EMPLOYEE DATA ANALYSIS IN MS-EXCEL

BY
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POWERED BY

PSYLIQ

INTRODUCTION

- I am excited to present the results of my internship project, "Employee Data Analysis," provided by PSYLIQ.
- Throughout this journey, I utilized the capabilities of MS-Excel, applying various techniques such as data cleaning, Pivot Tables, dynamic charts, VLOOKUP to derive actionable insights.
- My primary goal was to answer key questions posed by PSYLIQ and finally create Dashboard with insights.

PSYLIQ

DATA INSIGHTS

For each questions, data analysis results and insights are provided respectively

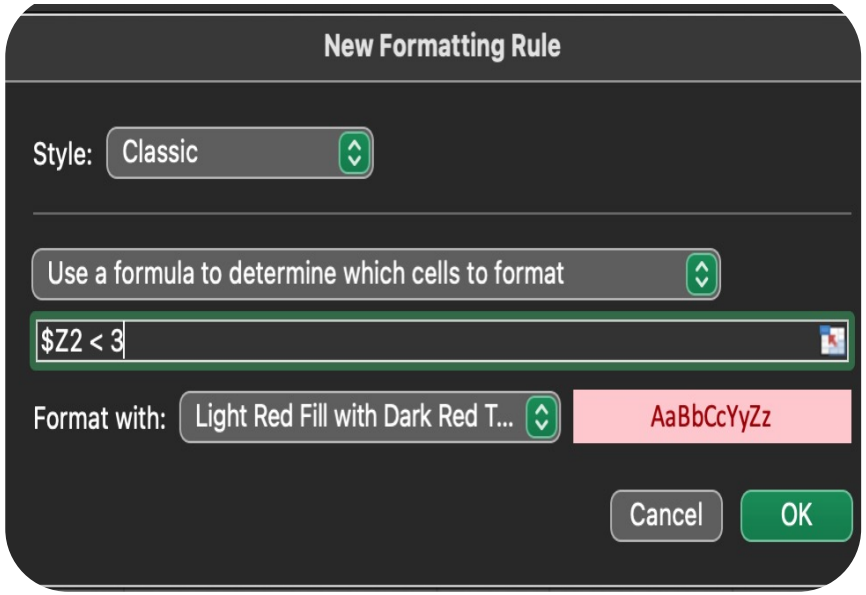
1 create a pivot table to summarize the total number of employees in each department?

Departments	Count of Employee
Admin Offices	80
Executive Office	24
IT/IS	430
Production	2020
Sales	331
Software Engineering	115
Grand Total	**3000**

- The **Production department** has the highest number of employees, with **2020 individuals**.
- **Admin Offices** and **Executive Office** have relatively smaller employee counts, with **80 and 24 employees**, respectively.
- Production, IT/IS, and Sales departments appear to be the core operational areas, as they collectively constitute a significant portion of the workforce.

2

Apply conditional formatting to highlight employees with a ”employee rating" below 3 in red .



L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
ype	PayZone	EmployeeClassificationType	TerminationType	TerminationDescription	DepartmentType	Division	DOB	State	JobFunctionDescription	GenderCode	LocationCode	RaceDesc	MaritalDesc	Performance Score	Current Employee Rating
	Zone C	Temporary	Unk		Production	Finance & Accounting	10/07/1969	MA	Accounting	Female	34904	White	Widowed	Fully Meets	4
	Zone A	Part-Time	Unk		Production	Aerial	30/08/1965	MA	Labor	Male	6593	Hispanic	Widowed	Fully Meets	3
	Zone B	Part-Time	Unk		Sales	General - Sga	10/06/1991	MA	Assistant	Male	2330	Hispanic	Widowed	Fully Meets	4
	Zone A	Full-Time	Unk		Sales	Finance & Accounting	04/04/1998	ND	Clerk	Male	58782	Other	Single	Fully Meets	2
	Zone A	Temporary	Unk		Sales	General - Con	29/08/1969	FL	Laborer	Female	33174	Other	Married	Fully Meets	3
	Zone B	Full-Time	Unk		Sales	Field Operations	04/03/1949	CT	Driver	Male	6050	Black	Married	Fully Meets	3
	Zone B	Temporary	Involuntary	Me see picture nature degree benefit.	Sales	General - Eng	07/01/1942	CA	Technician	Female	90007	Hispanic	Divorced	Exceeds	4
	Zone C	Full-Time	Involuntary	Blue community type skill story.	Sales	Engineers	03/07/1957	OR	Engineer	Female	97756	White	Divorced	Fully Meets	2
	Zone B	Part-Time	Unk		Sales	Executive	15/05/1974	TX	Executive Assistant	Male	78789	Black	Widowed	Exceeds	3
	Zone B	Temporary	Resignation	Summer personal bag.	Sales	Engineers	11/11/1949	TX	Engineer	Male	78207	Asian	Widowed	Fully Meets	5
	Zone B	Temporary	Unk		Sales	Field Operations	26/01/1964	IN	Technician	Female	46204	Other	Single	Fully Meets	5
	Zone C	Temporary	Retirement	Alone once than. More condition pay far.	Sales	General - Con	04/06/1948	GA	Technician	Female	30428	Asian	Married	Fully Meets	3
	Zone A	Temporary	Involuntary	Foot in theory minute recognize test.	Sales	Splicing	24/11/1981	CO	Splicer	Male	80820	Other	Single	Fully Meets	3
	Zone A	Full-Time	Resignation	Degree wish science when thing week old.	Sales	Finance & Accounting	11/06/1951	KY	Controller	Female	40220	White	Divorced	Fully Meets	3
	Zone A	Part-Time	Unk		Sales	General - Con	21/11/1989	NV	Lineman	Male	89339	Asian	Widowed	Exceeds	4
	Zone A	Full-Time	Retirement	Fear particular method stage.	IT/IS	Field Operations	24/11/1952	MA	Laborer	Male	2810	Black	Single	Exceeds	2
	Zone C	Part-Time	Voluntary	Wall body wonder successful.	IT/IS	Project Management - Con	04/08/1994	KY	Coordinator	Male	2621	Asian	Widowed	Fully Meets	3
	Zone A	Part-Time	Voluntary	Visit foot nearly radio treatment.	Sales	Engineers	15/11/1983	KY	Director	Male	44553	Other	Widowed	Fully Meets	3
	Zone C	Full-Time	Unk		Sales	Project Management - Con	12/07/1985	KY	Supervisor	Female	5360	Other	Married	Exceeds	4
	Zone A	Part-Time	Unk		Sales	Field Operations	05/01/1996	TX	Driller	Female	16325	White	Divorced	Exceeds	2
	Zone C	Part-Time	Involuntary	Unit pass office southern break one.	Sales	General - Con	17/02/1964	TX	Technician	Female	43481	Asian	Widowed	Fully Meets	3
	Zone A	Temporary	Retirement	List class mind.	Sales	Engineers	05/12/1958	TX	Specialist	Male	50705	Asian	Widowed	Fully Meets	3
	Zone B	Temporary	Involuntary	Price third parent evening.	Sales	General - Eng	18/09/1992	CO	Technician	Male	5168	Black	Single	Fully Meets	5
	Zone C	Temporary	Resignation	Cause military a sense. Doctor property may.	Sales	Field Operations	08/11/1994	CO	Operator	Male	11765	Other	Single	Exceeds	2
	Zone C	Full-Time	Voluntary	Station another son positive.	Sales	General - Con	15/01/1968	CO	Technician	Male	71071	Other	Divorced	Exceeds	3
	Zone A	Part-Time	Unk		Sales	General - Con	01/07/1947	IN	Foreman	Male	12122	Black	Divorced	Fully Meets	2
	Zone C	Part-Time	Unk		Sales	Fielders	04/07/1982	MA	Engineer	Male	87065	White	Widowed	Fully Meets	4
	Zone C	Full-Time	Unk		IT/IS	General - Con	29/01/1970	KY	Foreman	Male	10415	Hispanic	Married	Needs Improvement	

