HR Analytics – Managerial Aspects

Objective

After completing this chapter, you should be able to describe

- The importance of analytics in today's technology- intensive and information-driven economy
- The requirements pertaining to HR analysis and analytics
- To apply practical knowledge in the HR cases using MS Excel

Introduction

Many of us feel overwhelmed in our modern world of Big Data and astonishingly speedy technology. The general public rolls its eyes when data scientists become graceful about the value of analytics. The ordinary individual feels terribly uneducated, helpless, blind, and lost without a doctorate degree in statistical analysis, particularly in predictive analytics. Ironically, analytics is logical and understandable. It merely allows computers to use their manipulation capabilities to provide insightful information. From the urge to analyse data to a clear, usable output, this chapter will guide you step-by-step.

Dealing with the same issue again while making little progress is a waste of time and resources. There is another option available that will prevent wasteful, expensive resource investments. The wisest course of action is to spend some time thinking through the issue before taking action. If we gather information about what occurred (descriptive analysis), examine it in terms of what caused it and what will probably continue if left untreated (predictive analysis), and then create a solution to solve it, you will probably be able to prevent the issue from occurring again (prescriptive analysis). The best technique to handle is in this manner. Additionally, it gives you more time to focus on being productive, or working to grow the organisation.

WHAT IS ANALYTICS?

The introduction of predictive analytics is possibly the most useful tool and largest

promise for organisational management. The intersection of art and science is analytics. We learn how to view the world through the arts. The sciences show us how to carry out a task. When you mention "analytics," most people instantly think of statistics. This is untrue. Statistics are crucial, but only once we have some understanding of how the various components of the problem interact and relate to one another. Analytics consists of three components: a conceptual framework, a logistical flow, and a collection of statistical procedures.

The main function of human resources (HR) or human capital analytics is as a communication tool. It combines information from several sources, including surveys, records, and operations, to provide a coherent, useful picture of the present situation and possible futures. This method of improving decision-making is evidence-based. Simply put, this common word refers to the collection of largely objective facts and tangentially linked subjective data.

Analytics is divided into three levels:

Descriptive

Traditional HR measures (such as turnover rate, time to fill a position, cost per recruit, quantity hired and trained, etc.) are primarily efficiency metrics. Here, process improvement and cost reduction are the main priorities. Relationships, as well as present and past data trends, are revealed and described through descriptive HR analytics. The base of your analytics endeavour is this. Examples include workforce segmentation, data mining for fundamental trends, dashboards and scorecards, periodic reports, and dashboards and scorecards.

Predictive

Numerous methods (statistics, modelling, data mining) fall under the category of predictive analysis, which uses historical and present data to forecast the future. It has to do with prospective influence and probability. It includes, for instance, models that increase the likelihood that the proper candidates will be chosen for hiring, training, and promotion.

Prescriptive

Beyond making forecasts, prescriptive analytics provides decision-making alternatives and workforce optimisation strategies. It is used to analyse complicated data to make predictions, offer alternatives for making decisions, and demonstrate different business consequences. It includes, for instance, methods for analysing the financial effect of alternative learning investments (uncommon in HR).

The procedure begins with straightforward HR metrics reporting and progresses all the way to prescriptive modelling of business practises. Although a company's lifeblood is its financial capital (cash) and economic capital (intangible assets), it is human capital (people) that uses cash and makes the most of intangible assets to boost performance. The value addition increases dramatically when you go from descriptive to prescriptive language.

How do we manage talent more effectively? is the central management question. Compared to material goods, human behaviour is far more complicated and unpredictable. Many managers have shifted their attention to more stable assets as a result of this volatility and erratic behaviour. However, physical assets like equipment lack the ability to create value and are therefore inert.

HR Analytics

It enables an organization to gauge the impact of a variety of HR metrics on overall business performance and make important decisions based on data. In simple words, HR analytics is a data-driven approach toward Human Resources Management. The best scientific HR analytics definition is given by Heuvel & Bondarouk. According to them, *HR analytics is the systematic identification and quantification of the people drivers of business outcomes* (Heuvel & Bondarouk, 2016)

In the history, Human Resource Management has grown noticeably. It has shifted from an operational discipline towards a supplementary strategic approach. The popularity of the term Strategic Human Resource Management (SHRM) exemplifies this. The data-driven approach that characterizes HR analytics is in line with this expansion.

ANALYTIC CAPABILITIES

There are two ways to gaze at data: structurally and unstructured. Unstructured data often consists of economic or less tangible data, whereas structured data is related to financial data. Figure 1.1 illustrates the intersection between analytics and data. We have concentrated on structured data—costs, process time cycles, and quantities—ever since the industrial revolution began 200 years ago. However, at least 90% of the data that is now generated is unstructured, non-numeric, and consists of images, text, chat, comments, like, share, gif, emoji and audio, according to IBM.

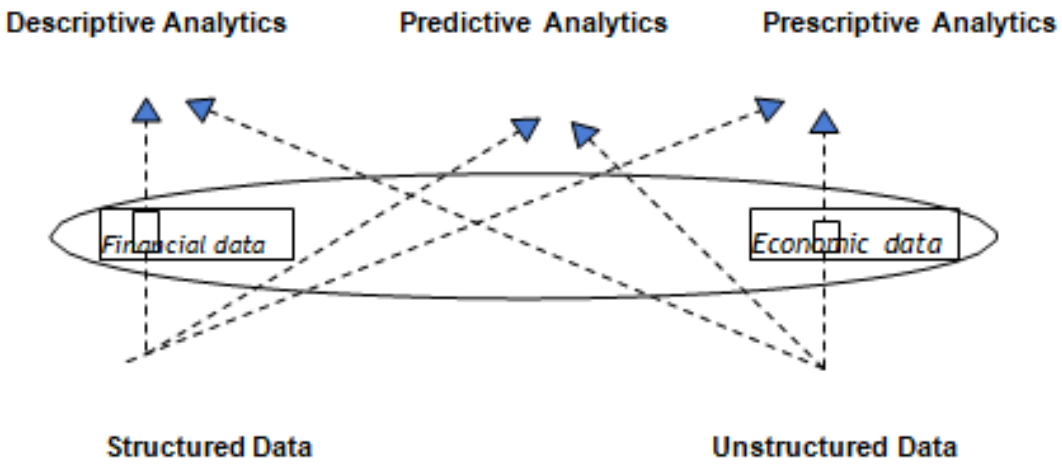


Figure 1.1 Analytic Paths

The amount of unstructured data will inevitably increase as social networking continues to grow fast. Structured and unstructured data can really be combined. It will be called as hybrid data today. Hybrid data will be necessary for future analysis, but it will also make decision process very difficult.

