Analysis On Career Growth Of A Job Level Employee

Objective: To assess the professional advancement of an employee employed within a company.

Software Utilized: R Programming Language

Platform Utilized: RStudio

Methodology:

In this analysis, I employed bar charts to illustrate various trends and correlations among different parameters, aiming to delineate the career progression of employees at various job levels. The interpretation of relationships depicted by the bar plots hinges on the direction of the trends; for instance, if the bars are consistently increasing, it indicates a positive relationship between the variables, whereas a decreasing trend suggests a negative relationship.

From the dataset under examination, I conceptualized career growth as a function of four distinct independent parameters: earning potential, job satisfaction, likelihood of promotion, and ease of job placement. These parameters collectively contribute to understanding the trajectory of an employee's advancement within a company. Furthermore, these four parameters are analyzed as a composite function of variables such as interpersonal skills, educational background, and personal attributes like diligence, discipline, and integrity, which are instrumental qualities for an employee's success within a company.
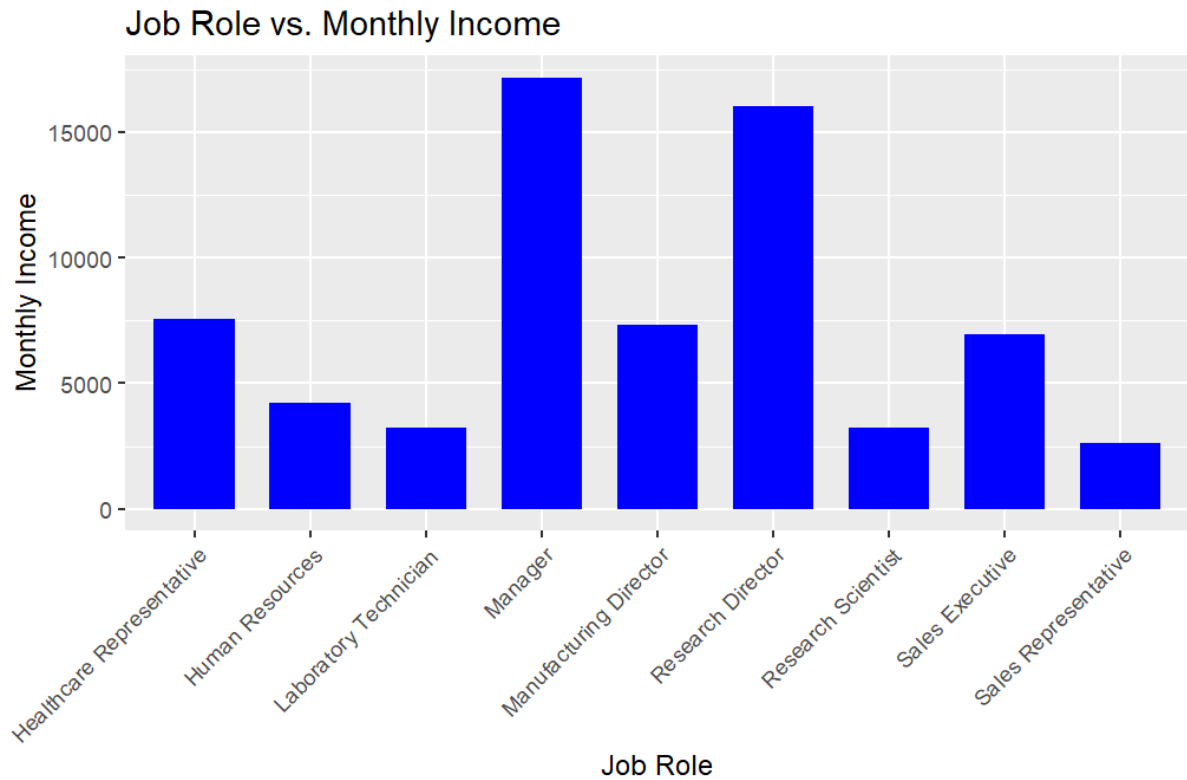
Analysis:

Figure:1

Observations:

The graph displays the monthly income of individuals based on their job roles.

Each job role is represented by a blue bar, indicating the average monthly income for that role.

The x-axis lists various job roles, including Healthcare Representative, Human Resources, Laboratory Technician, Manager, Manufacturing Director, Research Director, Research Scientist, Sales Executive, and Sales Representative.

The y-axis represents the monthly income in dollars.

Interpretations:

Highest Earnings:

Managers and Research Directors earn the highest monthly income, exceeding $15,000.

These roles likely correspond to top-level management or leadership positions within organizations.

Moderate Earnings:

Research Scientists, Manufacturing Directors, and Sales Executives fall in the middle range of monthly income, earning between $5,000 and $10,000.

These roles may involve specialized skills or responsibilities.

Lowest Earnings:

Laboratory Technicians and Sales Representatives have the lowest average monthly incomes, below $5,000.

These roles might involve technical or sales-related tasks.

