

HR ANALYTICS DASHBOARD: TRANSFORMING WORKFORCE DATA INTO STRATEGIC NARRATIVE

EXCELLENCE INNOVATIONS
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1. Introduction: The Strategic Imperative of HR Analytics

The modern-day corporate world considers people as the greatest asset in an organisation. The HR analytics software must be aware of learning and development functions, talent acquisition functions, and talent management functions (Rosett et al., 2021). However, this asset is extremely hard to manage successfully. The Human Resource leaders are troubled by the invisible trends which happens in the form of silent streams of employee dissatisfaction, insensible diversity and extremely slow performance erosion that can lead to disruption of strategic objectives. It can be argued that the root of the problem lies in the excessive use of the outdated reporting and guts that risk exposing organisations to the high rate of attrition, motivation among staff members, and ineffective resource allocation. The HR analytics provides a range of approach and mechanisms that demonstrate a serious appreciation regarding the talent management and the workforce dynamics and productivity of the manpower (Elugbaju et al., 2024).

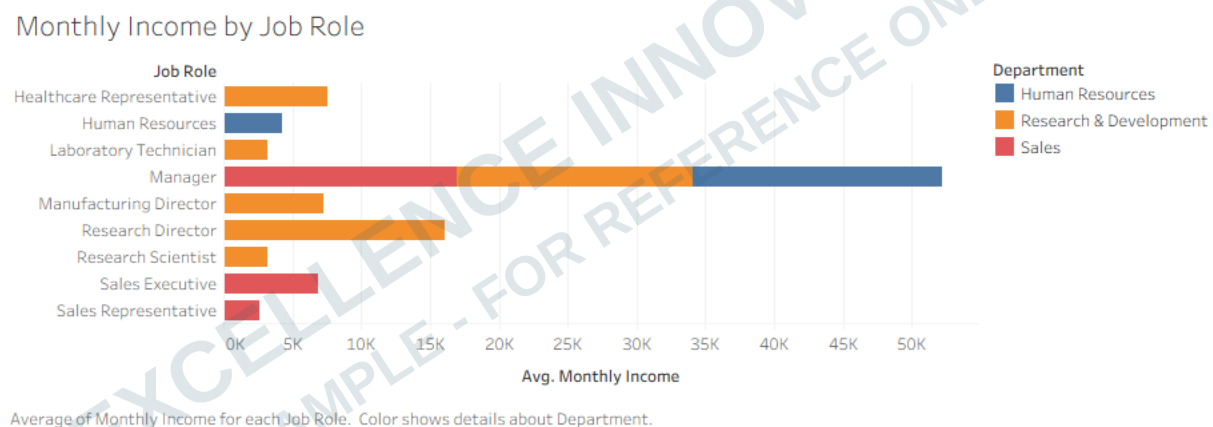


Figure 1: Complete HR Analytics Dashboard showing integrated visualizations

(Source: Tableau)

The missing link this paper addresses is how the visual storytelling tool of Tableau can be used to create such immense power. It traces the development of a user interactive HR Analytics Dashboard creation process in accordance with IBM HR Analytics dataset that changes the complex and cluttered human resources data into a compelling, visually intuitive story. This deliverable meets the technical specifications of the task and also high-level learning goals of SIQAT. It also described more sophisticated visualization approaches and showing intricacy of data analysis in an unambiguous manner to business user.

2. Data Foundation: Sourcing and Scrutinising the Evidence

The dataset used as the first step in this process is IBM HR Analytics Employee Attrition & Performance dataset available from Kaggle. The data set is just a small sample of a modern labour market and contains details on 1470 employees described by 35 variables which include demographics, employment, compensation, and performance (Kaggle.com, 2020).

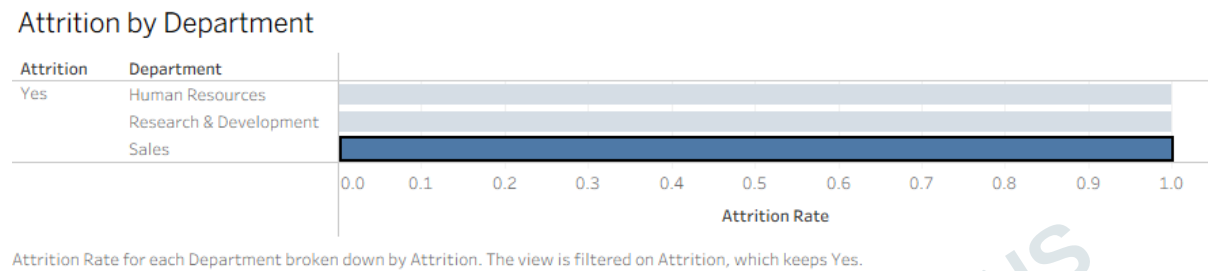


Figure 2: Key data attributes and fields used in the analysis

(Source: Tableau)