Analysis is critical because of this situation. There is no other way for us but logical investigation and statistical action to understand what is not immediately obvious when a situation is a complicated blend of objective facts and subjective views

Analysis begins with descriptive data that tells us what has occurred till date. Prediction and prescription, however, focus on what could or ideally might happen and how to make it so. The three levels are all required. Throughout the 20th century, we mentally extended descriptive data into the future using presumptive tendencies. When the market remained steady, this was to some extent acceptable. The market is anything but steady today and tomorrow. Prediction is therefore very essential for any business that wants to maintain or increase its market share and profitability in the new millennium.

Change is as incessant in the HR or human capital sector as it is in the production, finance, or marketing sectors. As company requirements and market conditions alter, concerns with labour supply and prices, skill development, leadership, engagement, and retention always shift.

A recruiting strategy from last year may become ineffective over night due to changes in the market scenario, rivals' actions, new technology, and irrational consumers. Recently, in India, in August 2023, the rates of tomato increased and the marketing strategy had to change.

Thus the labour paradigm was completely upended in the first ten years of the twenty-first century by the dot-com disaster and the liquidity crisis. Continued technological advancements, as well as new client expectations or regulatory changes, render yesterday's skill requirements obsolete. Acquisition and withholding of mission-critical skills become a worry as the economy grows. Because of these and other human capital management variables, analytics must be used to streamline our labour picture and forecast our optimal course of action. We drop market share and a competitive edge if we hang around to see what the competitor does and wait for their outcomes.

DATA ANALYSIS LEVELS

There is a structure to analytics that is more than simply running a statistical analysis.

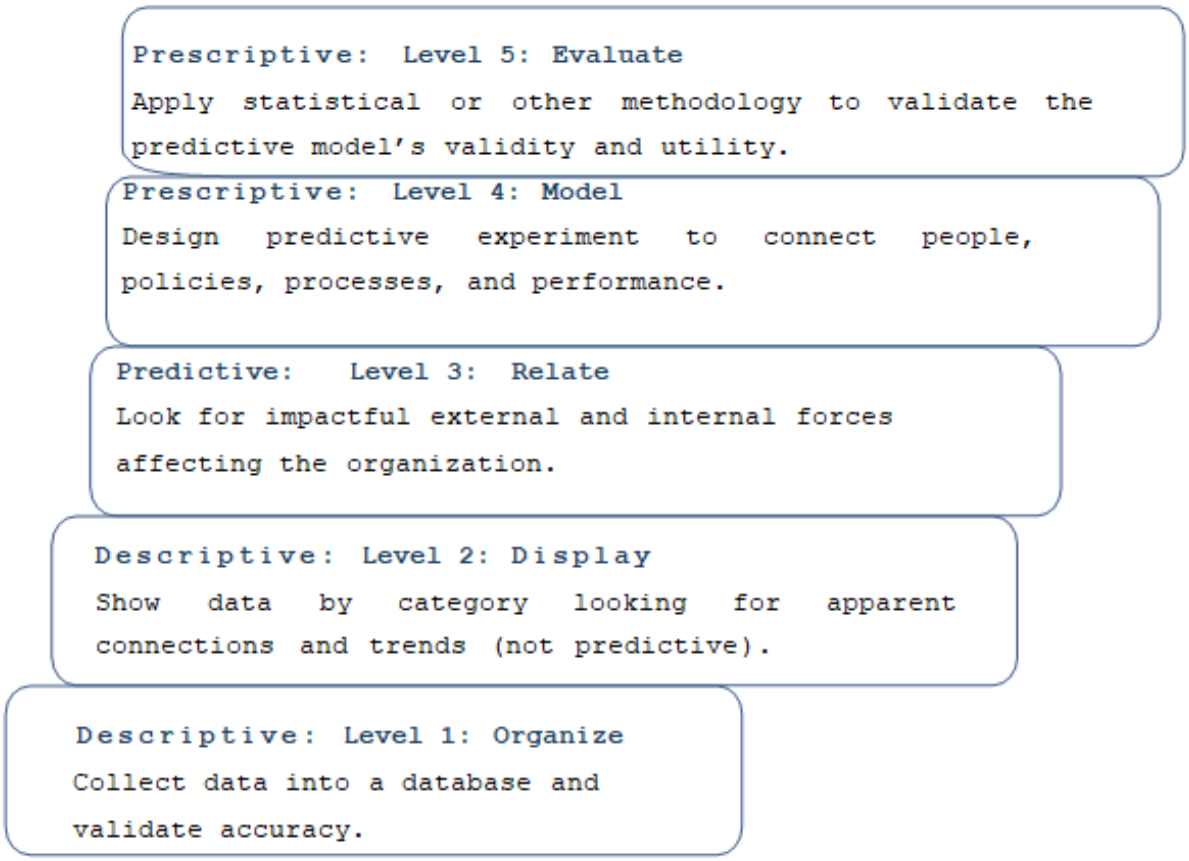


Figure 1.2 Data Analysis Levels

Level 1: Organizing

The five-step approach for this routine is given in Figure 1.2. The first phase, which is frequently a big issue, is gathering and organising the necessary human capital data. The majority of business databases were primarily created for accounting. Predictive modelling with statistical techniques is the second aspect of analytics and the one that is most frequently considered. Applications for production, sales/marketing/advertising, and research & development were afterwards created. In the beginning, the HR department mostly dealt with personnel records. Around 1970, the first HR information systems became available. Training and development applications later appeared, as well as applicant tracking systems and compensation and benefit plans, but these separate programmes were hardly ever integrated. The bulk of the packs just kept records and counted volume and costs. Almost none had any predictive capabilities. That is why today it is so expensive and time consuming to install a new program.

Level 2: Displaying

Many businesses have created dashboards that format data for various internal consumers after gathering basic data. The dashboards have the ability to display performance levels using red, yellow, and green colour coding. This is a development of descriptive information. It displays the status of things right now and historical tendencies. It is the basis for reporting the past. It only alludes to the future in hazy, unsupported generalizations. As a result of the absence of underlying circumstances and projections for the future, the trends cannot be extended. Dashboards' main benefit is that smart and resourceful users may find out opportunities for making preferred improvements.

Level 3: Relating

At the related level, attention shifts from the recorded data inward to how it relates to other data or occurrences. Benchmarking your data against that of other firms is now the most accepted practice. The caution with benchmarking is to make sure the businesses you compare yourself to are indeed comparable to you. Unless you are in close communication with them and can compare item definitions, this is not a simple task. Certain questions can be raised for probable answers.For example, Is a company's outstanding performance in employee development attributable to excellent hiring, dedication to development, or significant financial investment? Speaking with the benchmarked company directly is the only method to get an answer to that. Surveydata that compares outcomes across many companies can be of no value and often can lead to bogus assumptions.