Overall Trend:

The data suggests that managerial and directorial roles are compensated more compared to technical and sales positions.
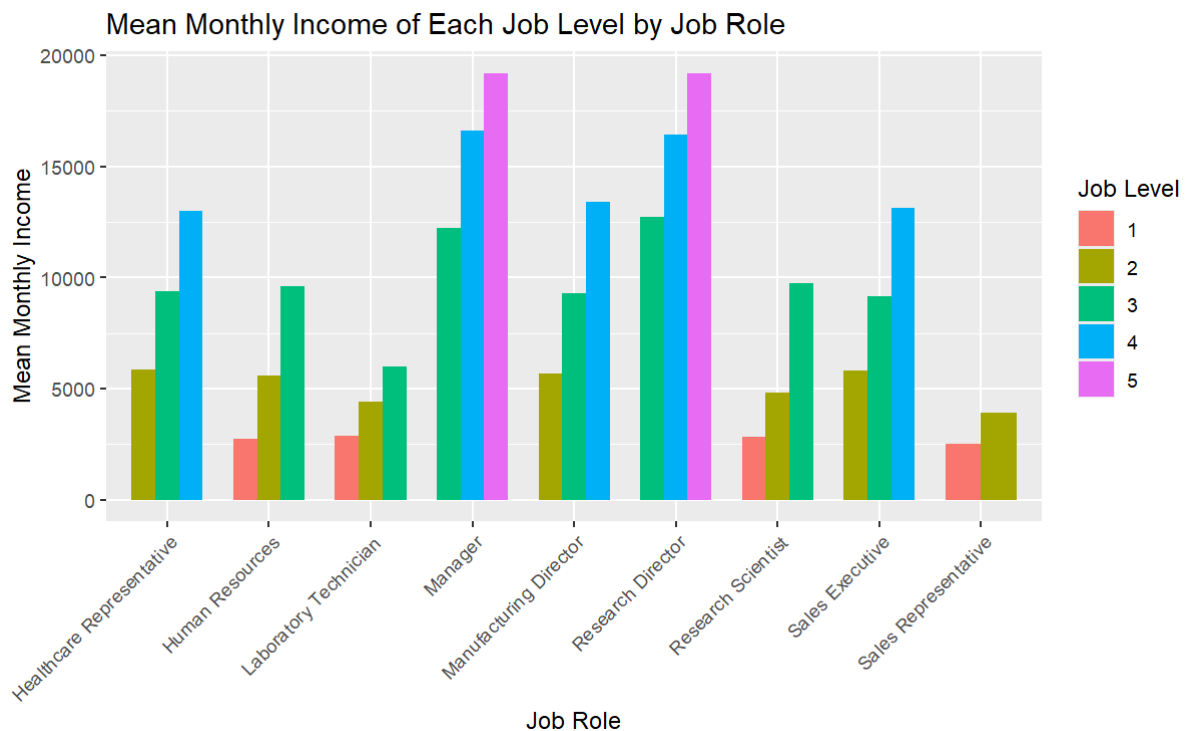

Figure:2

Observations:

The graph displays the mean monthly income of various job roles at different job levels.

Each job role is represented by a colored bar, indicating the average monthly income for that role.

The x-axis lists various job roles, including Healthcare Representative, Human Resources, Laboratory Technician, Manager, Manufacturing Director, Research Director, Research Scientist, Sales Executive, and Sales Representative.

The y-axis represents the mean monthly income in dollars.

Different colors correspond to different job levels (ranging from level 1 to level 5), as indicated in the legend on the right side.

Notably, Managers and Research Directors at all levels have higher incomes compared to other roles.

Interpretations:

If we interpret Job Level as an Experience in that particular job role, then Salary Increases as your Experience Increases. (Salary ∝ Experience {Job Level})

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These roles may involve specialized skills or responsibilities.

Lowest Earnings:

Laboratory Technicians and Sales Representatives have the lowest average monthly incomes, below $5,000.

These roles might involve technical or sales-related tasks.

Overall Trend:

The data suggests that Montly Income = f(Experience, Knowledge, Job Role).
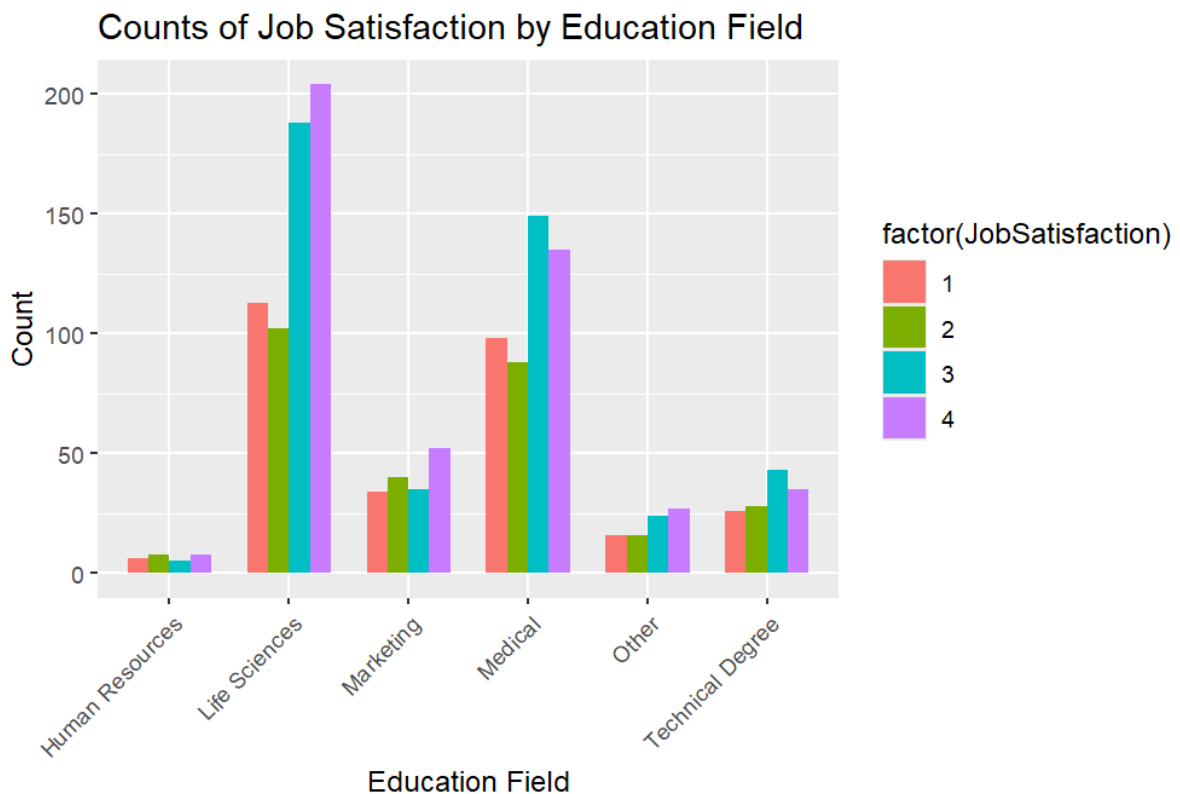