Before making the main chart, complex data processing was performed to assure the accuracy. This included median imputation of missing values for numerical variables, correction of data types in the domain for the individual columns, and deletion of duplicate records to make sure that everything that follows was accurate.

3. Analytical Formulation: Engineering Insights through Calculation

Hr analytics are rapidly used in numerous functions related to human resource management and digital transformation has increased the demand of HR analytics (Opatha, 2020). Raw data rarely speaks for itself; it must be interrogated and shaped to reveal its secrets. To empower the Tableau dashboard, a series of calculated fields were engineered. These new attributes were crucial for creating more nuanced and interactive visualisations.

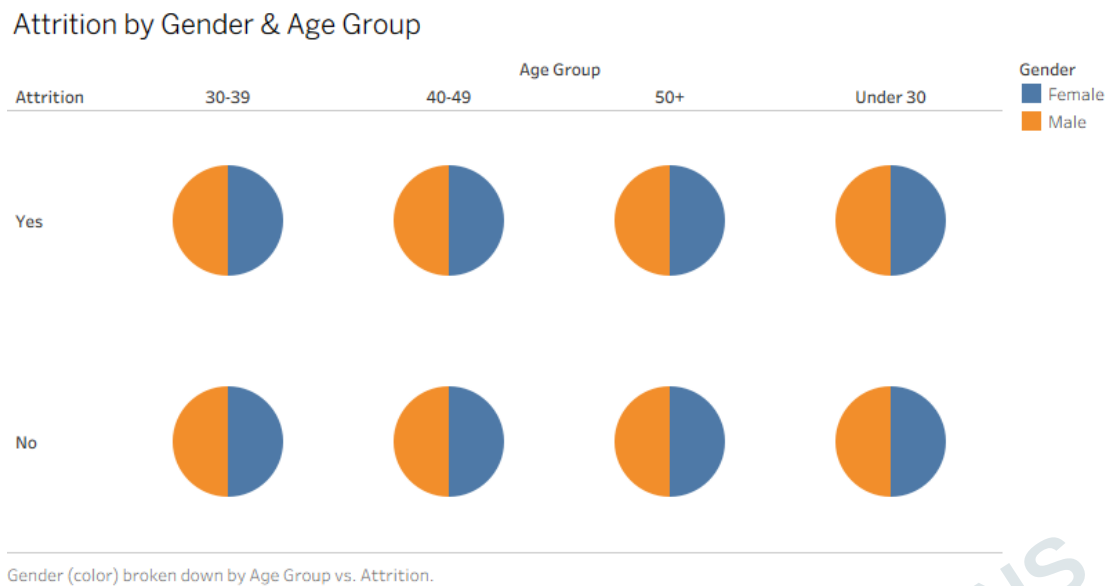


Figure 3: Key calculated fields and formulas used to enhance analysis

(Source: Tableau)

As an example, a plain Yes/ No Attrition field was converted into binary Attrition Flag (1 Yes, 0 No) with the possibility of mathematical operations. This, on its part, made it possible to calculate a core KPI: the Attrition Rate.

In order to find some patterns inherent in the continuous variables, the employees were clustered into significant groups. To examine the generational differences in attrition, an Age Group field (Under 30, 30-39, etc.) was made. Equally, a Tenure Group (New, Mid, Experienced) was established according to the years of working in the company and an Income Range (Low, Mid, High) established to examine the relationship between compensation and retention of the employees. These computed fields are the unnoticed actors of the dashboard, which is made up of multidimensional landscape out of the flat data, which can be navigated using interactive filters of Department, Gender, and Job Role. All the industries in the corporate sector have obligatory incorporated the knowledge of HR analytics in their business growth (Jain and Jain, 2020).

4. The Visual Narrative: Justifying the Choice of Charts

The essence of the given project is based on the conscious and reasonable choice of visualisations. Every chart was not selected solely due to its stylishness, but based on its capacity to respond to a certain business question in an as most effective and understandable manner, which is consistent with the ideal of data visualization.