Three types of capital

The understanding that an organization has three types of capital—human, structural, and relational—is another aspect of data analysis.

- The employees are undoubtedly the human capital.
- The assets that are owned, such as buildings, machinery, software, patents, and

copyrights, are considered structural capital.

- Relational capital refers to the human links that exist within a corporation as well as between employees and other parties. They might be members of the local administration or community leaders.

These are illustrated in Exhibit 1.4 as examples. In actuality, a change in one category of capital assets frequently has an impact on another category. These links are what make asking questions at both the macro and local levels crucial.

Level 4: Modeling

You have now clearly transitioned from the descriptive to the predictive level. What has occurred up to this point has been conveyed by the descriptive-level data. But now that we must plan for tomorrow, we must create a model of what we wish to alter. Let's imagine that you have an agreement to create and that you need to do it as soon as feasible. By working with one of the many assessment suppliers, you may have made an investment in a formal leadership evaluation programme. This provides you with a comprehensive understanding of the present skills of your future leaders. What does this have the potential to lead to?

Level 5: Evaluating

Prediction provided you with your ideal future model. What is the greatest approach to achieve that right now? A prescription is required. Similar to how a doctor's diagnosis and recommendation interact, predictive and prescriptive analytics. The doctor promises you a cure if you take this medication or adhere to a specific routine. You can learn what is required to verify the forecast by reading the prescription. You can see what the medication is and when it should be used. The model you created for company is definitely going to link up people, policies, goods, and processes in order to increase performance. The model foresaw certain patterns or interactions that work together to get the intended result.

When you complete the experiment, you can check or measure the amount or degree of change attained. In addition, the model gives you a new routine that should continue to improve outcomes.

Case: Study of Attrition

One of the most common uses of analytics is the study of attrition. The reason is that analytically, it is an easy application, and most of the information needed is already in the HR database. The employee records contain raw data on the key attributes;

- date of hire
- performance reviews
- any status changes (e.g., promotions, salary increases, or various jobs held)
- date of departure

There is a rich research database on turnover that yields theories on reasons for staying and leaving. However, as yet, very few attempts have been made to connect turnover or retention changes with business outcomes.

The usual way to start an analysis is by looking for patterns within job groups. You may be interested in a technical or professional group, people with long tenure, or even operators if the market is tight for jobs such as assemblers, warehouse pickers, or truck drivers.

Case: Data Analysis

Business Problem & Datasets

In this problem, you will be taking up the role of the HR Manager at an up and coming tech start-up in Silicon Valley.

You will be focusing on:

1 Using data pertaining to industry and competitors for the purpose of benchmarking and workforce planning regarding:
   - o Diversity
   - o No-shows at interviews

2 Using internal data in order to analyse, understand and manage the performance of your workforce while reducing attrition

Current scenario*: Openspace is an up and coming tech start-up in the silicon valley. It has been deemed to be a promising player in the field of AI and in tandem with that, one of its most precious resources is their manpower. You have recently joined Openspace as the HR manager*

and have been tasked with looking after the workforce requirements and satisfaction of the employees.

Now, in a survey, 83% of millennials reported higher levels of engagement when they believed their company fosters an inclusive culture. You also feel that diversity adds a lot to the productivity and long-term performance of the entire organization.

As the HR manager, you decide that your first task is going to be to analyse the industry data in order to benchmark the job category-wise diversity levels in terms of gender and race.

Having done that- and gotten an idea of the industry benchmarks pertaining to diversity, you figure out the workforce requirements for your company and invite applications for the same. But to your disappointment, even after receiving some inspiring applications, a lot of the candidates do not show up for interviews. You decide to analyse the industry data and figure out the benchmarks regarding no-shows for interviews so that you can understand and handle the problem better.

Finally, after sufficient staffing, your focus is now on understanding and improving the performance of your employees. For this purpose, you will be looking at internal data and figuring out the different factors that are likely to impact the performance of the employees. Lastly, you now want to retain your high-performing employees and decide to conduct an analysis pertaining to the same.

In accordance with the tasks, in this case, you will need to use three datasets for HR analysis:

1. **Diversity Data**

Name	Description
race	Race of the employees
gender	Gender of the employees
job_category	Type of job an employee does
count	Number of employees

Sample dataset: Diversity Data

	race	gender	job_category	count
2	Hispanic_or_Latino	male	Managers	1
3	Hispanic_or_Latino	male	Professionals	7
4	Hispanic_or_Latino	female	Managers	1
5	Hispanic_or_Latino	female	Professionals	5
6	Hispanic_or_Latino	female	Administrative sup	5
7	White	male	Executives	9
8	White	male	Managers	30
9	White	male	Professionals	61
10	White	male	Administrative sup	2
11	Black_or_African_American	male	Professionals	2
12	Asian	male	Managers	5
13	Asian	male	Professionals	23
14	Asian	male	Administrative sup	3
15	American_Indian_Alaskan_Native	male	Professionals	1
16	Two_or_more_races	male	Professionals	4
17	White	female	Executives	7
18	White	female	Managers	18
19	White	female	Professionals	37
20	White	female	Administrative sup	22
21	Black_or_African_American	female	Professionals	2
22	Black_or_African_American	female	Administrative sup	1
23	Native_Hawaiian_or_Pacific_Islander	female	Managers	1
24	Asian	female	Executives	1
25	Asian	female	Managers	6

2. Interview Data

Name	Description
Client	Name of the company
Industry	The industry the client company belongs to
Location	Current location of the candidate
Position	Position for which the candidate is to be interviewed
Skillset	Skill set the client wants
Interview_Type	The type of interview
Name(CandID)	Candidate unique identifier
Gender	Gender of the candidate
Interview_Venue	Location of the interview
Candidate_native_loc	Candidate native location
Ob_Attendance	Actual attendance record of the interview
Marital	Marital status of the candidate