Figure:3

Observation:

1. X-axis represents different education fields: Technical degree, Medical, Life Science, HR, and Other.

2. Y-axis represents the count of employees satisfied with their chosen education field for career growth.

3. Each bar is divided horizontally into four segments, denoting levels of satisfaction from 1 (lowest) to 4 (highest).

Interpretation:

1. Employees with backgrounds in Life Science demonstrate the highest satisfaction with job roles related to their education domain.

2. Medical field follows closely in satisfaction levels.

3. Other education fields exhibit moderate satisfaction levels.

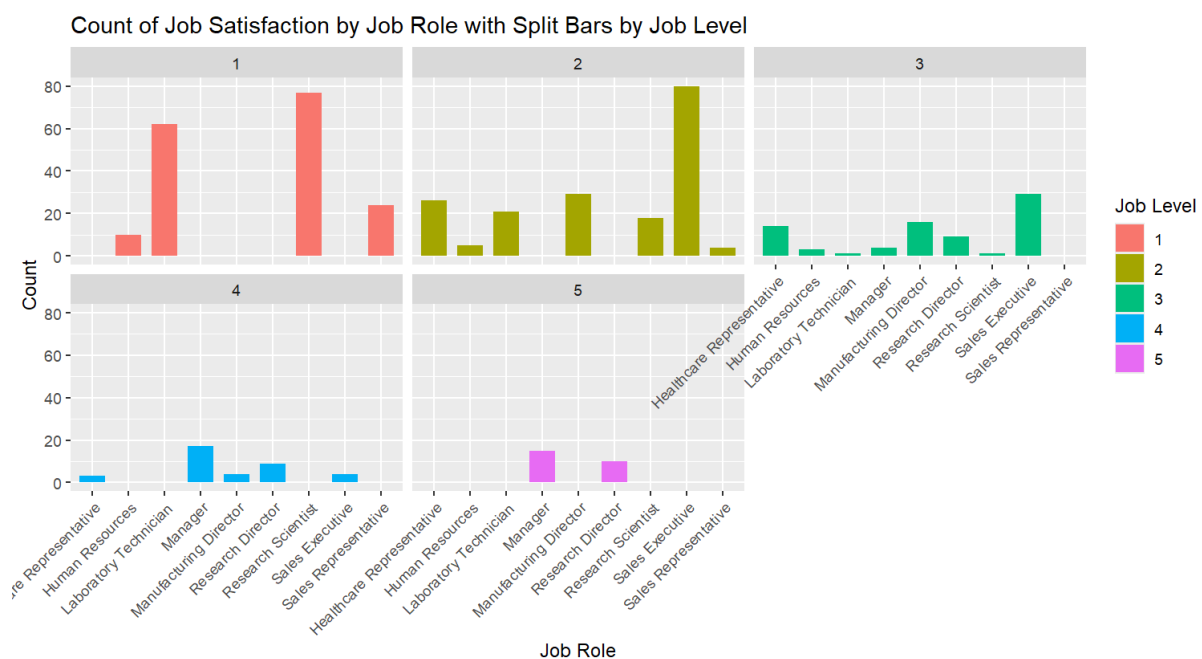4. Human Resources shows the lowest satisfaction levels among the observed education fields.

Figure:4

Observation:

1. X-axis includes different job roles such as Health representative, Human resources, Laboratory technician, Manager, Manufacturing Director, Research Director, Research Scientist, Sales Executive, and Sales Representative.

2. Y-axis represents the number of employees satisfied with these job roles.

3. The graph is divided into five separate sections based on job levels, ranging from 1 to 5.

   - Job level 1: Fresher or starter with minimal experience (0 or null).

- Job level 5: Highly experienced with extensive knowledge beyond a basic graduation degree.

Interpretation:

1. Job Level 1:

- Laboratory technicians and research scientists show high satisfaction, indicating potentially good earning and work-life balance.