- **781** employees found to have **employee rating below “3”.**
- Applied conditional formatting on entire dataset to highlight entire row containing employee rating below 3.
- **$Z2 < 3** (assuming Z is employee rating column)

3

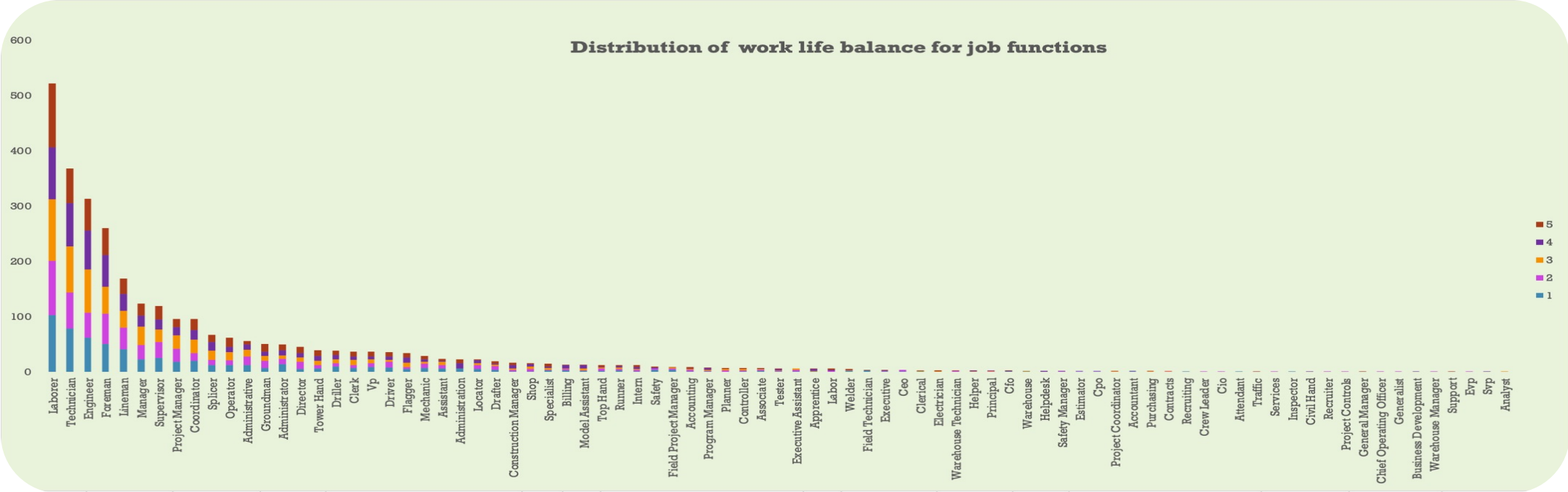
Calculate the average "Satisfaction Score" for male and female employees separately using a pivot table.

Gender	Average of Satisfaction Score
Female	3.005945303
Male	3.042488619
Grand Total	**3.022**

- On average, **male** employees have a **slightly higher satisfaction score** compared to female employees.
- The overall satisfaction score (grand total) falls in between the average scores of male and female employees, suggesting a relatively balanced satisfaction level across genders.