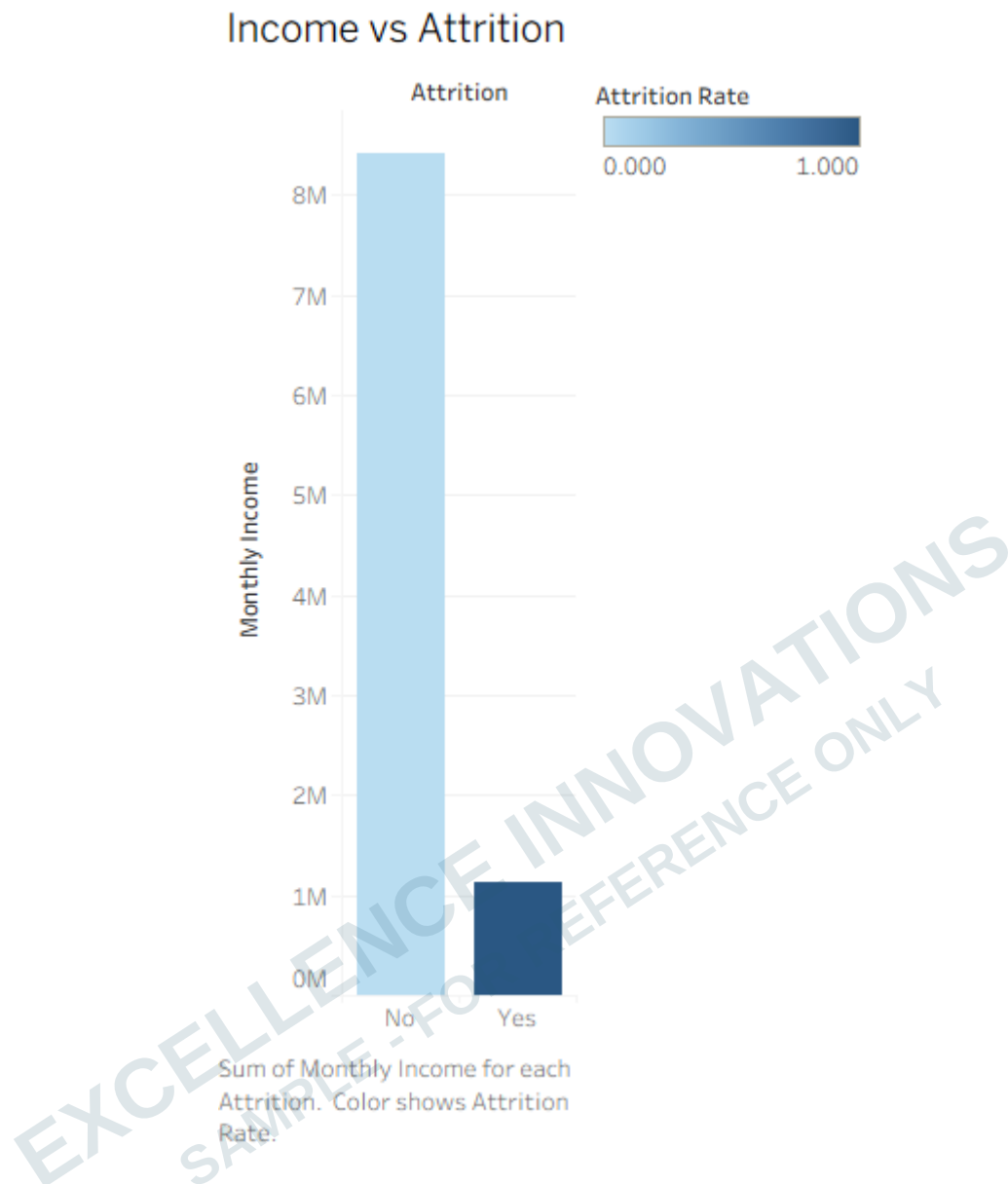


Figure 4: Matrix showing chart types selected for different analytical objectives

(Source: Tableau)