Sample dataset: Interview Data

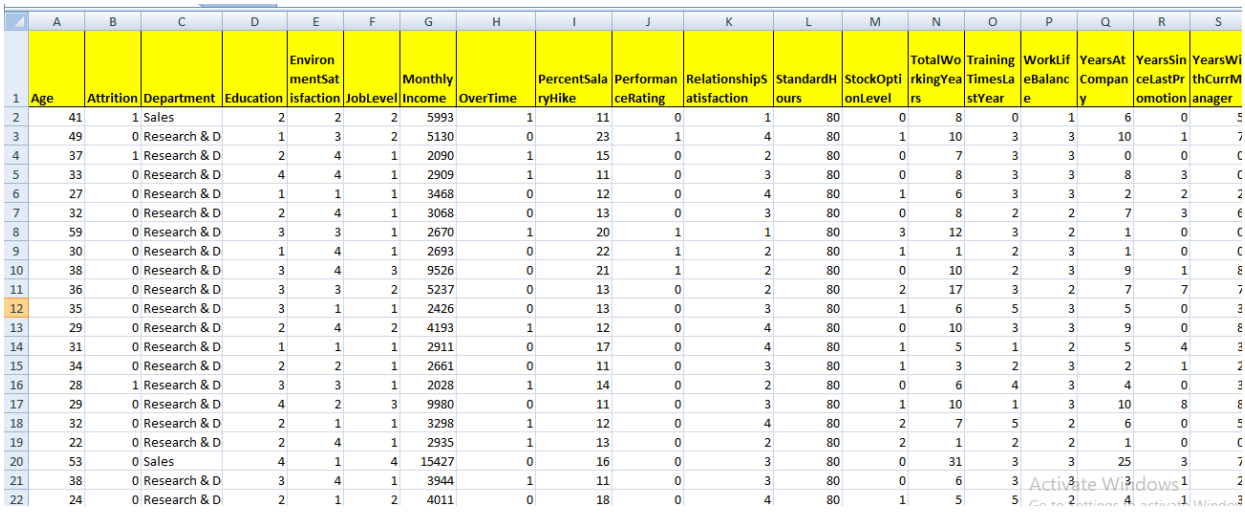
	Client	Industry	Location	Position	Skillset	Interview_Type	Name(Cand ID)	Gender	Interview_Venue	Candidate_native_loc	Ob_Attendance	Marital
2	Hospira	Pharmaceuticals	Chennai	Production- Sterile	Routine	Scheduled Walkin	Candidate 1	Male	Hosur	Hosur	0	Single
3	Hospira	Pharmaceuticals	Chennai	Production- Sterile	Routine	Scheduled Walkin	Candidate 2	Male	Hosur	Trichy	0	Single
4	Hospira	Pharmaceuticals	Chennai	Production- Sterile	Routine	Scheduled Walkin	Candidate 3	Male	Hosur	Chennai	0	Single
5	Hospira	Pharmaceuticals	Chennai	Production- Sterile	Routine	Scheduled Walkin	Candidate 4	Male	Hosur	Chennai	0	Single
6	Hospira	Pharmaceuticals	Chennai	Production- Sterile	Routine	Scheduled Walkin	Candidate 5	Male	Hosur	Chennai	0	Married
7	Hewitt	IT	Gurgaon	Selenium testing	Routine	Scheduled Walkin	Candidate 6	Male	Gurgaon	Gurgaon	1	Single
8	Hewitt	IT	Gurgaon	Selenium testing	Routine	Scheduled Walkin	Candidate 7	Male	Gurgaon	Gurgaon	1	Single
9	Hewitt	IT	Gurgaon	Selenium testing	Routine	Scheduled Walkin	Candidate 8	Female	Gurgaon	Noida	1	Single
10	Hewitt	IT	Gurgaon	Selenium testing	Routine	Scheduled Walkin	Candidate 9	Male	Gurgaon	Delhi /NCR	1	Single
11	Hewitt	IT	Gurgaon	Selenium testing	Routine	Scheduled Walkin	Candidate 10	Female	Gurgaon	Delhi /NCR	0	Single
12	UST	IT	Bangalore	Dot Net	Routine	Scheduled Walkin	Candidate 11	Male	Bangalore	Cochin	1	Single
13	UST	IT	Bangalore	Dot Net	Routine	Scheduled Walkin	Candidate 12	Female	Bangalore	Trivandrum	0	Single

3. Performance and Attrition Data

Name	Description
Age	Age of the employee
Attrition	Did the employee leave the company? (Binary categorical variable)
Department	The employee's department
Education	The employee's education
EnvironmentSatisfaction	The employee's satisfaction with the environment
JobLevel	The employee's job level
MonthlyIncome	The employee's monthly income
OverTime	The amount of overtime served by employee (0: low and 1: high)
PercentSalaryHike	The percentage salary hike given to the employee
PerformanceRating	Identifier for High Performers (High performer=1 and average performers =0)
RelationshipSatisfaction	The employee's satisfaction with the colleagues/manager
StandardHours	The employee's standard work hours
StockOptionLevel	Does the employee have stock options
TotalWorkingYears	The employee's total work experience
TrainingTimesLastYear	How many times has the employee undergone training
WorkLifeBalance	Does the employee have work-life balance?

Name	Description
YearsAtCompany	The number of years the employee has worked in the company
YearsSinceLastPromotion	The number of years since the last promotion of the employee
YearsWithCurrManager	The number of years the employee has worked under their current manager

Sample dataset: Performance and Attrition Data



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Age	Attrition	Department	Education	EnvironmentSatisfaction	JobLevel	MonthlyIncome	OverTime	PercentSalaryHike	PerformanceRating	RelationshipSatisfaction	StandardHours	StockOptionLevel	TotalWorkingYears	TrainingTimesLastYear	WorkLifeBalance	YearsAtCompany	YearsSinceLastPromotion	YearsWithCurrManager
2	41	1	Sales	2	2	2	5993	1	11	0	1	80	0	8	0	1	6	0	5
3	49	0	Research & D	1	3	2	5130	0	23	1	4	80	1	10	3	3	10	1	7
4	37	1	Research & D	2	4	1	2090	1	15	0	2	80	0	7	3	3	0	0	0
5	33	0	Research & D	4	4	1	2909	1	11	0	3	80	0	8	3	3	8	3	0
6	27	0	Research & D	1	1	1	3468	0	12	0	4	80	1	6	3	3	2	2	2
7	32	0	Research & D	2	4	1	3068	0	13	0	3	80	0	8	2	2	7	3	6
8	59	0	Research & D	3	3	1	2670	1	20	1	1	80	3	12	3	2	1	0	0
9	30	0	Research & D	1	4	1	2693	0	22	1	2	80	1	1	2	3	1	0	0
10	38	0	Research & D	3	4	3	9526	0	21	1	2	80	0	10	2	3	9	1	8
11	36	0	Research & D	3	3	2	5237	0	13	0	2	80	2	17	3	2	7	7	7
12	35	0	Research & D	3	1	1	2426	0	13	0	3	80	1	6	5	3	5	0	3
13	29	0	Research & D	2	4	2	4193	1	12	0	4	80	0	10	3	3	9	0	8
14	31	0	Research & D	1	1	1	2911	0	17	0	4	80	1	5	1	2	5	4	3
15	34	0	Research & D	2	2	1	2661	0	11	0	3	80	1	3	2	3	2	1	2
16	28	1	Research & D	3	3	1	2028	1	14	0	2	80	0	6	4	3	4	0	3
17	29	0	Research & D	4	2	3	9980	0	11	0	3	80	1	10	1	3	10	8	8
18	32	0	Research & D	2	1	1	3298	1	12	0	4	80	2	7	5	2	6	0	5
19	22	0	Research & D	2	4	1	2935	1	13	0	2	80	2	1	2	2	1	0	0
20	53	0	Sales	4	1	4	15427	0	16	0	3	80	0	31	3	3	25	3	7
21	38	0	Research & D	3	4	1	3944	1	11	0	3	80	0	6	3	3	3	1	2
22	24	0	Research & D	2	1	2	4011	0	18	0	4	80	1	5	5	2	4	1	3

You need to use these datasets and perform analysis using a tool of your choice (excel or python) in order to answer the following questions.