4

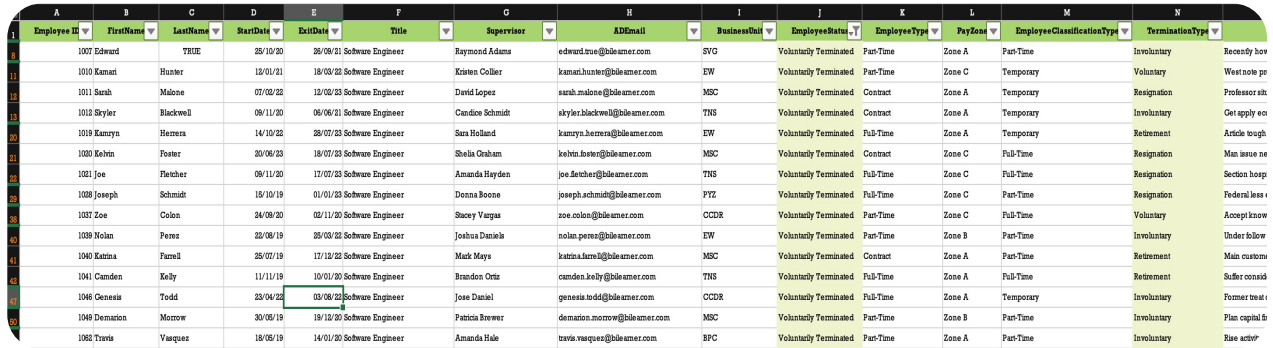
Create a chart to visualize the distribution of "Work-Life Balance Score" for different job functions.



- Job functions, such as **Labourer, Technician, Engineer, and Foreman**, have relatively high counts in the **higher satisfaction score** ranges (4 and 5).

5

Filter the data to display only terminated employees and find out the most common "Termination Type."



Employee ID	FirstName	LastName	StartDate	ExitDate	Title	Supervisor	ADEmail	BusinessUnit	EmployeeStatus	EmployeeType	PayZone	EmployeeClassificationType	TerminationType	
1007	Edward	TRUE	25/10/20	26/09/21	Software Engineer	Raymond Adams	edward.true@bilearner.com	SVG	Voluntarily Terminated	Part-Time	Zone A	Part-Time	Involuntary	Recently how
1010	Kamari	Hunter	12/01/21	18/03/22	Software Engineer	Kristen Collier	kamari.hunter@bilearner.com	EW	Voluntarily Terminated	Part-Time	Zone C	Temporary	Voluntary	West note pr
1011	Sarah	Malone	07/02/22	12/02/23	Software Engineer	David Lopez	sarah.malone@bilearner.com	MSC	Voluntarily Terminated	Contract	Zone A	Temporary	Resignation	Professor sit
1012	Skyler	Blackwell	09/11/20	08/06/21	Software Engineer	Candice Schmidt	skyler.blackwell@bilearner.com	TNS	Voluntarily Terminated	Contract	Zone A	Temporary	Involuntary	Get apply ec
1019	Kamryn	Herrera	14/10/22	28/07/23	Software Engineer	Sara Holland	kamryn.herrera@bilearner.com	EW	Voluntarily Terminated	Full-Time	Zone A	Temporary	Retirement	Article tough
1030	Kelvin	Foster	20/06/23	18/07/23	Software Engineer	Shelia Graham	kelvin.foster@bilearner.com	MSC	Voluntarily Terminated	Contract	Zone C	Full-Time	Resignation	Man issue ne
1021	Joe	Fletcher	09/11/20	17/07/23	Software Engineer	Amanda Hayden	joe.fletcher@bilearner.com	TNS	Voluntarily Terminated	Full-Time	Zone C	Full-Time	Resignation	Section hosp
1028	Joseph	Schmidt	15/10/19	01/01/23	Software Engineer	Donna Boone	joseph.schmidt@bilearner.com	PYZ	Voluntarily Terminated	Full-Time	Zone C	Part-Time	Resignation	Federal less
1037	Zoe	Colon	24/09/20	02/11/20	Software Engineer	Stacey Vargas	zoe.colon@bilearner.com	CCDR	Voluntarily Terminated	Part-Time	Zone C	Full-Time	Voluntary	Accept know
1039	Nolan	Perez	22/08/19	28/03/22	Software Engineer	Joshua Daniels	nolan.perez@bilearner.com	EW	Voluntarily Terminated	Part-Time	Zone B	Part-Time	Involuntary	Under follow
1040	Katrina	Farrell	25/07/19	17/12/22	Software Engineer	Mark Mays	katrina.farrell@bilearner.com	MSC	Voluntarily Terminated	Contract	Zone A	Part-Time	Retirement	Main custom
1041	Camden	Kelly	11/11/19	10/01/20	Software Engineer	Brandon Ortiz	camden.kelly@bilearner.com	TNS	Voluntarily Terminated	Full-Time	Zone A	Full-Time	Retirement	Suffer consid
1046	Genesis	Todd	23/04/22	03/08/22	Software Engineer	Jose Daniel	genesis.todd@bilearner.com	CCDR	Voluntarily Terminated	Full-Time	Zone A	Temporary	Involuntary	Former treat
1049	Demarion	Morrow	30/05/19	19/12/20	Software Engineer	Patricia Brewer	demarion.morrow@bilearner.com	MSC	Voluntarily Terminated	Part-Time	Zone B	Part-Time	Involuntary	Plan capital fi
1062	Travis	Vasquez	18/05/19	14/01/20	Software Engineer	Amanda Hale	travis.vasquez@bilearner.com	BPC	Voluntarily Terminated	Part-Time	Zone A	Part-Time	Involuntary	Rise activ

Count of TerminationType	Termination type				
Employee status	Involuntary	Resignation	Retirement	Voluntary	Grand Total
Terminated for Cause	21	22	10	13	66
Voluntarily Terminated	86	74	76	85	321
Grand Total	**107**	**96**	**86**	**98**	**387**

- Employee who are **voluntarily terminated** has most common **termination type as Involuntary** about **86** out of 321.
- Employee who are **terminated for cause** has most common **termination type as Resignation** about **22** out of 66.