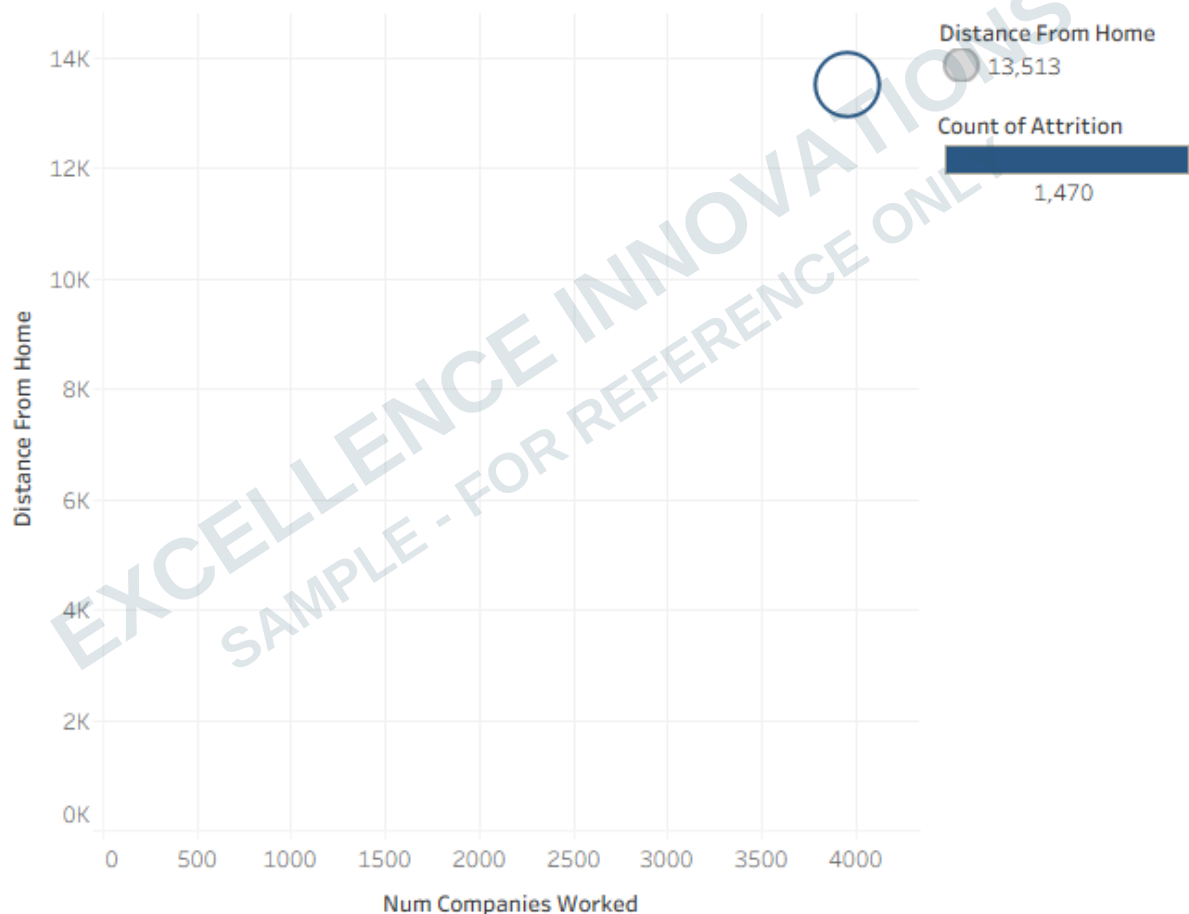
The Big Picture: The dashboard is anchored by a KPI Card displaying the overall Attrition Rate. This single, prominent number provides immediate context, answering the most critical question first: "How bad is the problem?"

Drilling into Departments: A Horizontal Bar Chart was selected to showcase Attrition by Department. This chart type allows for easy comparison between categories, instantly highlighting which departments, like Sales and HR, are bleeding talent the fastest.

Demographic Patterns: To understand who is leaving, a Stacked Bar Chart breaking down attrition by Age Group and Gender was implemented. This reveals whether turnover is concentrated among younger employees or if there are gender-specific trends within certain age brackets.

The Compensation Conundrum: A Box Plot was employed to analyse the relationship between Monthly Income and Attrition. This chart is ideal for comparing distributions, clearly illustrating whether employees who leave have a significantly different income profile than those who stay, often showing a concentration in the lower quartiles.

Tenure / Experience Impact



Sum of Num Companies Worked vs. sum of Distance From Home. Color shows count of Attrition. Size shows sum of Distance From Home.

