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LECTURE 14: DASHBOARD



Dashboard Table - Scroll

		KPI 1	KPI 2	KPI 3	KPI 4	KPI 5
1	Product Name 1	284	267	28%	-11	348.83
2	Product Name 2	170	218	86%	-11	734.27
3	Product Name 3	760	9	95%	-30	503.34
4	Product Name 4	366	388	35%	47	367.90
5	Product Name 5	1,345	130	58%	74	477.47
6	Product Name 6	790	181	97%	-10	678.05
7	Product Name 7	1,269	319	78%	24	373.29
8	Product Name 8	107	16	59%	61	532.21
9	Product Name 9	501	486	56%	67	265.00
10	Product Name 10	953	259	5%	74	855.81

LEARNING OUTCOMES

Students, after mastering materials of the present lecture, should be able

1. to explain and use pivot table to analyze data (information) in excel.
2. to explain dashboard including features and software.
3. to develop a simple dashboard with excel

1. INTRODUCTION

1. Definition

- A **data dashboard** is an information management tool that visually tracks, analyzes and displays key performance indicators (**KPI**), metrics and key data points to monitor the health of a business, department or specific process.
 - They are customizable to meet the specific needs of a department and company.
- A data dashboard is the most efficient way to track multiple data sources because it provides a central location for businesses to monitor and analyze performance.
 - Real-time monitoring reduces the hours of analyzing and long line of communication that previously challenged businesses. ⁴

2. Dashboard Uses

- **Visualization of Business Figures and BI Data**

- Whether you want to motivate your employees or you need a powerful tool to support management:
- By visualizing business data, figures and BI data such as KPIs (key performance indicators) on digital information screens you create a quick and convenient way to distribute relevant information within the company.
- Instead of digging into reporting tools or having to navigate Intranet pages, a simple glance at a wall-mounted screen is all you need to get the latest information and status updates at a glance!

- **Displaying Live Production Data**

- Especially at production plants, a live overview of the produced units and goals achieved is extremely helpful and often mission critical.

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- By placing the screens or terminals directly at the production site, employees can be informed at any time while they are doing their work. In addition to that, a system like this can also be used as a full-fledged employee information system. The FrontFace software already comes with everything you need for such an extended scenario.

- **Performance and Status Information of Facilities**

- Solar energy panels, environment-friendly heating systems or other environment-related systems provide a lot of data that you can access from their controller units in order to communicate the environmental awareness of your company to employees and to customers visiting your site.
- FrontFace helps you to visualize this data in an interesting and eye-catching manor.

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2. FEATURES OF DASHBOARD

- At the most basic level, business dashboards share certain common features.

1. Data Visualizations

- Selecting the right visualization for your dashboard is an important part of dashboard design.
- Data visualizations are graphical representations of your data, and are used to simplify the transmission of sometimes complex information.
- It's much easier for an end-user to spot trends in a chart rather than sifting through a data file with hundreds, possibly thousands of entries.



Tables



Line charts



Bar charts



Gauges

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2. Types of dashboards

- Dashboards typically fall into two categories:
 - (i) operational dashboards (time sensitive) and
 - (ii) analytical dashboards ().
- Choosing which type of dashboard to build depends on the type of problem you are trying to solve and your audience. You may end up building a dashboard that embodies characteristics of both operational and analytical.



	Timeframe:	Audience:	Objectives:
Operational	Time sensitive	Line of business managers, general	Tactical, short and medium-term objectives
Analytical	Trends or deeper insights	Executives, analysts	Strategy, long-term goals

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3. Dashboard software

- Businesses today have a number of options for creating dashboards.
- Here's an overview of the 3 main types of dashboard software available.

1. On-premise

Software is installed directly on computer or network. Dashboards are managed locally and typically published via printing or exporting as a PDF.

2. Cloud

Software is accessible on any computer with an internet connection. Dashboards are built and designed using a web browser, and can be published across multiple devices.

3. Mobile

Software is accessible on any mobile device such as a smartphone or tablet. Dashboards may be based on a native application or be pushed out from a cloud environment.

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3. BUILDING & DESIGNING

1. Basic Concept

- An effective dashboard promotes action and changes behaviour.
- Before jumping into the design stage of your dashboard project, you need to start with a plan that has clear objectives and a well defined audience.
- Here are some tips to guide you along the path of responsible dashboard design.