2. Job Level 2:

- Sales executives, manufacturing directors, and health representatives display notable satisfaction with their job roles.

3. Job Levels 3 and 4:

- These levels do not provide significant statistical insights regarding satisfaction versus job roles.

4. Job Level 5:

- Managers and research directors exhibit sustained satisfaction in their roles, suggesting long-term fulfillment. This level typically requires over a decade of experience for attainment.
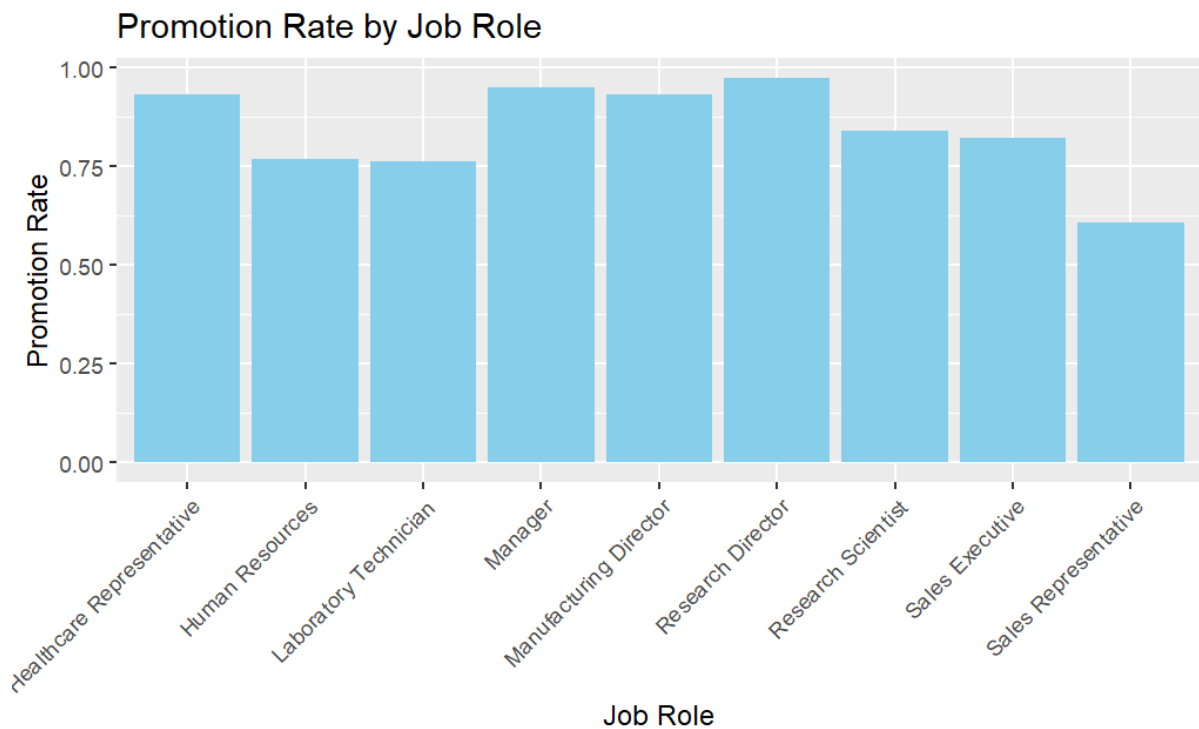
Figure:5

Observation:

1. X-axis displays different job roles: Health representative, Human resources, Laboratory technician, Manager, Manufacturing Director, Research Director, Research Scientist, Sales Executive, and Sales Representative.

2. Y-axis indicates the promotion rate, ranging from 0 to 1 in a probability fashion.

Interpretation:

1. The graph illustrates that promotion chances are higher in roles such as Manager, Research Director, Manufacturing Director, and Health Care Representative.

2. Other job roles show comparatively lower probabilities of promotion to higher levels.

3. Overall, the graph indicates that promotion opportunities exist across all job roles, albeit at varying rates.
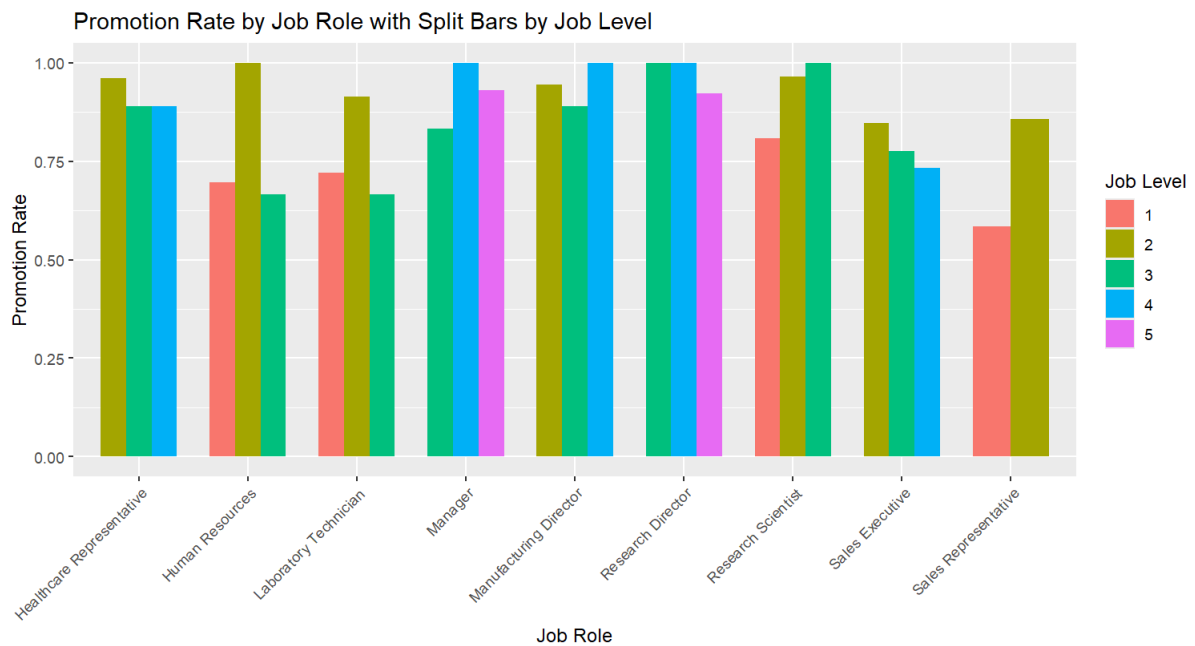
Figure:6