Figure 5: Core visualizations including attrition by department, income analysis, and demographic patterns

(Source: Tableau)

Mobility and Experience: A Heatmap is a visualisation that shows the correlation between the number of companies that an employee has worked at (NumCompaniesWorked) and their distance commute (DistanceFromHome). This shows groups of high risk of attrition, including among senior employees who travel long distances.

The Engagement Gap: A Diverging Bar Chart was developed in order to compare the scores on Job Satisfaction between the left and stayed employees. This is a very compelling visualization that pits leavers (negative bars) and stayers (positive bars) on a central axis that allows an immediate and intuitive visualization of the difference in the level of satisfaction.

Performance and Overtime: Performance Rating by Attrition and Overtime by Attrition were plotted with the help of Clustered Bar Charts. Such charts are effective to demonstrate the makeup of groups such as, are our high performers leaving? and "Is overtime a determinant of attrition?"

Diversity and Compensation Equity: A Donut Chart is an uncluttered perspective of the overall diversity in Gender, whereas a common Bar Chart ranks the average Monthly Income per Job Role, and shows the potential pay gaps that should be explored further.

5. Implementation and Dashboard Realisation in Tableau

The dashboard is created by connecting Tableau with the pre-processed CSV file and checking all types of data. All visualizations were then constructed sequentially on separate sheets, utilizing the same calculated fields but using filters to make sure they were correct.

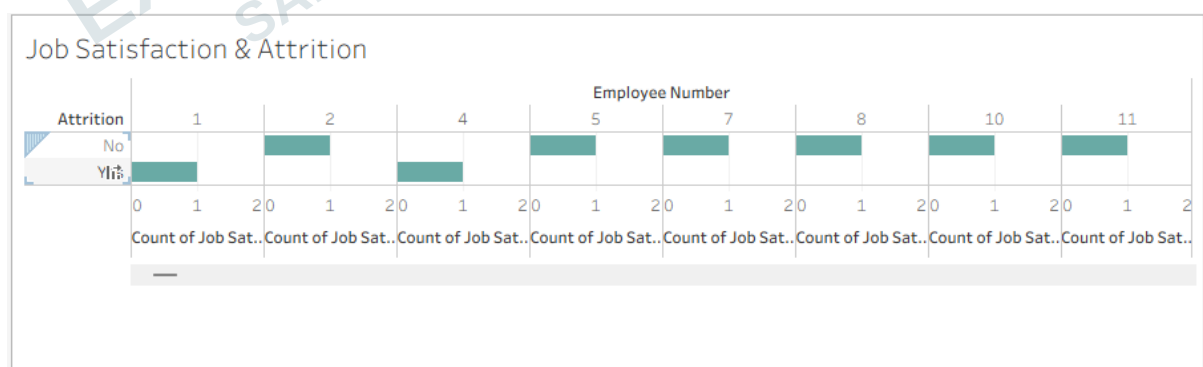


Figure 6: Tableau workspace showing the construction of visualizations and calculated fields

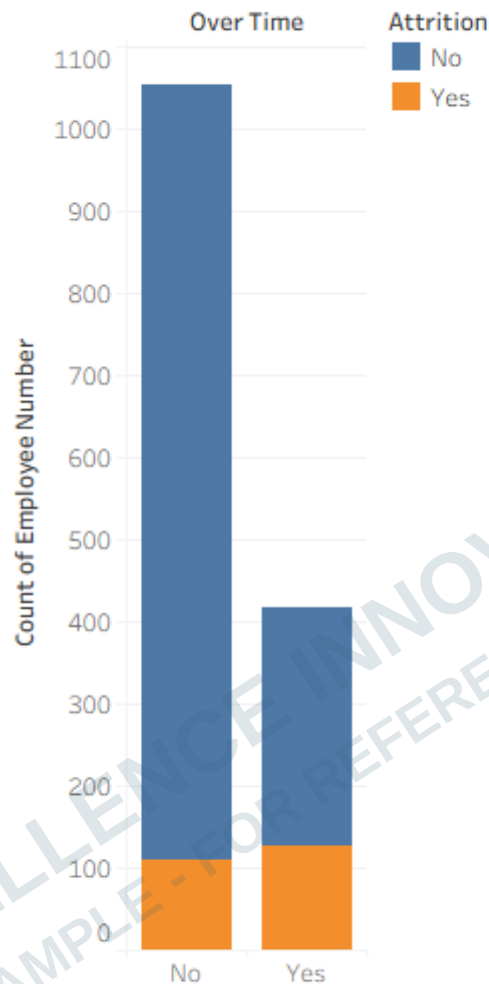
(Source: Tableau)

