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DASHBOARD TO AUTOMATE HR REPORTING

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***Abstract*—This project of data analytics for HR will help the officials of an organization to analyze the big amount of data regarding the employees such employee mode of working as working from home, part time, full time and the irregularity to office easily by creating a dashboard. The organization will struggle with enormous amount of data of employees to have a look on the employee's regularity to office and to generate monthly and annual reports. This problem could be solved by creating a dashboard using data analytics which produces graphs as an outcome which make the job easier and data analyzed can be taken for future developments. An HR dashboard is an analytical tool used by Human Resources teams for tracking, analyzing, and reporting on key performance indicators of the employees within their organization**

Keywords - HR analytics, DAX query, Dashboard,Research, Visualization.

I. INTRODUCTION

This HR Dashboard tool which provides at- a glance of viewof key performance indicators relevant to an HR objective or business process designed to enable HR managers to easily monitor work force metrics. This helps leaders to make decisions to create a better work environment and maximize employee productivity. This Dashboard is based on the metrics of attendance report of the employees in the organization. Currently this dashboard tool is designed in such a way it is completely automated and can be refreshed on its own with internet connectivity at a interval of time. This dashboard tool can also produce alert messages in the form of a email notification when the threshold value is met in the dashboard when it is being updated.

II. SYSTEM REQUIREMENTS

A. Hardware Requirements

- Processor: x64 Processor: AMD Opteron, AMD Athlon 64, Intel Xeon with Intel EM64T support, Intel Pentium IV with EM64T.
- Ram: 4GB or higher.
- Hard disk: Minimum of 1GB. Addition space will berequired on the database.
- Operating System: Windows 8.1 or higher.

B. Software Requirements

Languages Used: DAX Query Language and JSON
Visualization Tool: Power BI
Other Software Tools: Gateway and Power AutomateData Storage Tool: Microsoft Excel.

B. SOFTWARE DESCRIPTION

a. DAX Query language

DAX (Data Analysis Expressions) is a formula language used in Power BI, Excel, and Analysis Services for data analysis. A wide range of calculations, including data aggregation and filtering, the creation of new calculated columns or tables, and complex calculations based on multiple conditions, are all possible with the help of DAX formulas. For data analysis and modeling, DAX is a powerful tool that can be used to create complex calculations that can't be done with standard Excel formulas. DAX extends Excel's capabilities to handle more complex data analysis tasks and is

based on Excel's formula language. Formulas in DAX can reference columns, tables, and other formulas in the same or different tables, and they use functions and operators to calculate data. Users can create powerful data models and analyses with DAX, which provide insights and make it easier to make decisions based on data. Software Description is a technical specification of requirements of software products. This specifies the environment for development, operation and maintenance.

There are several advantages of using DAX for dataanalysis:

- Flexible and Powerful: DAX provides a flexible and powerful toolset for data analysis, allowing users to perform complex calculations and aggregations on data.
- Improved Data Model.

DAX allows for improved data model, enabling users to create more accurate and efficient data models for their analysis.

- Integration with Other Tools: DAX can be used with various other tools, such as Excel, Power BI, and Analysis Services, providing users with a seamless integration experience.
- Reusability: DAX formulas are reusable, meaning that once a formula has been created, it can be reused in other queries, saving time and effort.
- Dynamic Calculations: DAX formulas can be used to create dynamic calculations. DAX is a powerful and flexible language that enables users to perform advanced calculations and analyses on their data, making it a valuable tool for data analysts and business intelligence professionals.

b. JSON

JSON (JavaScript Object Notation) is a lightweight data interchange format that is easy for humans to read and write, and easy for machines to parse and generate. As an alternative to XML, JSON, which is based on a subset of the JavaScript programming language, is frequently utilized to transfer data between a server and a web application. Key- value pairs, where keys are strings and values can be strings, numbers, Boolean, arrays, or other objects, make up JSON, a text-based format. Because it is designed to be simple for humans to read and write, JSON is a popular choice for data storage and transmission. JSON's ease of use and adaptability are among its primary advantages. JSON can be handily parsed by programming dialects like JavaScript, Python, and Java, and can be utilized to communicate information between various applications or frameworks.