Observation:

1. X-axis displays various job roles: Health representative, Human resources, Laboratory technician, Manager, Manufacturing Director, Research Director, Research Scientist, Sales Executive, and Sales Representative.

2. Y-axis represents the promotion rate from 0 to 1 in a probability fashion.

3. Each bar is divided into five sub-bars, indicating the likelihood of promotion at different job levels, mapped by experience and knowledge.

Interpretation:

1. Promotion chances are higher in roles such as Manager, Research Director, Manufacturing Director, and Health Care Representative.

2. Other job roles exhibit lower probabilities of promotion to higher levels.

3. Managers are typically promoted from job level 3 onwards, suggesting that they are not typically hired at job levels 1 or 2.

4. Similarly, Health Representatives see promotions starting from job level 2, implying that candidates must have some job-level experience to work in this role within a company.

5. For Sales Representatives, the maximum promotion likelihood is up to job level 2. This indicates that reaching the end of one's career as a Sales Representative means no further promotions or earning increases within that role. To pursue promotions and higher earnings, individuals must consider changing their job roles
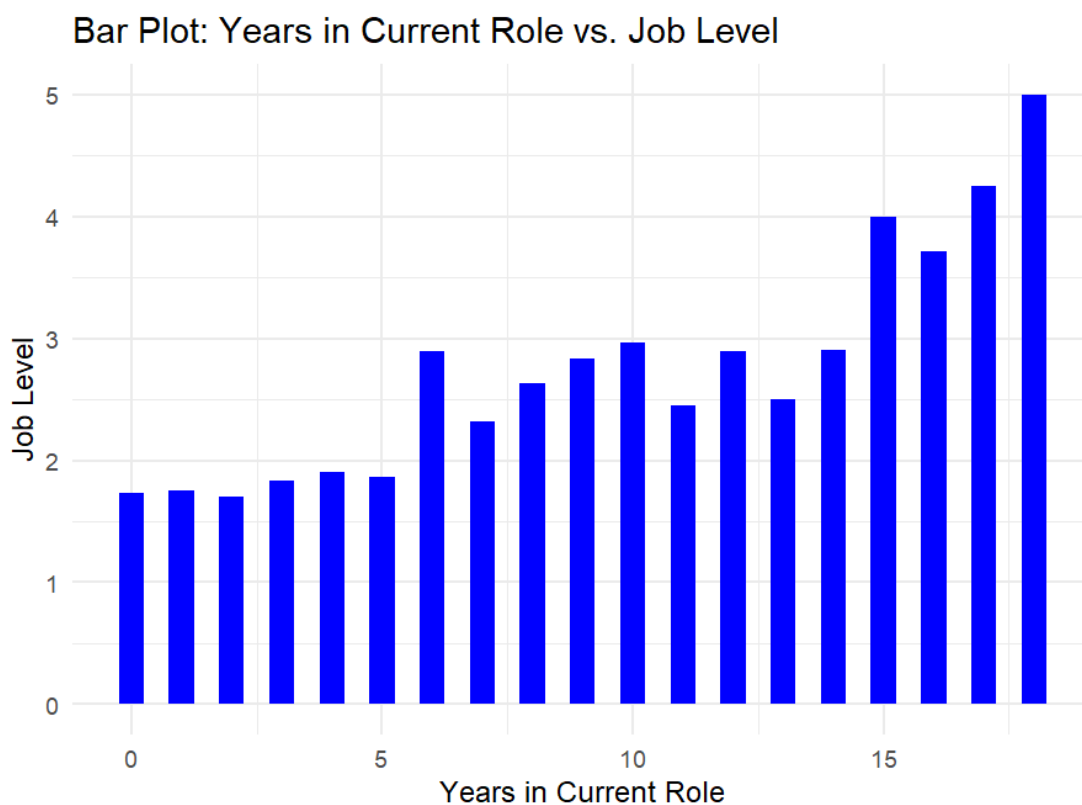

Figure:7

Observation:

1. The x-axis of the bar plot represents the number of years an employee spends in a company in a particular job role.

2. The y-axis represents the job level, ranging from 1 to 5.

Interpretation:

1. To progress from job level 1 to 2, an employee typically needs to spend at least 5 years in the current job role.

2. For advancement from job level 2 to 3 and beyond, employees generally require approximately 10 years of experience.

3. Advancement from job level 3 to 4 typically necessitates spending between 10 to 15 years in the current role.

4. To attain job level 5, employees usually need experience exceeding 15 years.

5. It's important to note that these estimations are approximate and may vary depending on the specific job role within a company.
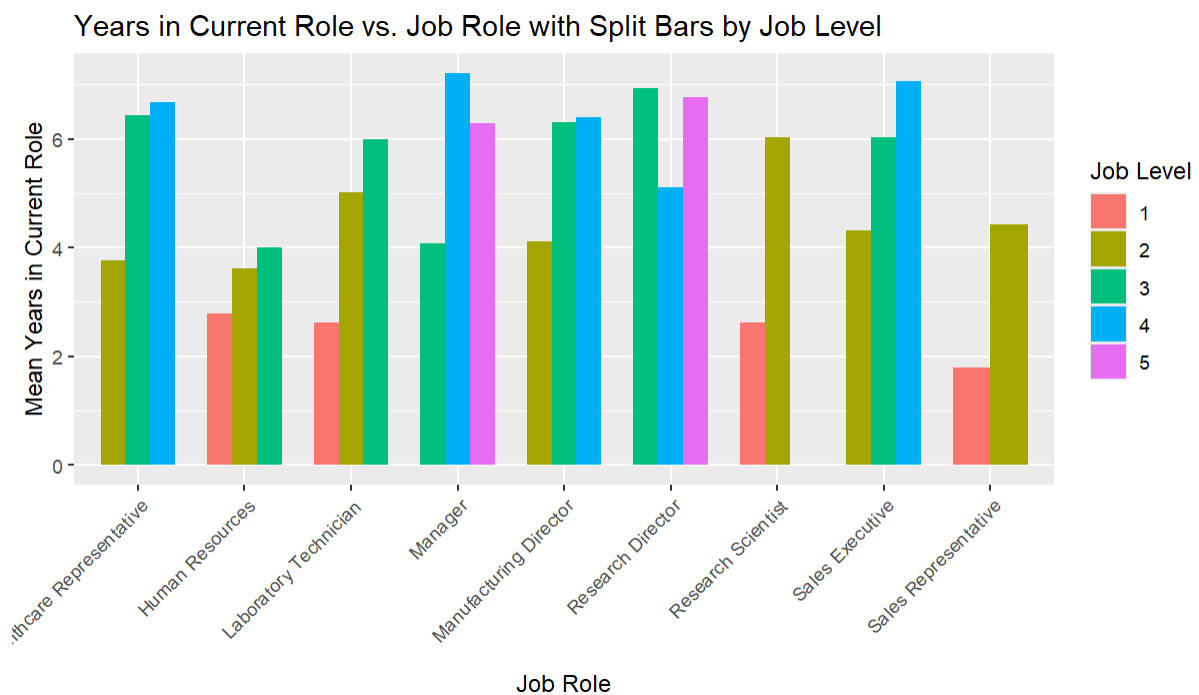

Figure:8

Observation:

1. The x-axis of the bar plot represents different job roles.

2. The y-axis represents the mean number of years an employee has spent in a particular job level within a specific job role.

3. Horizontal split bars on the x-axis indicate different job levels.

Interpretation:

1. For example, in the job role of Health Representative, employees typically start with a minimum experience level of job level 2. After obtaining the role of Health Representative, they must work for at least 4 years to be eligible for promotion to the next job level, i.e., level 3. Subsequently, they need to work for at least 6 years to advance to a higher job level.