6

Calculate the average "Engagement Score" for each department using a pivot table.

Department type	Average of Engagement Score
Admin Offices	2.925
Executive Office	3.375
IT/IS	3.025581395
Production	2.906435644
Sales	2.990936556
Software Engineering	2.973913043
Grand Total	**2.939666667**

- **Executive Office** has the **highest average** (3.375), while **Production** has a slightly **lower average** (2.906).
- **Admin Offices, IT/IS, Sales, and Software Engineering** fall in between these two extremes.

7

Use VLOOKUP to find the supervisor's name and employee email address for a specific employee.

Enter EmployeeID:	1942
Supervisor Name:	William Thompson
ADEmail ID:	jett.kent@bilearner.com

- **Create a cell** to enter required **employeeID** [AI5]
- Enter formula **=VLOOKUP(AI5,A1:AD3001,7)** to retrieve supervisor name
- Enter formula **=VLOOKUP(AI5,A1:AD3001,8)** to retrieve email address

8

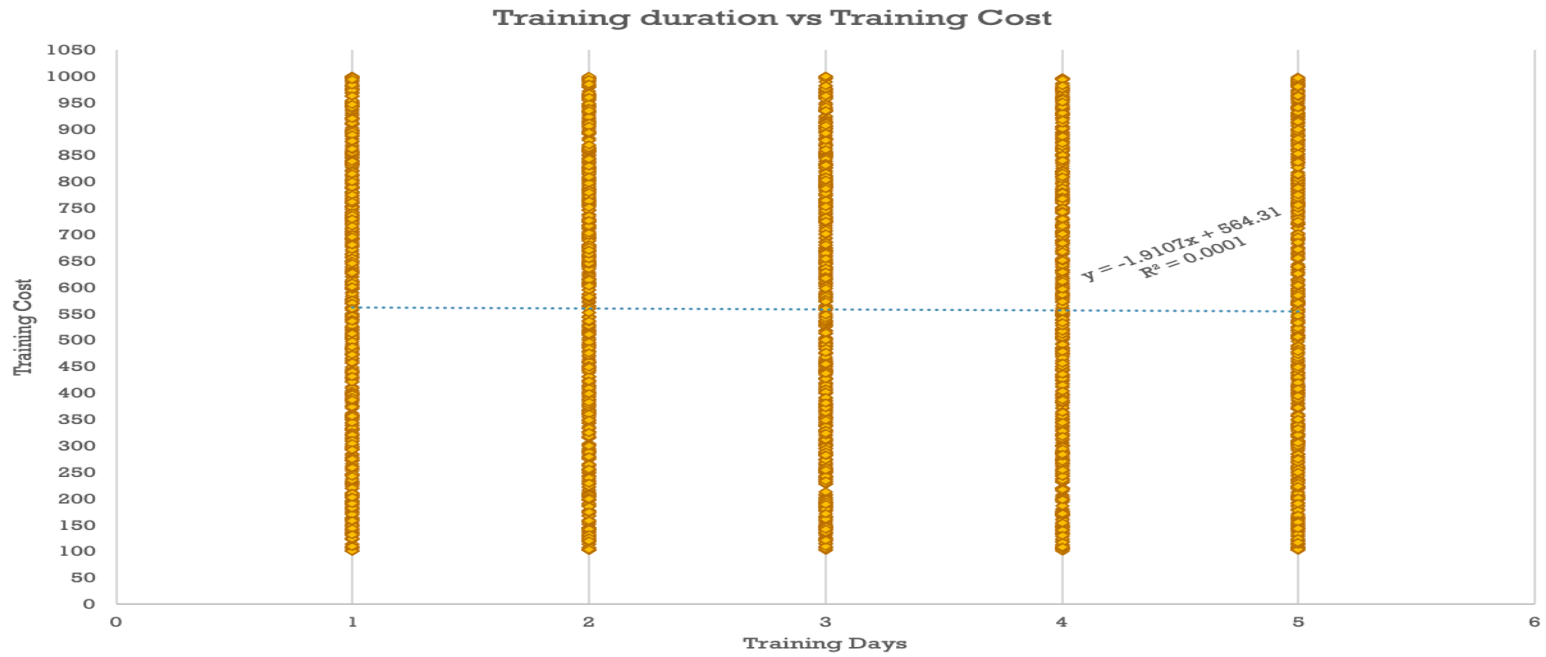
Can you identify the department with the highest average "Employee Rating?"

Departments	Average of Current Employee Rating
Admin Offices	3.025
Production	2.982178218
IT/IS	2.969767442
Sales	2.909365559
Software Engineering	2.904347826
Executive Office	2.791666667
Grand Total	**2.969**

- Department **Admin Offices** found to have **highest average Employee Rating**.

9

Create a scatter plot to explore the relationship between "Training Duration (Days)" and "Training Cost.



- From the equation, **y = -1.9107x + 564.31** and **R^2 value = 0.0001** , it is evident that the linear relationship between the two variable is **very weak**.

10

Build a pivot table that shows the count of employees by "RaceDesc" and "GenderCode."

Count of Employee ID	GenderCode		
RaceDesc	Female	Male	Grand Total
Asian	346	283	629
Black	346	272	618
Hispanic	325	247	572
Other	318	264	582
White	347	252	599
Grand Total	**1682**	**1318**	**3000**

- Highest number of employee found to be **Asian race** (629)
- Highest number of **Female** employees belong to **White**(347), **Asian and black** (346) race respectively.
- Highest number of **Male** employees belong to **Asian** (283) race.

11

Use INDEX and MATCH functions to find the "Training Program Name" for an employee with a specific ID.