JSON's light weight is yet another advantage. Compared to other formats like XML or binary formats, JSON requires less bandwidth and storage space because it is based on text. Because of this, JSON is an excellent format for use in web applications and other settings where speed and efficiency are crucial. Overall, JSON is a popular and widely used data interchange format that is lightweight, flexible, and easy to read and write, making it an excellent choice for many applications involving data transmission and storage.

c. Power BI

Microsoft's Power BI business analytics service lets users visualize and analyze data from a wide range of sources. Power BI has intuitive drag-and-drop features that make it easy for users to create powerful and interactive reports and visualizations without having to know a lot about coding or technology. Power BI's ability to connect to a wide range of data sources, including on-premises data sources, cloud-based services, and Excel spreadsheets, is one of its main advantages. 15 Power BI also includes a number of built in connectors that make it simple for users to connect to popular data sources like Microsoft Dynamics, Google Analytics, and Salesforce. One more benefit of Force BI is its strong information demonstrating abilities. Using Power BI's intuitive Query Editor, users can transform and shape data to create complex data models that can be used for analysis and visualization. Power BI additionally upholds progressed examination and AI, permitting clients to make custom computations and prescient models in light of their information. Power BI also offers a variety of visualization options, such as maps, charts, and tables, that let users create rich, interactive dashboards and reports. Power BI likewise gives a scope of customization choices, permitting clients to tweak the look and feel of their reports and dashboards to suit the requirements. Power BI is a strong and easy to understand business examination administration that gives a scope of elements and capacities for information investigation and representation. Power BI is a great option for businesses looking to gain insights from their data because of its powerful data modeling capabilities, built in connectors and rich visualization options.

d. Gateway

The software application Power BI Gateway connects on-premises data sources to the cloud-based Power BI service. Users can access and analyze data from on-premises data sources in Power BI thanks to the Power BI Gateway, which acts as a link between the Power BI service and on-premises data sources like SQL Server or Oracle databases. Users are able to securely connect to on premises data sources without the need for intricate network configurations or VPN connections thanks to the Power BI Gateway, which can be installed on either a local machine or a server. The Power BI Gateway's capacity to accommodate multiple users and data sources is yet another advantage. The Gateway can be set up to support multiple users, letting each user connect to different on premises data sources. It can also be set up to support multiple data sources for each user, letting them access a wide range of data sources from Power BI.

In addition, the Power BI Gateway offers cutting-edge security features like data encryption to guarantee the safe transfer of data between on-premises data sources and the Power BI service. Users can connect to data sources that Power BI does not natively support by configuring the Gateway to support custom data connectors. The Power BI Gateway is a robust and adaptable instrument that enables businesses to securely link on-premises data sources to the Power BI service. The Power BI Gateway is a great option for businesses that want to use Power BI to get insights from their premises data sources. It supports multiple users and data sources, has advanced security features, and has custom data connectors.

e. Power Automate

Microsoft's Power Automate, formerly Microsoft Flow, is a cloud-based service that lets users create automated workflows between various services and applications. Users of Power Automate are able to streamline business processes and automate repetitive tasks, which results in time savings and increased productivity. 18 Power Automates ease of use is one of its primary benefits. Power Automate has an intuitive user interface that lets users use a visual designer to create workflows without having to know a lot about coding or technology. Power Automate also gives users access toa variety of pre-built templates and connectors that make it simple and quick for them to set up workflows that connect to popular services and applications. Power Automates

adaptability is yet another benefit. Office 365, Dynamics 365, SharePoint, OneDrive, Twitter, and a lot of other services are supported by Power Automate.

Power Automate also offers a variety of triggers and actions that let users create intricate workflows that react to particular conditions or events. Power Automate offers advanced features like conditional logic, data transformations, and error handling, making it possible for users to construct robust and dependable workflows. Power Automate also lets you connect to other Microsoft services like Power BI and Azure, making it possible for you to buildcomplete solutions that use multiple services.

Overall, Power Automate is a powerful and adaptable tool for streamlining business processes and automating mundane tasks. Power Automate is an excellent option for businesses looking to increase productivity and efficiency through automation due to its ease of use, extensive set of applications and services, and advanced features.

III. SYSTEM IMPLEMENTATION

LIST OF MODULES

1. Understanding the requirements.
2. Gathering and Transforming Data.
   i. Data Cleaning and Preparation
   ii. Exploratory Data Analysis
   iii. Creating Metrix using DAX
3. Visualization or Dashboarding.
4. Publishing the report to web.
5. Installing Gateway software to automate dashboard.
6. Email Notification.

