting technique is my favorite way of doing Gantt charts. This is how I did it in 2009 when I impressed my clients and this is how I would do it even today. The conditional formatting technique is very simple to use. It is scalable, it works with any number of activities and it looks elegant and it is very light-weight. We set up a massive cell grid like 100 columns by 100 rows - each row for one activity and each column for one day or one week or one month of the project duration. So, if it is a big project, you set up one column per month. If it is a medium sized project like a 2-year project, you will set up one column per week. If it is a really small project, you will set up one column per day. If it is a tiny project like a one day project, you will set up one column for 15-min or 30-min intervals or something like that. So, we set up a grid like that which is more or less like a calendar and then we color the cells only if an activity is happening on those times. So, once you set it up like that, this will give you a Gantt chart kind of look. You can remove the cell borders and everything. To fill the color, we will use conditional formatting. That is where I said that explaining the logic is a little hard on a podcast kind of medium but visit the show notes page at http://chandoo.org/session46 where you can find a link and some templates that will explain how to do that.

The third one which is really my most preferred way is to use a template because there is no Create Gantt Chart button in Excel. So, no matter what technique you use, you are going to spend a lot of time

and as a Project Manager, your time is at a premium. So, my suggestion is that if you are finding yourself creating these Gantt charts quite often, just get a template and use it. Just enter your data and it will generate the Gantt charts for you.

What kind of template should you be using? There are many templates out there but the one that I would recommend, both because I am selfish and also because I think these templates are awesome, are the http://chandoo.org Project Management templates. I have created a set of templates based on all my experience as a Project Manager and Excel user. These templates will help you create projects plans, Gantt charts, project status dashboards, project portfolio dashboards, timelines, milestones, timesheets and resource trackers and what not. It is a collection of templates. Each template is one Excel workbook or something like that. You simply enter your data and a beautiful and gorgeous looking Gantt chart is generated for you. The Gantt chart templates are of about 7 different types. So, depending on the kind of work you are doing and the complexity of the project plan, you can choose one of the Gantt chart templates and go with that. So, using a template is another option. Again, in the show notes page at http://chandoo.org/session46, I am going to link to our templates so that you can purchase a pack or at least review what this does and see if that is suitable for your kind of work. I have been selling these templates since late 2009 and they are one of the best-selling products at http://chandoo.org. I think till date I have sold them to more than 10,000 project managers all over the world and customers just love them. I get awesome feedback about these templates every month. That's a little bit about using templates.

Let me suggest some resources for you especially if you are a project manager or a project leader or a business analyst working in a project organization or in a PMO organization or something like that. On http://chandoo.org we have a lot of articles, tips, tutorials and videos on project management using Excel. This is not just creating project plans and Gantt charts but there are also other kinds of things that you do in a project environment like analyze budgets, build trackers, build dashboards, build reports, create milestones and timeline charts and various kinds of analysis like resource loading, employee vacation tracking and what not. So, visit http://chandoo.org/session46 and I am going to link to a couple of resources that will help you as a project manager. These are a few resources. You can go through them and learn more about them. At http://chandoo.org we also offer a training program for project managers. It is called Excel for Project Managers. It is a course that I offer in conjunction with Edu Pristine. In that course we talk about various project management concepts and how you can implement them using Microsoft Excel right from budgeting all the way up to project sign-offs. At every stage of the project there are various things that you can do easily with Microsoft Excel. I think if you use Excel to handle projects, it is not only a cost-effective solution but it is also a light weight and easy solution. There is no learning curve. Everybody can use Excel and you can focus more time on the project rather than on using the project management software.

That's a little bit about project management, project tracking, project planning and Gantt charts using Excel. I hope you enjoyed this podcast. If you liked this podcast please

visit http://chandoo.org/session46 where all the show notes and resources can be accessed. Also, there will be a link to our iTunes page on that page and you can go to iTunes and write a review for us. If you are working as a project manager please consider getting a copy of http://chandoo.org Project Management Templates because that might save you a lot of time and make you look awesome in front of your bosses and colleagues. Thank you so much for listening to this podcast. I'll talk to you again soon. Bye.