Analysis to be performed on the dataset;

The following types of analysis can be done using the data set.

- Diversity Analysis
- Recruitment Analysis
- Performance Analysis
- Attrition Analysis

Question 1

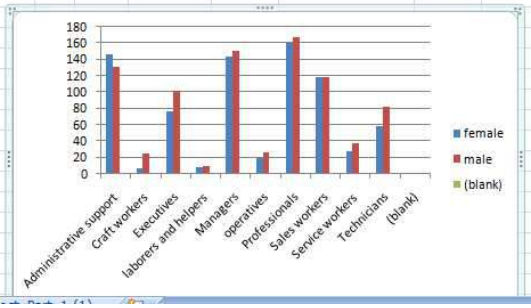
So far the company has been hiring on a severely need-to-need basis majorly through references. This has led to some questions around the diversity policy in your company. Therefore, you have decided to analyse the different job categories and their accompanying diversity profiles with the hope of making every role more inclusive.

1.1 Evaluate diversity in gender across various job profiles. Which role(s) has the highest percentage of males and females respectively in the workforce? Which role is seen to have the most gender diversity?

Answer 1.1 : Sales workers have highest percentage of males and females under the respective workforce i.e. 50% : 50% . Sales Workers have almost 50:50 ratio of male and females in their respective workforce and have highest gender diversity.

Row Labels	female	male	(blank)	Grand Total
Administrative support	146	131		277
Craft workers	7	25		32
Executives	77	102		179
laborers and helpers	8	10		18
Managers	144	151		295
operatives	19	26		45
Professionals	160	168		328
Sales workers	118	119		237
Service workers	28	37		65
Technicians	59	82		141
(blank)				
Grand Total	**766**	**851**		**1617**

Row Labels	female		male		Grand Total
Administrative suppc	146	52.71%	131	47.29%	277
Craft workers	7	21.88%	25	78.13%	32
Executives	77	43.02%	102	56.98%	179
laborers and helpers	8	44.44%	10	55.56%	18
Managers	144	48.81%	151	51.19%	295
operatives	19	42.22%	26	57.78%	45
Professionals	160	48.78%	168	51.22%	328
Sales workers	118	49.79%	119	50.21%	237
Service workers	28	43.08%	37	56.92%	65
Technicians	59	41.84%	82	58.16%	141
(blank)					
Grand Total	766		851		1617



Question 2:

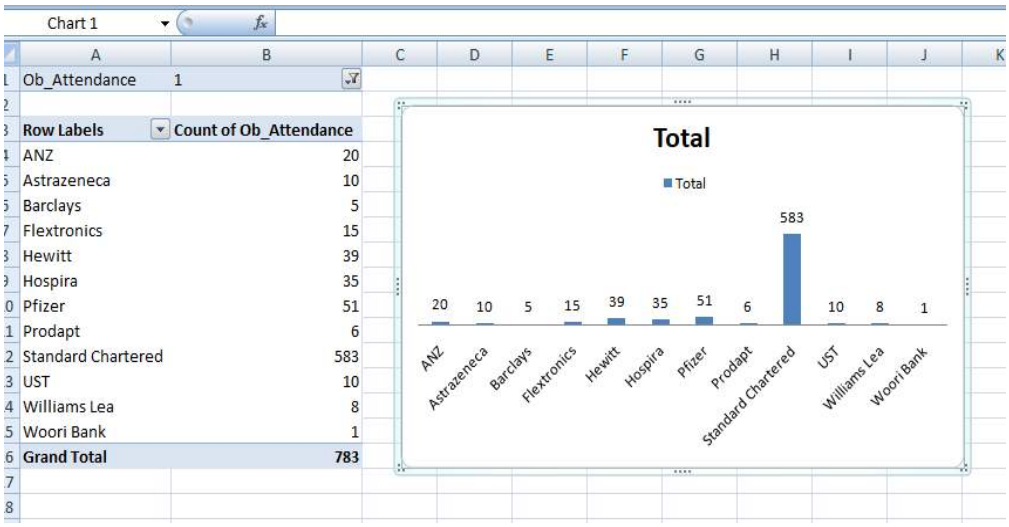
It has been brought to your notice that some of the candidates that go through your recruitment process have a tendency of dropping out mid-process. You want to assess if this problem is unprecedented or not. You hence want to establish external benchmarks in order to evaluate your company's position.

Analyse the observed attendance (in interviews) against the various factors and state your

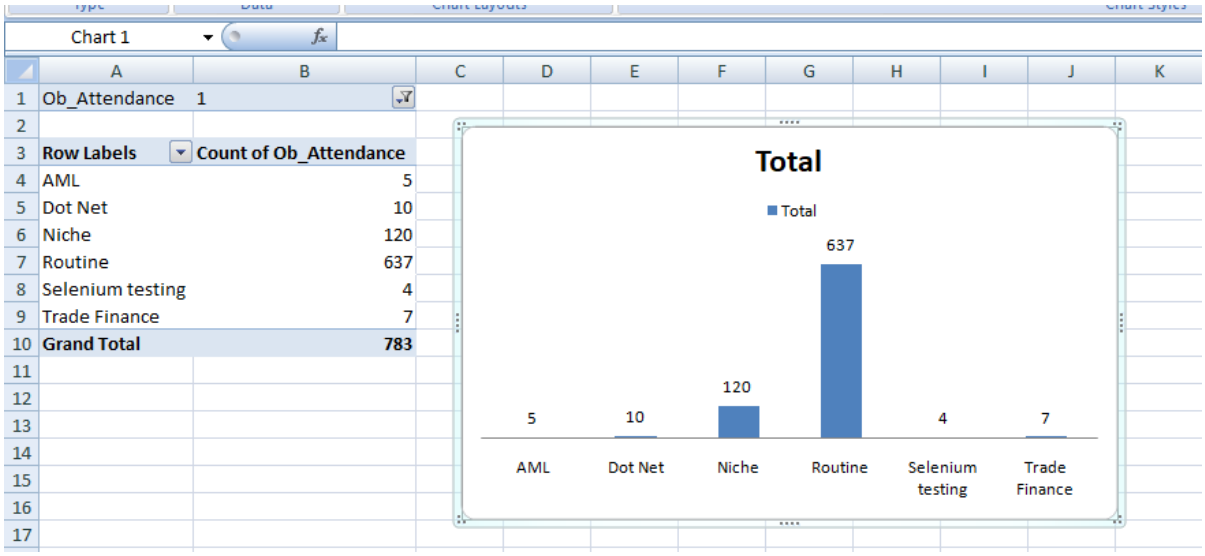
findings.