1. Define your audience

At the outset, you need to understand who will use your dashboard and how they will use the dashboard. Depending on your audience, you may be designing dashboards for consumption on mobile devices, web browsers, or LCD TV monitors. At the end of the process, you will integrate your audience's feedback into future iterations of your dashboard design.

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2. Identify the key metrics

Ask the question: "What problem am I trying to solve?" The type of dashboard you create depends on the metrics and KPIs that you need to track. By identifying these metrics at the start of your project, you will understand what you're trying to accomplish. It will give you a clear roadmap for building your dashboard.

3. User context

When designing a dashboard, take into account the context in which the dashboard will be viewed. You've already identified your audience, now it's time to select visuals that are meaningful to them. A CEO will want a compact dashboard with very clean, simple visualizations, while a business analyst will want to dive deeper into the data using more sophisticated visualizations.

4. Design for immediate action

A dashboard's strength depends on providing your audience with the current status of key metrics. An effective dashboard is designed to prompt a response from your audience, whether that means getting them to sound the alarm for an "all-hands" response or bringing up the issue at your next board meeting. The key is to establish and stick to a consistent design convention.

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4. DASHBOARD BUILDING

Data and PivotTables

Step 1:

- Open the excel dashboard tutorial file (If it has been already downloaded) and you will see there is a sheet named data. The data is already formatted as table.

Step 2:

- Select the data by having an active cell within data and hitting Ctrl+A.
- Go to Insert tab > Tables group > Pivot tables, create pivot table dialogue box will pop up.
- Give any name or leave it as is and click OK.
- A new worksheet will be inserted with pivot table options interface enabled.

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Step 3:

- Click and drag Sales value from the list to values quadrant, click and drag sales person to rows quadrant.
- This will give a pivot report on the left.

Step 4:

- Click on the drop-down arrow button with the Row labels and select value filters > Top 10.
- Click OK. This will get you top 10 sales personnel by total sales generated.

Step 5:

- Click on the arrow again and this time click more sort options. Choose descending and from the drop down menu select sum of sales.
- This will sort the data in descending order.

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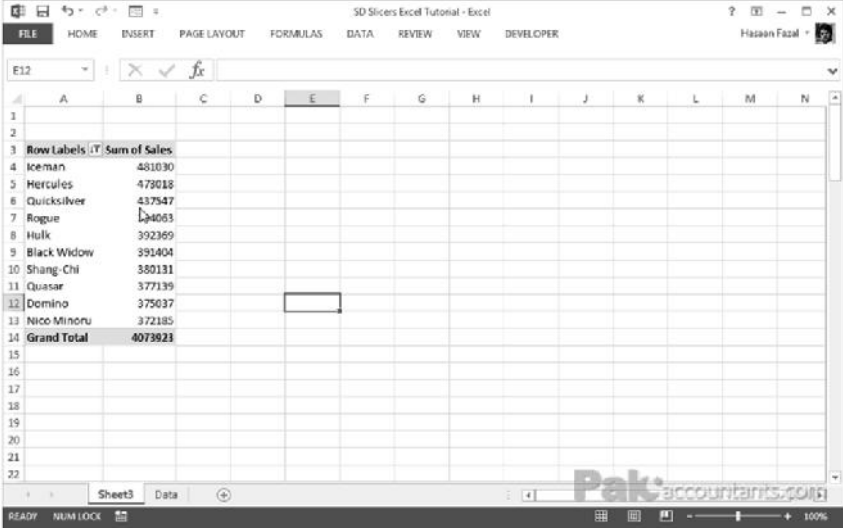
Buyers	Items	Sales person	Region	Sales	Date	Cost	Distribut
2	Abomination	Chitauri Gun	Storm	Oceania	7541	4/12/2014	13817
3	Chameleon	Ginrei	Angel	Antartica	25049	7/30/2015	47291
4	Daken	Star Sceptre	Iceman	Africa	40959	5/20/2015	8842
5	Morbius	Disintegrator Cane	Captain Marvel	Australia	25394	9/1/2015	8872
6	Lady Deathstrike	Gram	Machine Man	Africa	34388	1/27/2013	48352
7	Quicksilver	Megingjord	Hawkeye	Asia	4110	2/18/2013	32128
8	Lady Deathstrike	Streamsword	Black Bolt	Europe	43944	10/24/2014	44836
9	Mystique	Midnight Gun	Human Torch	Oceania	24375	7/28/2015	10284
10	Omega Red	Kree Composite Soul Bow	Hulking	Australia	31903	9/6/2015	13814
11	William Stryker	Melting Ray MK II	War Machine	Oceania	20642	4/6/2013	35103
12	Kraven the Hunter	Tactigon	Warpath	Europe	16509	1/10/2015	32328
13	Sandman	Infinity Sword	Hulking	Australia	1584	8/14/2013	24687
14	Sebastian Shaw	Ginrei	Iron Fist	Australia	23106	3/15/2013	27498
15	Pyro	Stygan Fire	Jessica Jones	Antartica	48297	2/28/2015	19667
16	Vulcan	Serpent Staff	Tigra	Asia	1804	1/3/2013	5499
17	The Hood	Jet Paralyzer	Iron Fist	Oceania	48826	2/13/2014	24825
18	Ultron	Overkill Device	Vision	Antartica	23108	6/3/2013	49160
19	Kraven the Hunter	Hunter Missile	Wolverine	Europe	32537	3/27/2014	13316
20	Venom	Neutralizer Ray	Shang-Chi	Antartica	15041	6/1/2014	3280
21	Apocalypse	Breathing Gun	Mimic	Asia	43419	3/11/2013	16981
22	Silver Samurai	Star Shield	Cyclops	Antartica	30975	12/2/2015	13052
23	Silver Samurai	Thermic Stabilizer	Elektra	Africa	21978	6/13/2015	35669