Choose Employee Id:	1009
Training Program Name:	Customer Service

- Created **drop down list** to **choose employee ID**.
- Extracted training program name corresponding to the chosen employeeID using the formula **= INDEX(A:I,MATCH(L2,A:A),3)**.

12

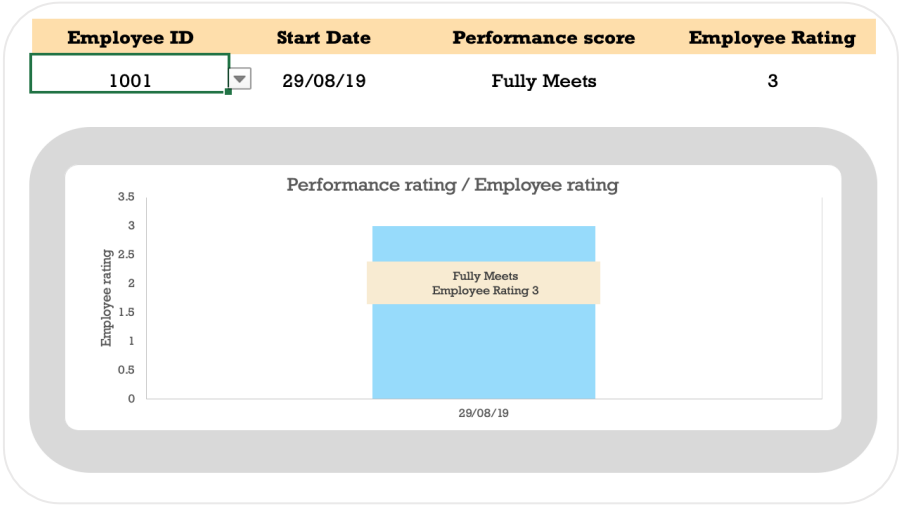
Create a multi-level pivot table to analyze the "Performance Score" by "BusinessUnit" and "JobFunctionDescription."

Count of Performance Score	Performance score				
BusinessUnit/ JobFunction	Exceeds	Fully Meets	Needs Improvement	PIP	Grand Total
NEL	30	251	11	12	304
SVG	46	233	20	5	304
BPC	36	235	24	8	303
EW	39	240	16	7	302
PL	34	241	16	10	301
CCDR	39	234	17	10	300
PYZ	35	228	23	13	299
TNS	41	233	15	8	297
MSC	39	226	20	11	296
WBL	30	240	15	9	294
Laborer	4	39	2	1	46
Technician	6	25	5		36
Engineer	2	30	2	1	35
Foreman	4	22		1	27
Coordinator	3	12			15
Supervisor	1	13			14
Lineman	2	7	1	2	12
Project Manager	3	7			10
Manager	1	8			9
Administrative		6		1	7

- The **Fully Meets** category **dominates in each Business Unit**, indicating that a significant portion of employees meets the expected performance standards.

13

Design a dynamic chart that allows users to select and visualize the performance of any employee over time.

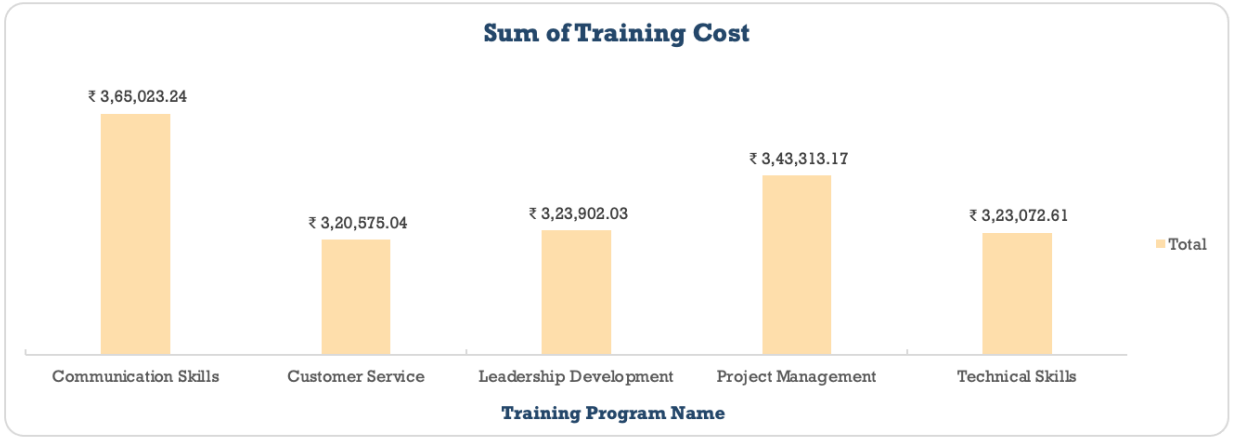


- Created **drop down list** to choose **EmployeeID**.
- Used **=INDEX(Employee_ID:Current_Employee_Rating, MATCH(R3,Employee_ID,0), {2,3,4})** to retrieve date , performance score and employee rating of selected employeeID.
- Created bar chart which measure employee rating and added label which also show performance rating of employee

14

Calculate the total training cost for each "Training Program Name" and display it in a bar chart.