1. Client Name
2. Position to be closed
3. Interview Type
4. Industry

Answer 2.1: Clients: It is found from the graph and pivot table that Standard Chartered has maximum observed attendance in interviews amongst all the clients.

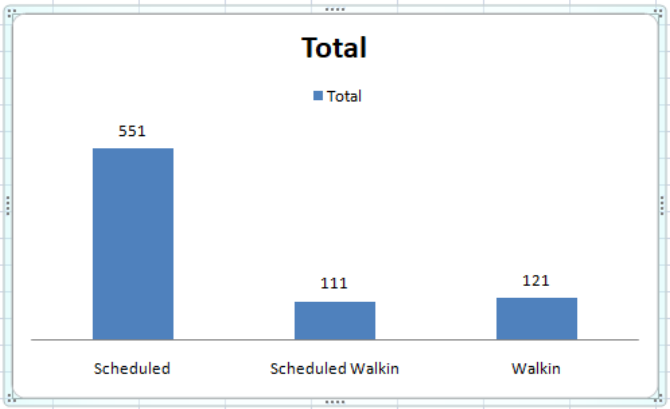


Answer 2.2: Position to be closed: It is found from the graph and pivot table that selenium testing has minimum observed attendance in interviews.



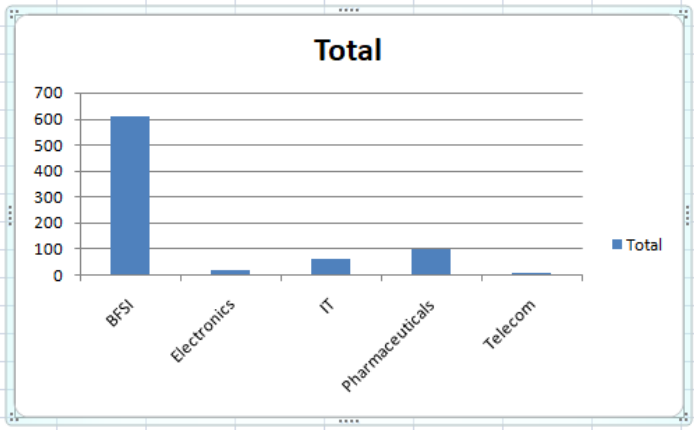
Answer 2.3: Interview Type: It is seen from the graph given below that scheduled interview has maximum observed attendance and scheduled walkin has minimum observed attendance.

Ob_Attendance	1
Row Labels	**Count of Ob_Attendance**
Scheduled	551
Scheduled Walkin	111
Walkin	121
Grand Total	**783**



Answer 2.4: Industry: It is seen from the graph below that BFSI has maximum count of observed attendance and telcom industry has minimum observed attendance.

Ob_Attendance	1
Row Labels	**Count of Ob_Attendance**
BFSI	609
Electronics	15
IT	57
Pharmaceuticals	96
Telecom	6
Grand Total	**783**



Question 3:

The next important analysis is around the performance of employees. Your team has successfully identified high-performing employees. You hence want to try and identify the 'recipe for success' across various departments.

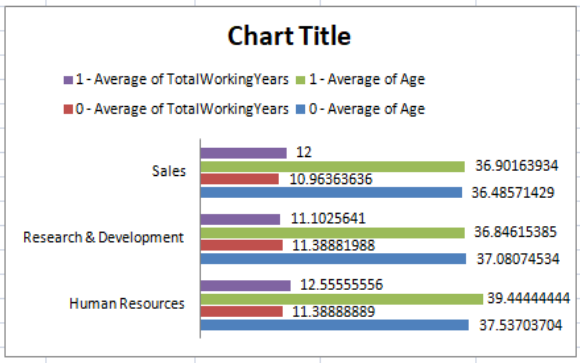
Analyse the data and answer the following questions:

3.1: In which department is it seen that, on average, the high performers were younger and had lower experience than the average performers?
(Please note that the performers have been divided into two groups in the dataset:
0:Averageperformers 1: High performers)

Solution:

Answer 3.1: In Research and Development Department, the high performers (with value 1) were younger (with average age 36.84) and had lower experience (11.10 years) than the average performers.

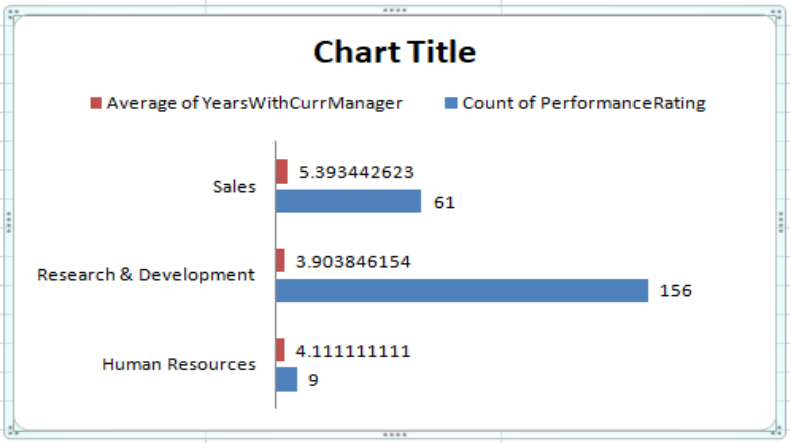
	Column Lab						
		0		1		Total Average of Age	Total Average of TotalWorkingYears
Row Labels		Average of Age	Average of TotalWorkingYears	Average of Age	Average of TotalWorkingYears		
Human Resources		37.53703704	11.38888889	39.44444444	12.55555556	37.80952381	11.55555556
Research & Developme		37.08074534	11.38881988	36.84615385	11.1025641	37.04266389	11.34235172
Sales		36.48571429	10.96363636	36.90163934	12	36.5426009	11.10538117
Grand Total		**36.91639871**	**11.25723473**	**36.96460177**	**11.40265487**	**36.92380952**	**11.27959184**



3.2. In which department does increased experience under the same manager have the most significant impact on performance?