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1. Top 10 Sale Personnel

1. Once you have the report, it is super easy to know who made **the highest number of conversions** and **who generated highest revenue**. To do it simply
2. Go to **values** quadrant and left click on **downward arrow** to invoke a menu.
3. Click value field settings and from the list you can pick if you want the report on the basis of sum of the value or count of the value.

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The screenshot shows an Excel spreadsheet with a pivot table. The pivot table is located in the range A3:E14. The data is as follows:

Row Labels	Sum of Sales
Ice man	481030
Hercules	478018
Quicksilver	437547
Rogue	340663
Hulk	323369
Black Widow	321404
Shang-Chi	380131
Quasar	377139
Domino	375037
Nico Minoru	372185
Grand Total	4073923

The Excel window title is "3D Slicers Excel Tutorial - Excel". The ribbon tabs are FILE, HOME, INSERT, PAGE LAYOUT, FORMULAS, DATA, REVIEW, VIEW, and DEVELOPER. The status bar at the bottom shows "READY NUM LOCK" and a zoom level of 100%.

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Pivot Chart

Step 6: Select the data in pivot table (just the data).
Click Insert tab > charts group > column charts
> clustered column charts and click OK.

This will insert the chart showing top 10 sales personnel. And this is not just an ordinary chart, it is actually a pivot chart.

Step 7: Click on chart to select it. Go to Analyze sub-tab > show/hide group > click field buttons to turn of pivot options inside chart to make it look clean.
Rest are cosmetic changes which you can do as you wish easily.

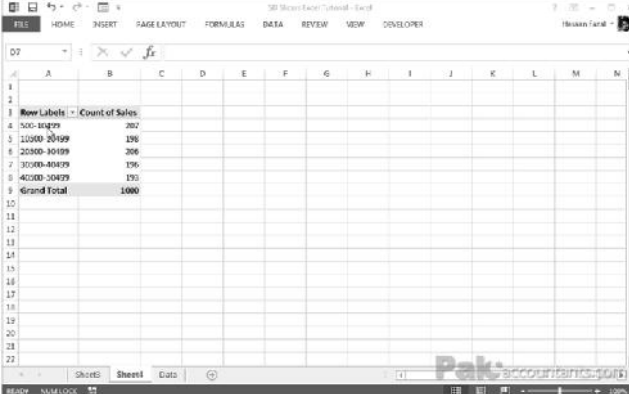
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2. Number of Sales by Slap

- Step 1:** Go back to data worksheet and select the data having an active cell within data and hitting Ctrl+A.
- Step 2:** Click insert tab > table group > click pivot table button > OK. This will insert another pivot table on a new worksheet.
- Step 3:** Click and drag sales to value quadrant. Click and drag sales again but in Row quadrant. Yes same element in two different quadrants.
- Step 4:** Right click on pivot table and from the menu select group. A dialogue box will appear. Uncheck both options and in start at field type in 500 and in ending at field type in 50000. By field should have 10000. Click OK.
- Step 5:** Select the data within pivot table go to Insert tab > charts group > column charts > clustered column > OK. Now you have the pivot chart of sales count for each slab. You can turn of the buttons and make the cosmetic changes as you desire