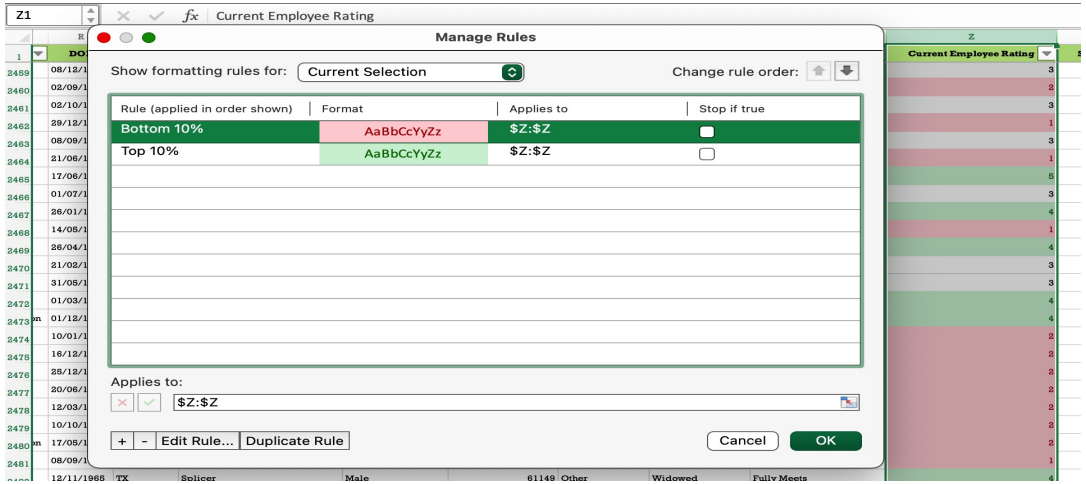
Training Program Name	Sum of Training Cost
Communication Skills	₹ 3,65,023.24
Customer Service	₹ 3,20,575.04
Leadership Development	₹ 3,23,902.03
Project Management	₹ 3,43,313.17
Technical Skills	₹ 3,23,072.61
Grand Total	**₹ 16,75,886.09**



- Training on Communication skills costs the largest about ₹ 3,65,023.24
- Training on customer services costs the smallest about ₹ 3,20,575.04

15

Apply advanced conditional formatting to highlight the top 10% and bottom 10% of employees based on "Current Employee Rating."



- Found that employees with **employee rating 1,2** are **bottom 10%** about 781 employees.
- Employees with **employee rating 4,5** are **top 10%** about 689 employees.

16

Use a calculated field in a pivot table to determine the average "Engagement Score" per year.

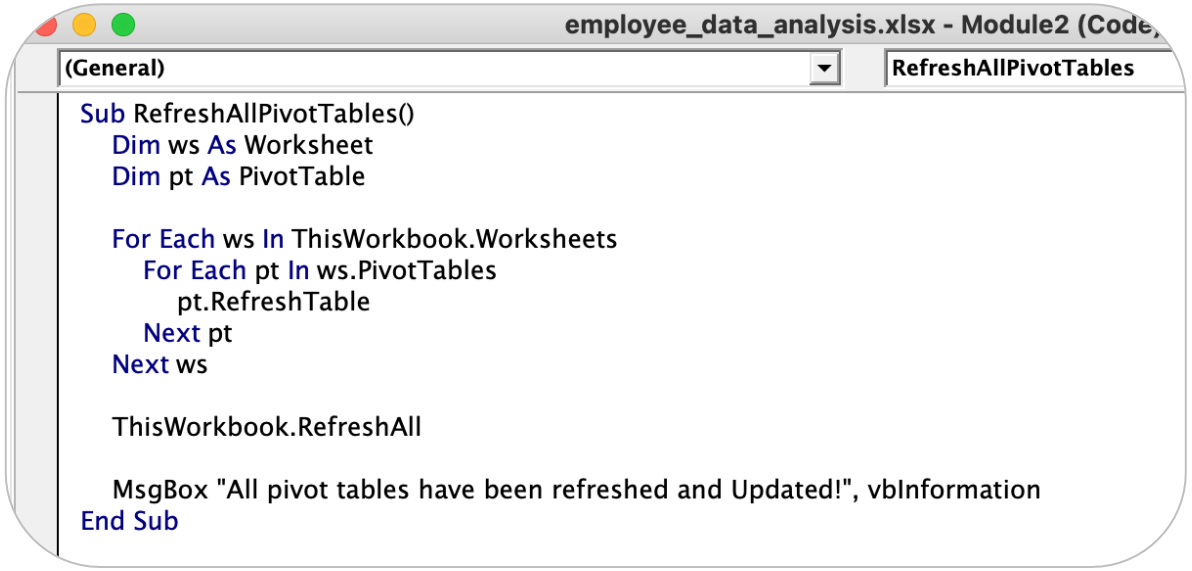
Year	Sum of Employee count	Sum of Engagement Score	calculated_avg_per_year
2018	255	739	2.9
2019	598	1833	3.07
2020	592	1740	2.94
2021	600	1733	2.89
2022	620	1825	2.94
2023	335	949	2.83
Grand Total	**3000**	**8819**	**2.94**

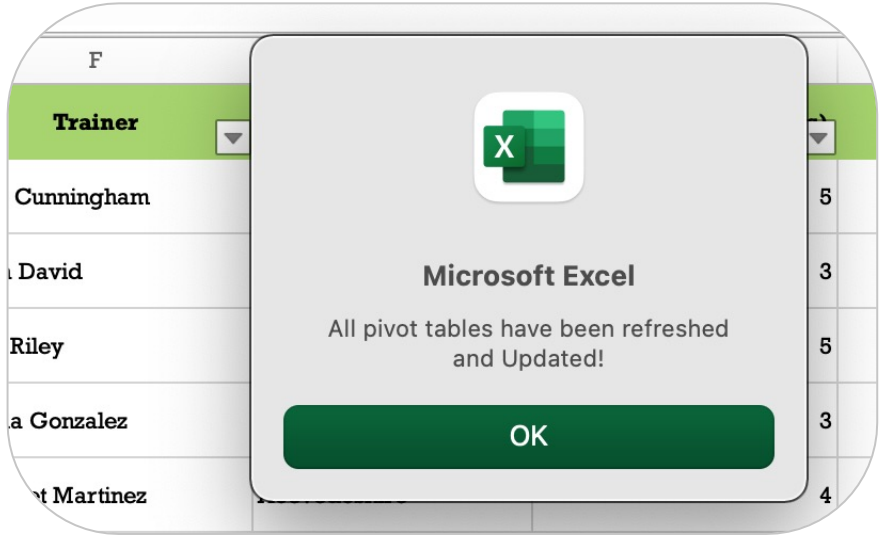
Calculated Field		
Solve Order	**Field**	**Formula**
1	Calculated_average	=ROUND('Engagement Score' /'Employee count',2)

- There is an **increase in Employee count from 2018 to 2019**, and then it remains relatively stable in the following years.
- The Engagement Score **peaks in 2019** approximately 3.07.