2. However, it's important to note that this pattern of years required for promotion varies among different job roles and job levels. For instance, in the case of a Research Scientist, employees may only need to work for 2 years to be promoted from job level 1 to 2. This variation in required years exists across different job roles and job levels.
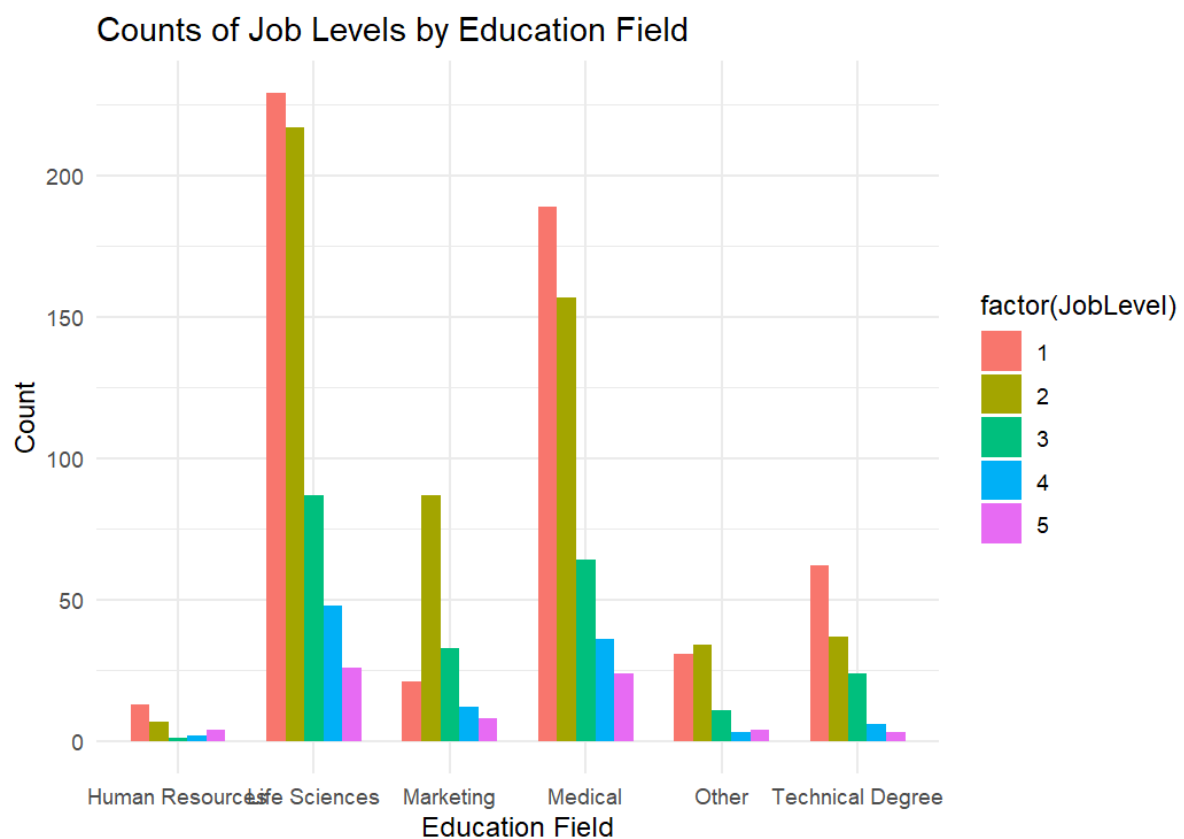

Figure:9

Observation:

1. The x-axis of the graph represents various education fields such as life sciences, medical, marketing, others, technical degree, and human resources.

2. The y-axis represents the number of employees with jobs under these education domains.

3. Each bar is horizontally split into job levels ranging from 1 to 5, indicating the educational attainment level from basic graduation to higher degrees in that particular domain.

Interpretation:

1. Companies seem to be hiring fresher employees predominantly from education backgrounds in life sciences, medical, and technical fields.

2. In the field of marketing, there is a preference for hiring employees at a more experienced level, i.e., job level 2, compared to job level 1 in life sciences and medical fields.

3. Conversely, there is less interest from companies in hiring employees from human resources backgrounds and other education fields, indicating potential challenges in finding employment in these domains.

4. Overall, it appears relatively easier for beginner employees to enter the medical, life sciences, and technical domains compared to human resources and other fields.
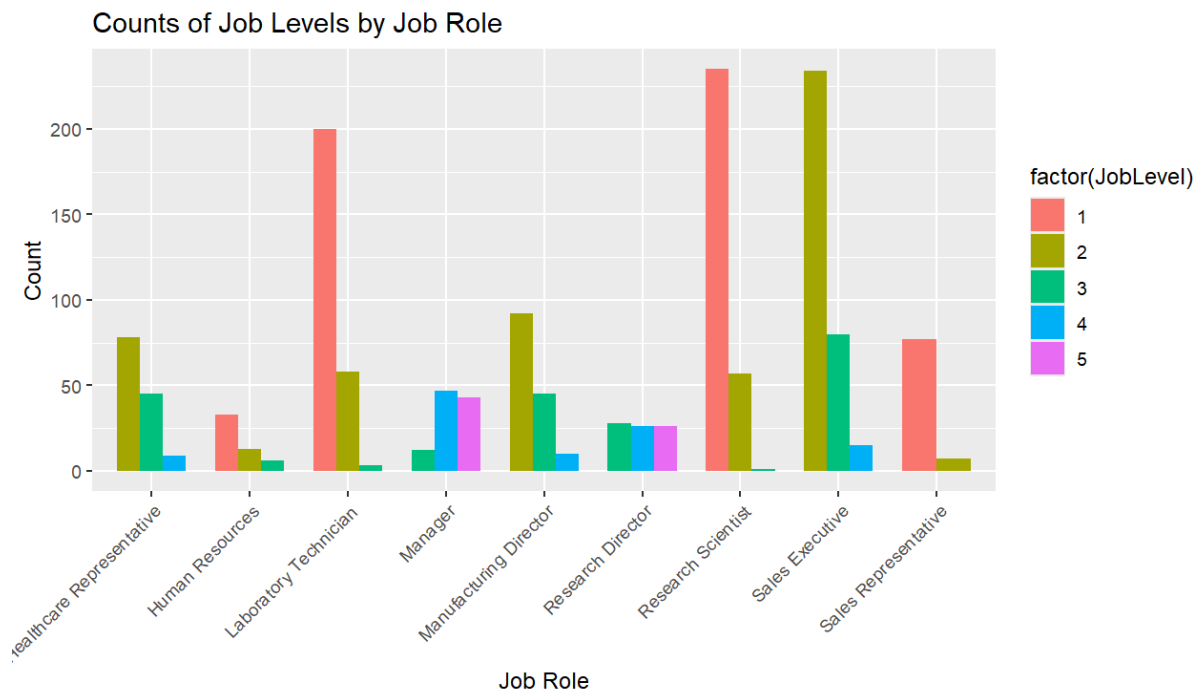
Figure:10

Observation:

1. The x-axis of the graph represents various job roles, with horizontal split bars indicating different job levels (experience or education levels).

