

IE 351
TERM PROJECT
Due January 21st, 23:59*

* Submissions after the due date will not be graded !

RIHAM Inc. is a company producing cabinets which was founded seven years ago. As of today, it is serving in 10 different countries with a total of 48 branches. However, they don't have a systematic way of evaluating their sales performance yet. Lately, they have been feeling the lack of such an analysis. So, **RIHAM Inc. is seeking for help to define KPIs and obtain a dashboard where they can track the performance of the company.**

Being a proud graduate of Industrial Engineering Department at Istanbul Bilgi University, you have been consulted by the company to solve their problem using the relevant data.

- The product range consists of seven products; SAMLA, DRAGON, ANDREA, NORDEN, FLISAT, MULA and TARVA (yes, the company is inspired from IKEA products for the names).
- The products are grouped under three main segments, namely premium, luxury and general.
- They buy 21 main types of raw materials from the suppliers. Not all raw materials are used in every product.
- They have been keeping all the sales information for seven years.
- Their current customer database consists of 600 customers of all branches.
- All the analysis will be made over the current prices (products, raw materials etc.).

The following data are provided in the MS Excel file "ProjectData_PowerBI_GroupX.xlsx" where X corresponds to your group number;

- Customers Details (CUSTOMERID, AGE, GENDER)
- Branch details (BRANCH CODE, CITY, OPENING DATE)
- Product details (NAME, SEGMENT ID, UNIT PRICE)
- Segment details (SEGMENT ID, DESCRIPTION)
- Raw material details (CODE, UNIT PRICE)
- Bill of Materials (BOM) details for the products (PRODUCT NAME, USED RAW MATERIAL ID, NUMBER OF UNITS USED)
- Sales details per product (BRANCH, UNITS SOLD, DATE, SALES MONTH, CUSTOMERID)

Also, you have two additional sheets which you are going to complete.

PRODUCT ANALYSIS

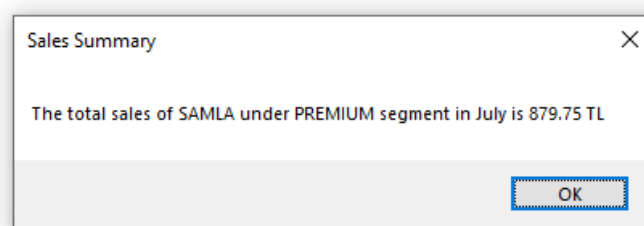
Before generating a dashboard in PowerBI, you want to make an analysis on the sales performance of your branches for all years and products. To do that, you need to add two drop-down lists to PRODUCT ANALYSIS sheet first. The first one in cell A2 will be listing your segments whereas the second one in cell B2 will dynamically be listing your products in that segment. In the example below, segment 3 is selected from the first drop-down list due to which we have only products DRAGON and TARVA in the second drop-down list.



	A	B	C
1	SEGMENT	PRODUCT	FIRST n
2			
3		DRAGON	
4		TARVA	

Next, you want to limit your analysis to the sales made in the first n months (1 to n , including n) which will be the third input of your analysis. Instead of selecting a value from a drop-down list, the users should be writing the value directly to cell C2. However, you should limit them so that they can only write whole numbers from 1 to 12. In other words, one should not be able to write text or decimals to cell C2.

Finally, for the selected segment, product, and month (n), you need to report the sales of categorized per year in range E1:F8. You should use the corresponding sales sheet of the product (SALES-SAMLA etc.). Here, you will need to address the sheet name dynamically. Also, you should show the total sum of sales of all years to the user in a message box every time any input (A2:C2) has changed (Hint: Events). Showing the message box will be the only part that you will use macros in this sheet. The message box template is shown below.



DATA FOR POWERBI

Here, you are going to collect all the information from separate tables into a single one using macro(s). Please note that your code should be flexible to allow addition/removal of new products as well as addition/removal of sales information for the current products.

Also note that a nested for loop (one for sheets, one for the lines in that sheet) in your macro would be useful to collect sales data. For the other columns, you will need to get the information using the relevant info

(branch code, product name etc.). Lookup functions (VLOOKUP, MATCH, INDEX etc.) might be helpful. Nevertheless, you

Furthermore, you need to calculate the “Total Profit” using the raw materials cost which is not readily available. For your calculations in column M, use the following age intervals;

20-25, 26-30, 31-35, 36-40, 41-45, 46-50, 51-55, 56-60, 61-65 and 66-70

After all the calculations, you should fix the first row in the sheet (so that the headings will be visible all the time) and not leave any formulas in the cells. That is, all the values should be pasted as values after every time a macro is run; i.e. old values should be recalculated and overwritten at each run of the macro.

Finally, a shape/image of your choice should be added to the sheet and your macro that does the above should be assigned to that shape/image.

Deliverables

The CEO of RIHAM Inc. is expecting you to deliver your Excel file and a Power BI dashboard along with a project report.

1. MS Excel File

“ProjectData_PowerBI_GroupX.xls^m” file with working macros and formulas. You should only modify the original file of your group. **DO NOT WORK ON A NEW MS EXCEL FILE.**

2. Power BI Dashboard

This dashboard should include two graphs addressing sales by month and customer segmentation by age intervals in addition to other relevant visualizations of the KPIs you decided. You may want to get ideas from the samples in Power BI or any other dashboard that you will find.

Note that, for this step you should get your MS Excel file (DATA FOR POWERBI sheet) ready first.

3. Project Report

Your report of at least 3 pages must include notes on the reasoning, assumptions and calculations you made. You can use screenshots of your reports and dashboard in Power BI here but the report should not be consisting of only these screenshots.

They also expect you to decide at least 5 KPIs, to comment on the performance of the company on the decided KPIs and why you selected them.

Grading

A working MS Excel file with macros (50 points)

A working Power BI Dashboard (35 points): This dashboard should contain visuals/graphics that are in parallel with the KPIs you selected.

DO NOT PRESENT A VISUAL/GRAPH THAT DOES NOT TELL US ANYTHING. Note that the number of people who drowned by falling into a swimming-pool in US in between 1999 and 2009 and the number of films Nicolas Cage appeared within the same period has a correlation coefficient of 0.666004. Yet, we are not feeling any wiser with that information, are we? For more spurious correlations refer to <https://tylervigen.com/old-version.html>.

Report (15 points): It is not evaluated only on the formatting but also the content of the report. Note again that your report will be presented to the CEO.

Make sure you are using your own data (ProjectData_PowerBI_Group99.xlsx etc.)! Not doing so will cause you to get zero (0) grade.

Submission

Submit your MS Excel file and report to Blackboard in a single Windows OS compatible compressed document and name it as Group1.zip, Group12.rar etc. Only a single member of the group must submit the report.

Share your dashboard with me (mahir.yildirim@bilgi.edu.tr) over Power BI. Name your dashboard as Group1 etc.

Report Format

PAGE SETUP

Margins	Top, Bottom, Left, Right	: 2.54 cm
Orientation		: Portrait
Paper	Paper Size	: A4

FONT

Font		: Times new roman
Size		: 12 pt
Font Style	1 st Level Titles	: Bold, UPPERCASE
	All Other Titles	: Bold, Each Word Capitalized
	Paragraphs	: Regular

PARAGRAPH

General	Alignment	: Justified
Indentation	For the 1 st paragraph after each title	: Left: 0, Right:0, Special: None
	For the following paragraphs	: Left: 0, Right:0, Special: First line By:0.63 cm

FIGURES and TABLES

Each figure and table should be captioned (Figure 1. Explanation, Table 1. Explanation etc.) appropriately.

Also, every table and figure should be referenced within the text.