17

Can you build a macro that automates the process of updating and refreshing all pivot tables in the workbook?

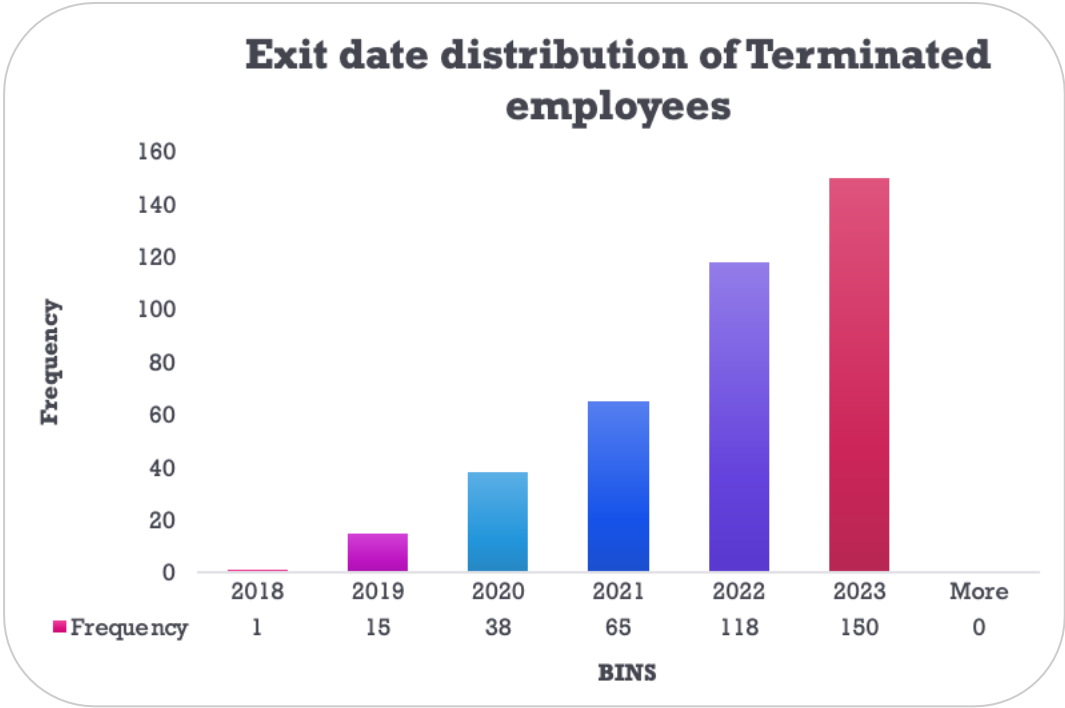




- Two nested loops to iterate through worksheets and pivot tables.
- **pt.RefreshTable** to refresh each individual pivot table.
- **ThisWorkbook.RefreshAll** for refreshing the entire workbook.

18

Create a histogram to understand the distribution of "ExitDate" for terminated employees.



- The number of employees **terminated statuses increases significantly** in subsequent years.

19

Utilize the SUMPRODUCT function to calculate the total training cost for employees in a specific location.

	G	H	I	J	K	L
1	**Location**	**Training Duration(Days)**	**Training Cost**			
2	Aaronborough	5	841.22		CHOOSE LOCATION:	Aaronborough
3	Aaronburgh	3	633.96		TOTAL TRAINING EXPENDITURE:	4206.1
4	Aaronstad	5	939.02			
5	Abbottton	3	609.01			
6	Acevedoshire	4	443.55			
7	Adamborough	4	444.22			
8	Adammouth	2	738.65			
9	Adammouth	2	510.12			
10	Adamsberg	3	962.45			
11	Adamsmouth	4	261.13			
12	Adamsmouth	4	106.21			
13	Aguirreland	4	881.71			
14	Alexanderberg	2	494.29			
15	Alexanderchester	5	346.93			

- Created **drop down list** using data validation to **choose specific location** [L2]
- Utilized **=SUMPRODUCT((G2:G3001 = L2)*H2:H3001*I2:I3001)** to return total training cost for employees

EMPLOYEE ANALYSIS DASHBOARD

EMPLOYEE ANALYSIS DASHBOARD

TOTAL	FEMALE EMPLOYEES	MALE EMPLOYEES	ACTIVE EMPLOYEES	TERMINATED EMPLOYEES	AVERAGE EMPLOYEE RATING
3000	1682	1318	2458	387	2.969

GenderCode
- Female
- Male

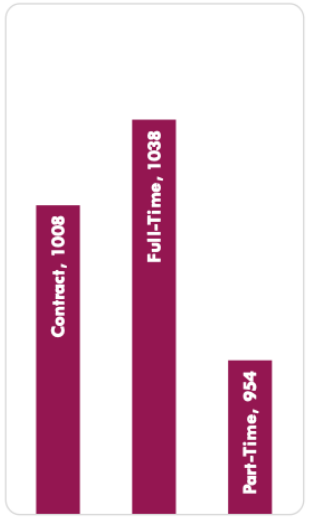
Department Type
- Admin Offices
- Executive Office
- IT/IS
- Production
- Sales
- Software Engineering