The individual visual elements were synthesized into a single, interactive canvas following a logical information hierarchy. The top of the dashboard is reserved for high-level KPIs (Attrition Rate, Gender Diversity). The left panel focuses on operational drivers like departmental and overtime analysis. The KPIs are the measurable metrics that used to examine the contribution and performance of a working professional (Ulhaq and Febriansyah, 2023). The central area is dedicated to human factors engagement and performance. The right side discusses compensation information, finally, the bottom is used for the exploratory heatmap for tenure and mobility.

Interactivity was embedded in the fabric of the dashboard. Filters for Department, Gender and Job Role were positioned more prominently so that the user could instantly isolate data for the Sales department, for example, and see all other charts update contextually. Gender and age also influence the acceptance of HR Analytics and it became a new tool for decision making (Muhammad *et al.*, 2024). Additional actions were added in an interactive dashboard. For example, the bar graph can be clicked, which will drill down all the other remaining graphs on the dashboard. This makes for a solid and strong drill-down experience, which serves as a litmus test to the effectiveness and efficacy of good and useful dashboards.

6. Discussion: From Visuals to Actionable Strategy

Overtime & Attrition



Count of Employee Number for each Over Time. Color shows details about Attrition. The data is filtered on Employee Number, which keeps 1,470 of 1,470 members.

Figure 7: Summary of key insights and recommended actions derived from the dashboard

(Source: Tableau)

Younger employees (under 30) and poor individuals are disproportionately represented among leavers. This raises questions about career development, professionalism and remuneration. Engagement is a major factor. The bar chart obviously shows that the employees who leave

have a lesser job and environment satisfaction score. This means that exit and stay in the organizations should be looking in a more effective manner. The story of performance is more complicated. Good and consistent performers also leave. This type of turnover can be detrimental to the organization, as it can result in the loss of experience and institutional knowledge. The effective HR strategy can help HR leaders and practitioners to prevent costly errors associated with unethical practices (Falletta and Combs, 2021). The income by job role chart will enable you to dig up some fairly off-putting pay differences among job in the same company grade in the same level of seniority or women and men in the same job occurring and setting up an instantaneous activity to perform a pay equity audit. Such lessons can help the HR to cease working at the reactive stance, but fall at the proactive one. HR planning recognizes the skills and competencies and acquire them through training to ensure high quality work force to enhance productivity (Susanti *et al.*, 2022). The role of HR is beyond the simple filling vacancies. They can involve in mentoring junior staff, reevaluate compensation bands and implement numerous programs. This can assist to improve job satisfaction in areas where workforce shortages occur.

Data analytics can enable the HR to establish and monitor the Key Performance Indicators (KPIs) based on individual roles and the business goals in general, which can increase the accuracy of the performance reviews. KPIs are now customizable to particular functions-e.g. sales lead generation or support customer satisfaction- to be relevant and understandable. Instead, a company can have real-time measurements that permit it to assess performance at any time, and the assessments remain current and implementable. Automated tracking ensures less time is spent on manual errors although offering accurate and reliable data. Moreover, comparative analysis facilitates benchmarking of the performance against industry standards or even internal standards and gives in-depth understanding of employee and team performance. Specific feedback enables HR to address the areas of operation and improvement of employees, and instead of generic feedback, it provides specific advice (Adabala, 2022). Succession planning is also assisted by the performance data, as it assists in identifying the high-potential employees, and preparing them to take up the leadership position in future. The data-driven career development plans can foster talent through cultivating the growth paths of employees with organizational objectives, as well as have a strategic contribution towards the long-term business objectives.

7. Conclusion and Future Horizons

The project itself is a sign of the possibility of using Tableau to reconcile the very complex HR information and strategic decision-making. This was because of the systematic procedure used in the first stage of raw data into an interactive dashboard which was built through the use of raw data and therefore turned the raw data to a story of a life in conversations. The learning outcomes of the module discussed in the paper are planning and advanced skills in the Tableau software that will result in an interactive dashboard that can hold vast amounts of knowledge that can be retrieved by professional and non-professional users.