2. The y-axis represents the number of employees working in a particular domain and job level.

Interpretation:

1. Companies show a preference for hiring laboratory technicians, research scientists, and sales representatives at fresher or beginner employee levels.

2. Conversely, for roles such as Sales Executive, Health Representative, and Manufacturing Director, companies prefer more experienced employees.

3. In the case of managers, companies tend to hire individuals with job experience at level 4.

4. There is less demand for job roles in domains like human resources, and for more experienced sales representatives (job level 2), indicating either fewer vacancies or lesser interest from companies.

5. This observation provides insight into the level of competition employees may face when seeking particular job roles at specific job levels
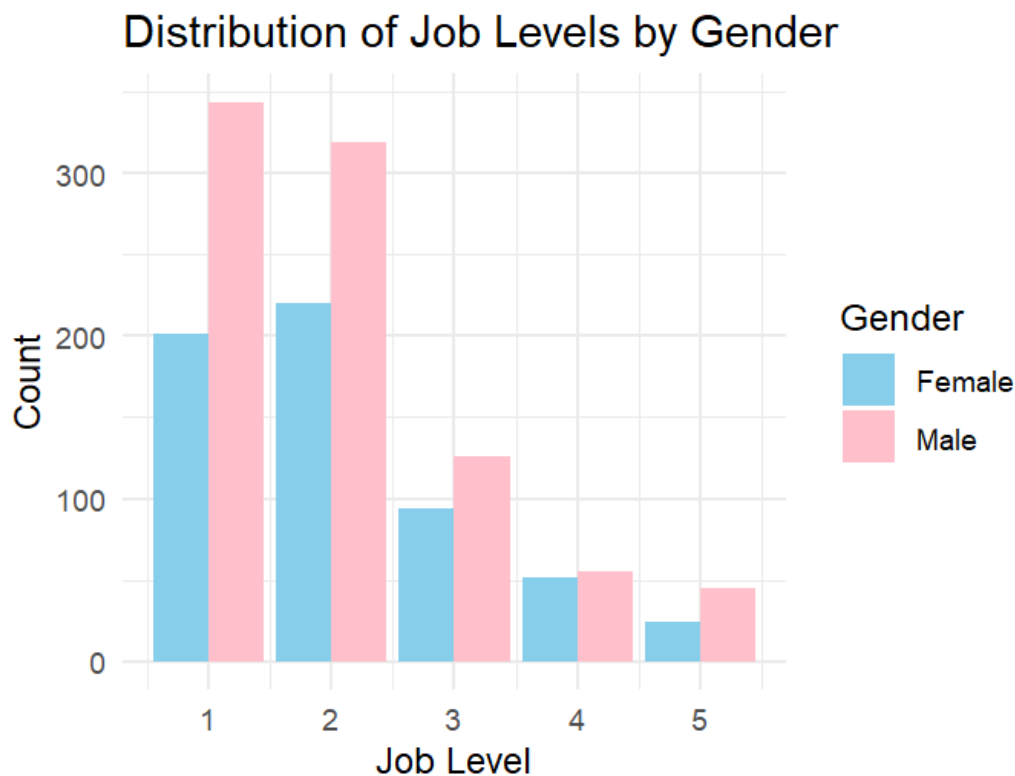

Figure:11

Observation & Interpretation:

The graph highlights gender disparities in job levels. While females dominate at Job Level 2, males are more prevalent at higher levels (3 to 5).

The significant increase in female representation at Job Level 2 suggests that this level might be a crucial point for career advancement for women.

Organizations can use this data to assess retention rates and identify barriers to career progression.

By addressing gender-specific career trajectories, companies can create inclusive policies and opportunities for growth.

Conclusion:

1. Position and Earnings:

   - Advancement to lucrative positions like manager or director necessitates substantial effort to acquire the requisite skills and knowledge beneficial for the company.

   - Demonstrating loyalty, honesty, and dedication by staying with a company for 5 to 6 years is crucial to attain such positions.

2. Job Satisfaction:

   - Initial job satisfaction may not persist in the long term.

   - Investing effort in the initial years (4 to 5 years or more) can result in sustained satisfaction over a career spanning 15 to 20 years.

3. Factors of Career Growth:

   - Career growth is not solely determined by monetary rewards.

   - Attributes such as knowledge, skills, interpersonal abilities, and personal characteristics play significant roles in both individual and organizational growth.

   - Therefore, individuals should prioritize enhancing their knowledge, skills, behavioral etiquette, and interpersonal skills to achieve success in their careers and contribute to the growth of the company.

Reference:

Saadharoon27. (n.d.). HR Analytics Dataset.

https://www.kaggle.com/datasets/saadharoon27/hr-analytics-dataset

APPENDICES

I have appended a link to Github Repository which includes all the necessary codes, data sets and figures of our report. This includes the files like R language codes, Plot images and Data Set.

https://github.com/agneepradeep/Data-Science-Projects/tree/main/Career%20Growth%20of%20a%20Job%20Level%20Employee/Figures%20and%20Plot