Answer 3.2: In Research & Development department, increased experience under the same manager has the most significant impact on performance. The count of performance rating is 156 in R & D department.

	A	B	C	D
1	PerformanceRating	1		
2				
3		Values		
4	Row Labels	Count of PerformanceRating	Average of YearsWithCurrManager	
5	Human Resources	9	4.111111111	
6	Research & Development	156	3.903846154	
7	Sales	61	5.393442623	
8	Grand Total	226	4.314159292	



3.3. Assess the impact of RelationshipSatisfaction on performance across all three departments.

Answer 3.3: The relationship satisfaction on performance is highest in “HR” department with 66.67%(6 employees have given 4 out of 9), followed by “R&D” department with 24.36% and lowest in “sales” department with 22.95%.

	A	B	C	D	E	F
1	PerformanceRatin	1				
2						
3	Count of Perform	Colum				
4	Row Labels	1	2	3	4	Grand Total
5	Human Resources	1		2	6	9
6	Research & Development	29	41	48	38	156
7	Sales	15	10	22	14	61
8	Grand Total	45	51	72	58	226

Row Labels	1		2		3		4		Grand Total
Human Resources	1	11.11%		0.00%	2	22.22%	6	66.67%	9
Research & Development	29	18.59%	41	26.28%	48	30.77%	38	24.36%	156
Sales	15	24.59%	10	16.39%	22	36.07%	14	22.95%	61
Grand Total	45		51		72		58		226

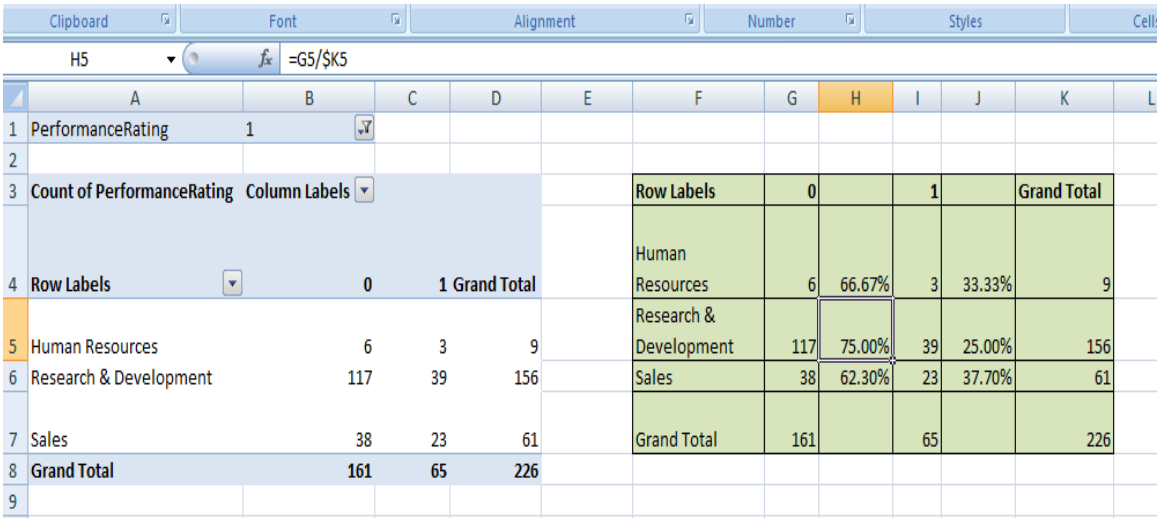
3.4. What is the impact of Overtime on performance across all three departments?

Answer 3.4:

Findings :

- HR Department: Here 66.67% high performers have not done over time.
- R & D department: Here 75% high performers have not done overtime.
- Sales department: Here 62.30% high performers have not done over time.

After viewing the data in table, we conclude that in all the three departments, the high performers with overtime work done are less in number and more high performers are not doing overtime works. They are performing in their stipulated time frame and not taking any extra hour to perform high.

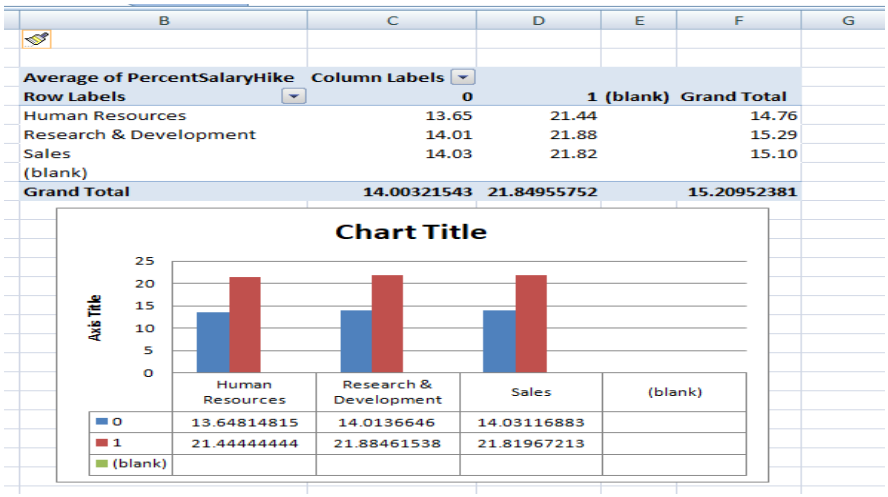


	A	B	C	D
1	PerformanceRating	1		
2				
3	Count of PerformanceRating	Column Labels		
4	Row Labels	0	1	Grand Total
5	Human Resources	6	3	9
6	Research & Development	117	39	156
7	Sales	38	23	61
8	Grand Total	161	65	226

Row Labels	0		1		Grand Total
Human Resources	6	66.67%	3	33.33%	9
Research & Development	117	75.00%	39	25.00%	156
Sales	38	62.30%	23	37.70%	61
Grand Total	161		65		226

3.5. Finally, are Salary hikes competitive in nature (High performance leads to better hikes)? Are the variations in hike similar across all three departments?