Predictive Analytics: Build a machine learning model in which you predict the Attrition risk of every employee and aggregate them to an Attrition risk Score over which proactive retention can be undertaken.

Rich Data Layers: The inclusion of richer data sources such as employee engagement surveys, access to mentorship and detailed skills data would help paint a more comprehensive picture of the employee experience.

Cohort Analysis: It takes the individual hire-year groups all the way to the present and determines the effectiveness of the company programs in retaining personnel on the long term.

8. References

- Adabala, S.K., (2022). The Importance of Data Analytics in Modern HR Practices. https://www.researchgate.net/profile/Sai-Krishna-Adabala/publication/391233667_The_Importance_of_Data_Analytics_in_Modern_HR_Practices/links/680f817dbd3f1930dd6660c8/The-Importance-of-Data-Analytics-in-Modern-HR-Practices.pdf
- Elugbaju, W.K., Okeke, N.I. and Alabi, O.A., (2024). Human resource analytics as a strategic tool for workforce planning and succession management. *International Journal of Engineering Research and Development*, 20(11), pp.744-756. https://www.researchgate.net/profile/Wande-Elugbaju/publication/387222842_Human_Resource_Analytics_as_a_Strategic_Tool_for_Workforce_Planning_and_Succession_Management/links/6764752e117f340ec3cd9055/Human-Resource-Analytics-as-a-Strategic-Tool-for-Workforce-Planning-and-Succession-Management.pdf
- Falletta, S.V. and Combs, W.L., (2021). The HR analytics cycle: a seven-step process for building evidence-based and ethical HR analytics capabilities. *Journal of Work-Applied Management*, 13(1), pp.51-68. <https://doi.org/10.1108/JWAM-03-2020-0020>
- Jain, P. and Jain, P., 2020. Understanding the concept of HR analytics. *International Journal on Emerging Technologies*, 11(2), pp.644-652. https://www.researchgate.net/profile/Pooja-Jain-30/publication/340950833_Understanding_the_Concept_of_HR_Analytics_-_The_Theory_of_HR_Quantification/links/5ea70d21299bf1125612f3b9/Understanding-the-Concept-of-HR-Analytics-The-Theory-of-HR-Quantification.pdf
- Kaggle.com (2020). *IBM HR Data-Employee Attrition Analysis* [https://www.kaggle.com/code/gautambishnoi/ibm-hr-data-employee-attribution-analysis#:~:text=Summary:%20Dataset%20Structure:%201470%20observations%20\(rows\)%20C%2035,in%20the%20organization%20than%20they%20actually%20leave.](https://www.kaggle.com/code/gautambishnoi/ibm-hr-data-employee-attribution-analysis#:~:text=Summary:%20Dataset%20Structure:%201470%20observations%20(rows)%20C%2035,in%20the%20organization%20than%20they%20actually%20leave.)
- Muhammad, G., Siddiqui, M.S., Rasheed, R., Shabbir, H. and Sher, R.F., 2024. Role of external factors in adoption of HR analytics: does statistical background, gender and age matters?. *Journal of Business Analytics*, 7(1), pp.1-14. <https://doi.org/10.1080/2573234X.2023.2231966>
- Opatha, H.H.D.P.J., (2020). HR analytics: A literature review and new conceptual model. *International Journal of Scientific and Research Publications*, 10(6), pp.130-141. https://www.researchgate.net/profile/Hhd-Pooja-Jayani-Opatha/publication/341997548_HR_Analytics_A_Literature_Review_and_New_Conceptual

_Model/links/5edf90c0299bf1d20bdb4d8c/HR-Analytics-A-Literature-Review-and-New-Conceptual-Model.pdf

Rosett, C.M., Hagerty, A. and Rosett, (2021). *Introducing HR Analytics with Machine Learning*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-67626-1>

Susanti, D.E., Wiyanto, D. and Wahidaya, D., (2022). HR Planning Steps Based On Data From Job Analysis Results. *Indonesian Development of Economics and Administration Journal*, 1(1), pp.81-91. <http://ojs.ideanusa.com/index.php/idea/article/download/95/90>

Ulhaq, F. and Febriansyah, H., (2023). Improve employee key performance indicator through establishment of high performing team model (Case study: TNP). *International Journal of Current Science Research and Review*, 6, pp.6092-6100. <https://doi.org/10.47191/ijcsrr/V6-i9-01>

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