StartDate
2018 - 2023 YEARS
2018 2019 2020 2021 2022 2023

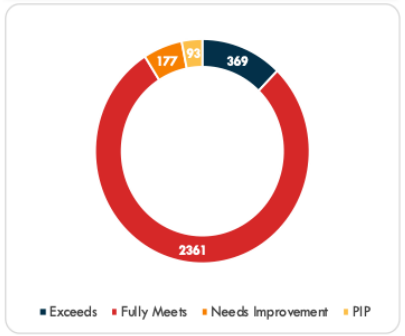
TOP PERFORMING EMPLOYEES

Employee ID	Employee Name	GenderCode	EmployeeClassificationType	BusinessUnit	DepartmentType	Location	Performance Score	Current Employee Rating
2103	Nola Sellers	Female	Full-Time	MSC	Production	MA-49149	Exceeds	5
2148	Joel Koch	Female	Full-Time	PL	Production	MA-75427	Exceeds	5
2187	Amaris Kirk	Female	Full-Time	PL	Production	MA-31571	Exceeds	5
3047	Francesca Lowe	Female	Full-Time	PYZ	Production	MA-33237	Exceeds	5
2183	Bria Bush	Female	Full-Time	SVG	Production	MA-81415	Exceeds	5
2121	Jenna Cochran	Female	Full-Time	TNS	Production	MA-12265	Exceeds	5
2109	Zain Tanner	Female	Part-Time	BPC	Production	MA-51689	Exceeds	5
2211	Leonara Lindsay	Female	Temporary	WBL	IT/IS	CT-6070	Exceeds	5
2119	Marcos Carey	Female	Temporary	EW	Production	MA-72491	Exceeds	5
3376	Maren Anderson	Female	Temporary	PL	Production	MA-7445	Exceeds	5
2118	Dale Mendoza	Female	Temporary	SVG	Production	MA-41529	Exceeds	5
2920	Caden Silva	Male	Part-Time	MSC	Production	MA-80589	Exceeds	5
3656	Francesca Mcmahon	Male	Part-Time	TNS	Production	MA-72523	Exceeds	5
3363	Trevor Barry	Male	Temporary	MSC	Production	MA-31018	Exceeds	5
3382	Romeo Gordon	Male	Temporary	TNS	Production	MA-59153	Exceeds	5

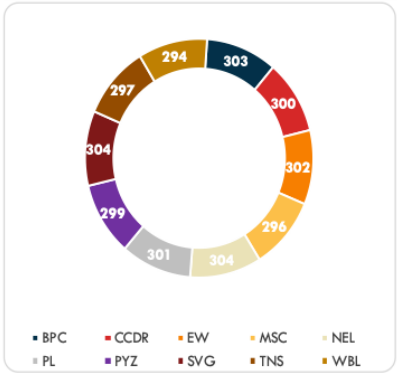
HEADCOUNT PER EMPLOYEE



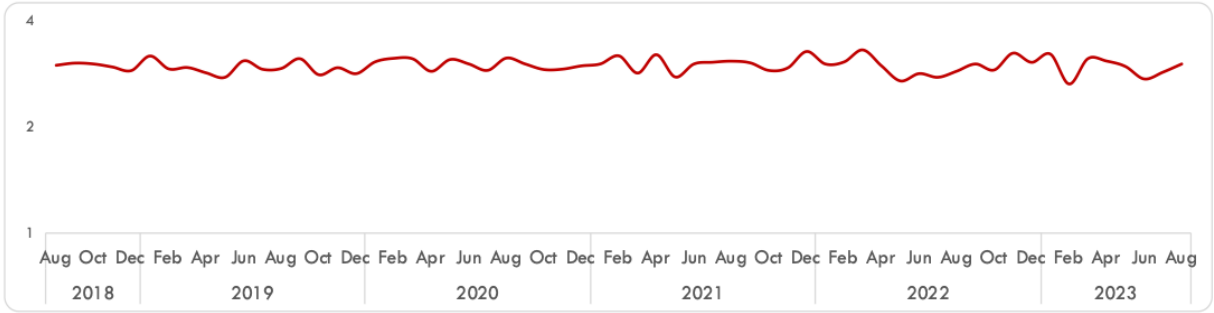
PERFORMANCE SCORE



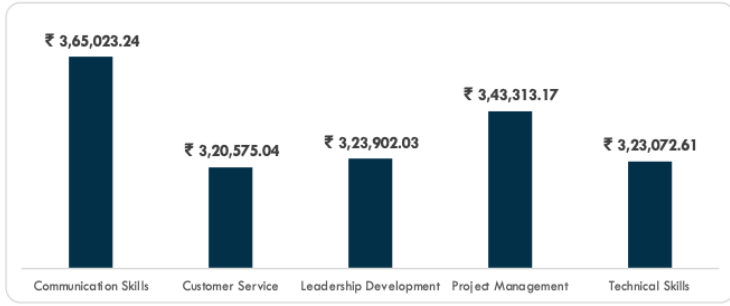
HEADCOUNT PER BUSINESS UNIT



AVERAGE EMPLOYEE RATING



TOTAL TRAINING COST PER TRAINING PROGRAM



MS – EXCEL FUNCTIONS AND METHODS UTILIZED

1. Filtering
2. Sorting
3. Conditional Formatting
4. Pivot tables
5. Multi level Pivot Tables
6. Calculated fields
7. INDEX Functions
8. MATCH Function
9. Dynamic charts
10. Pivot Charts
11. Dashboard
12. Slicers

THANK YOU

Thank you, PSYLIQ, for the invaluable opportunity to not only apply my Excel skills but also for fostering an environment that encourages learning. The chance to delve into creating dynamic pivot tables, incorporating calculated fields, and crafting dashboards in Excel has been both enriching and rewarding.