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- Step 5:** Select the data within pivot table go to Insert tab > charts group > column charts > clustered column > OK. Now you have the pivot chart of sales count for each slab. You can turn of the buttons and make the cosmetic changes as you desire



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2														
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Row Labels	Count of Sales
500-10499	207
10500-20499	198
20500-30499	206
30500-40499	196
40500-50499	193
Grand Total	1000

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3. Monthly Sales-Cost chart

Step 1:

Go to data worksheet again and select the data then go to Insert tab > tables group > click pivot table button and then click OK on the dialogue box that appear. A new worksheet will be inserted with pivot table interface enabled.

Step 2:

Click and drag Sales and Cost items to values quadrant one by one. Then drag month item in rows quadrant to generate a report with monthly cost-sales information.

Step 3:

Select the data within pivot table, all three columns, go to insert tab > chart group > column chart > cluster column

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Step 4:

Having chart selected go to analyze tab and click once on field button to hide filter controls and other buttons on chart. Select the.

Step 5:

- Go to design tab > type group > click change chart type button. A dialogue box will open. From the left in the list click combo.
- For cost select stacked line with markers and for sales select area from chart type drop down.
- You can choose to plot either of the aspects on secondary axis but its not needed in our case. But you can if you want easily by checking the box of secondary axis.

Step 6:

- Make cosmetic changes as you desire using chart layout options. I just moved the legends to the bottom using quick layout preset.

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Buyers	Items	Sales person	Region	Sales	Date	Cost	Distribut
Abomination	Chitauri Gun	Storm	Oceania	7541	4/12/2014	18817	
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Quicksilver	Megingjord	Hawkeye	Asia	4110	2/16/2013	32128	
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Vulcan	Serpent Staff	Tigra	Asia	1804	1/3/2013	5499	
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Ultron	Overkill Device	Vision	Antartica	23108	6/3/2013	49160	
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Silver Samurai	Star Shield	Cyclops	Antartica	30975	12/2/2015	13052	
Silver Samurai	Thermic Stabilizer	Elektra	Africa	22978	6/13/2015	35669	

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Step 4:

- So now we have all the three elements we needed:
 - Top 10 sales personnel
 - Count of sales for each sales slab
 - Monthly Sales-cost chart
 - m
-
- Now we need to have all of them at one place (as currently these charts are in three worksheets) and insert slicers that will be linked to all three charts. Once done, all three of them will dance on our finger tips

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So now we have all the three elements we needed

1. Top 10 sales personnel
2. Count of sales for each sales slab
3. Monthly Sales-cost chart

Now we need to have all of them at one place (as currently these charts are in three worksheets) and insert slicers that will be linked to all three charts. Once done, all three of them will dance on our finger tips.

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4. Assembling the Dashboard

Step 1:

- Insert a new blank worksheet and name it Dashboard.
- Select the whole worksheet and change the fill color to any color you like other than white (chose gray?).
- Go to page layout tab > sheet options group > gridlines > uncheck view option. Grid lines will vanish.

Step 2:

- Cut each chart and paste it in the dashboard worksheet. Its simple just cut paste.
- The charts will keep their integrity with underlying data even if they are moved to another worksheet so don't worry.

Step 3:

- Once all the charts in the worksheet and arranged. Click on any chart go to analyze tab > filter group > click insert slicers option.

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- A new dialogue box will open. Check year, month and sales and click OK to close it. It will insert three sets of slicers.

Step 4:

- Select the year slicers box and go to slicer tools options tab and in buttons group change the number of columns to 3. Change width and height of the box as you wish.

Step 5:

- Having it still selected go to slicer group under slicer tools options tab and click report connection button.
- From the dialogue box check the pivot tables appearing. We have three pivot tables in place and we want all three of them to filter if slicer buttons are clicked.
- Check them and click OK. Now if you click the buttons chart will update automatically.

Step 6:

- Repeat the same step as told in Step 5 with other slicers to arrange and connect them.

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And done!

Now you can watch the charts updating as you click and select slicer buttons!

Your dashboard is ready.

Here is what it looks like once finished with other two slicers connected and arranged:

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