Answer 3.5: Yes, high performance leads to better hikes in salary. Yes, the variation across all the three departments i.e. HR, R&D and Sales is almost same 21.44%, 21.88% and 21.81%



Average of PercentSalaryHike	Column Labels			
Row Labels	0	1	(blank)	Grand Total
Human Resources	13.65	21.44		14.76
Research & Development	14.01	21.88		15.29
Sales	14.03	21.82		15.10
(blank)				
Grand Total	14.00321543	21.84955752		15.20952381

Question 4:

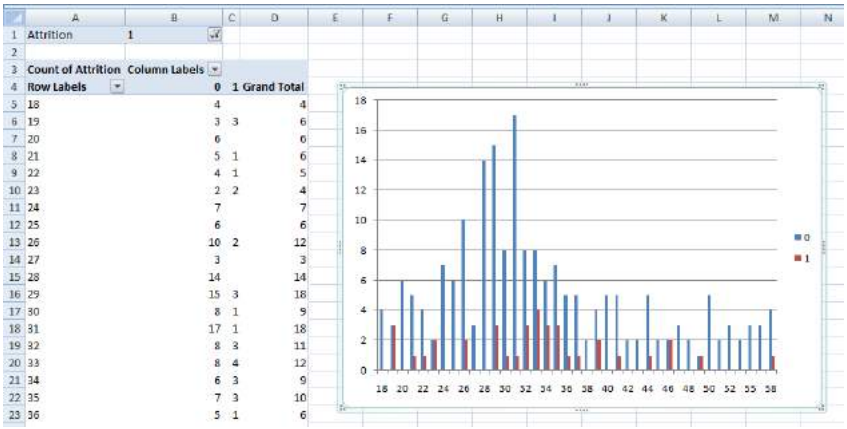
Lastly, the company has recently seen a surge in the attrition rate. Analyse the data to identify what are the key influencing factors for attrition of high potential employees.

Comment on the following attributes' behaviour against high performing employees' attrition:

1. Age
2. Job Level
3. Environment Satisfaction
4. Overtime
5. Work-Life Balance

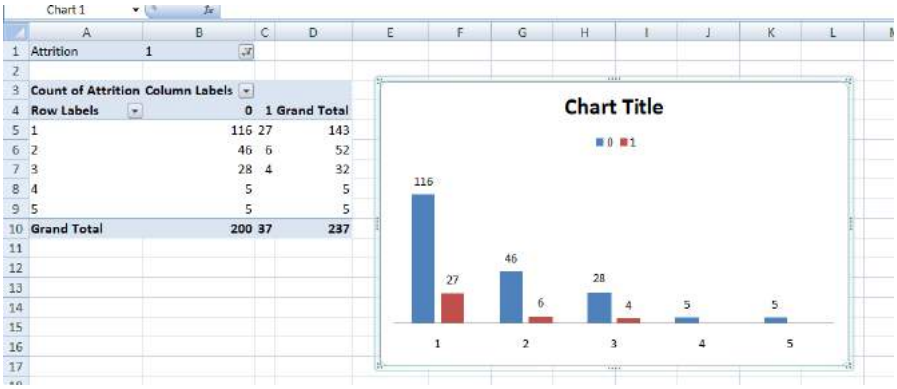
Solution:

Answer 4.1: AGE : After introspecting the graph, we find that 33 age has the maximum iteration of 4.



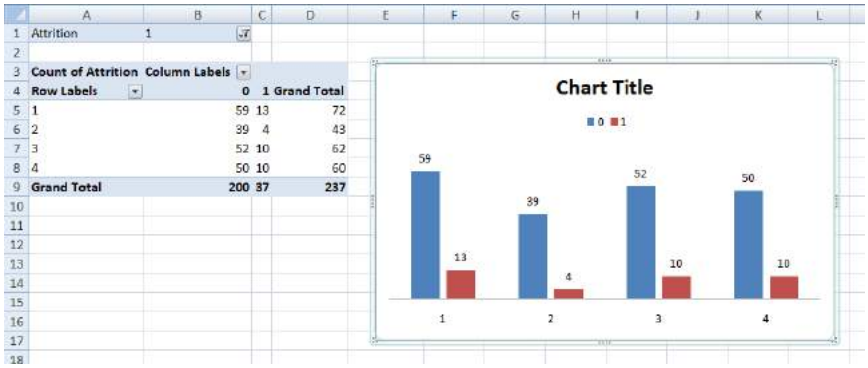
Attrition	1		
Count of Attrition	Column Labels		
Row Labels	0	1	Grand Total
18	4		4
19	3	3	6
20	6		6
21	5	1	6
22	4	1	5
23	2	2	4
24	7		7
25	6		6
26	10	2	12
27	3		3
28	14		14
29	15	3	18
30	8	1	9
31	17	1	18
32	8	3	11
33	8	4	12
34	6	3	9
35	7	3	10
36	5	1	6

Answer 4.2: JOB LEVEL: After introspecting the graph, we find that Job Level 1 has maximum Attrition



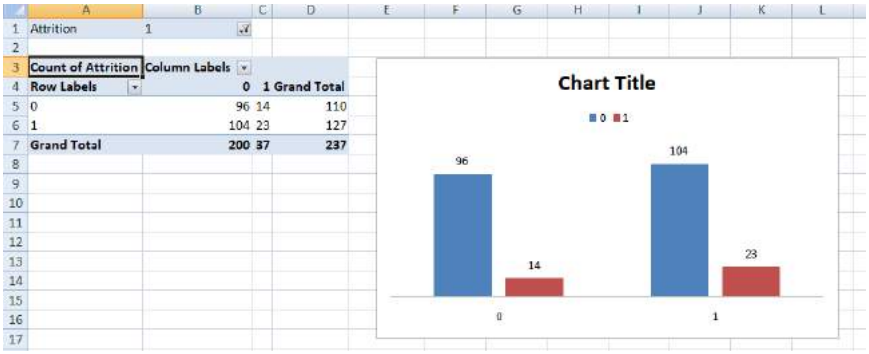
Attrition	1		
Count of Attrition	Column Labels		
Row Labels	0	1	Grand Total
1	116	27	143
2	46	6	52
3	28	4	32
4	5		5
5	5		5
Grand Total	200	37	237

Answer 4.3: After introspecting the graph, we find that Environment Satisfaction 1 has maximum attrition.



Attrition	1		
Count of Attrition	Column Labels		
Row Labels	0	1	Grand Total
1	59	13	72
2	39	4	43
3	52	10	62
4	50	10	60
Grand Total	200	37	237

Answer 4.4: Overtime: After introspecting the graph, we find that Overtime (1) has maximum attrition.



Attrition	1		
Count of Attrition	Column Labels		
Row Labels	0	1	Grand Total
0	96	14	110
1	104	23	127
Grand Total	200	37	237

Conclusion

Thus HR analytics also known as people analytics is the collection and application of talent data to improve critical talent and business outcomes. HR analytics leaders enable HR leaders to develop data-driven insights to inform talent decisions, improve workforce processes and promote positive employee experience.

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