A. MODULE DESCRIPTION

a. Understanding the Requirements:

The first step is to define the problem that needs to be solved. The problem should be clearly defined and articulated in order to guide the entire analysis process. In this we are having the year starting from April to March and need to combine the three months of data together to see the insights. In this dashboard we included to see the insights ofthe following:

i. Working Preference of People
ii. Find Sick Leave Percentage

b. Gathering and Transforming Data*:*

The next step is to gather and transform data using Power Query. Power Query is a feature within Power BI that helps you collect and transform data. We have our data in Excel and multiple sheets with different column headers.

- **Data Cleaning and Preparation:** Once the data has been collected, it must be cleaned and prepared for analysis. This involves removing duplicates, correcting errors, and transforming the data into a usable format.
- **Exploratory Data Analysis:** In this step, the data is explored to identify patterns, relationships, and trends. This can involve using descriptive statistics, visualizations, and other analytical tools to gain insights into the data.
- **Creating metrics using DAX:** By leveraging the power of DAX, we create custom metrics that are tailored to the specific needs of their organization, enabling them to make more informed decisions and take action based on data-driven insights.

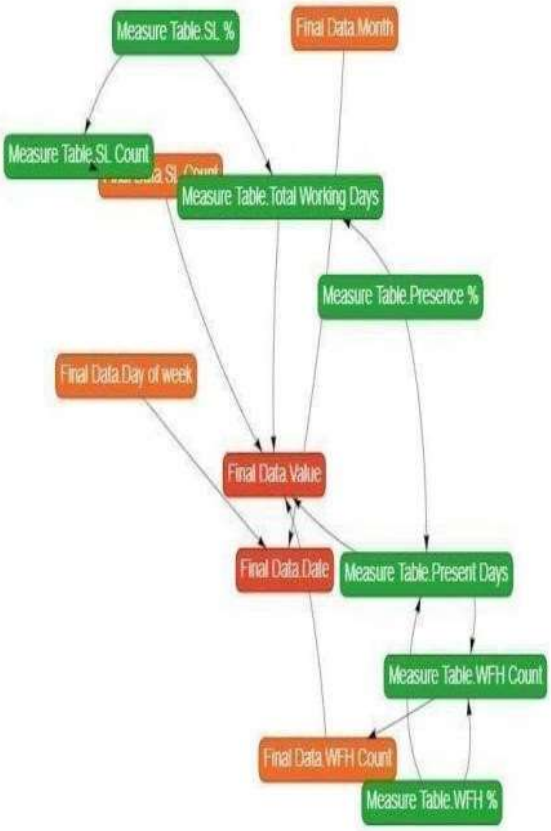
c. Visualization or Dashboarding:

The results of the analysis must be communicated to stakeholders in a clear and visually appealing format. This can involve creating charts, graphs, and other visualizations to help stakeholders understand the insights gained from the analysis.

d. Publishing the report to web:

Publishing Power BI to web means making a Power BI report publicly available on the internet, allowing anyone with access to the report to view and interact with it. This is achieved by publishing the report to the Power BI service and then embedding it into a website or sharing it through a link.

Dependencies:



e. Installing Gateway software to automate dashboard:

Using Gateway to automate a dashboard enables you to keep your data up-to-date and ensure that the visualizations in your dashboard always reflect the latest data. It also allows to connect to data sources that are not available through the cloud, such as on-premises databases, and securely access and refresh the data.

With automated dashboards, we monitor key performance indicators (KPIs), track progress towards business goals, and make data-driven decisions based on real-time insights. When scheduling the refresh, we can choose to refresh the data every hour, day, week, or month. In our Dashboard we set up in such way on daily basis at 3pm automatic refreshment occurs.

f. Email Notification:

We Trigger a cloud flow based on an email's sender by creating a manual flow using JSON in power automate to trigger a mail when the threshold of the value in your created dashboard hits. In our dashboard a separate alert dashboard has been created in such a way if the present percentage hits below 90 percentage it needs to send a mail notification to the particular mail id added.

IV. RESULTS

Our automated dashboard was tested on the features of Email Notification with different trigger values, mail id and the process was successful in all cases. The dashboard was also tested on the feature of automatic refreshment with different time and by adding different data in excel and worked seamlessly by keep on updating the dashboard visuals. The dashboard was also evaluated on various performance metrics, including conversion speed, memory usage, and error handling. The results show that the tool is efficient and reliable with greater visuals. The error handling was also effective, with appropriate error notifications had be sent in case of any issues during the automatic refreshment process.

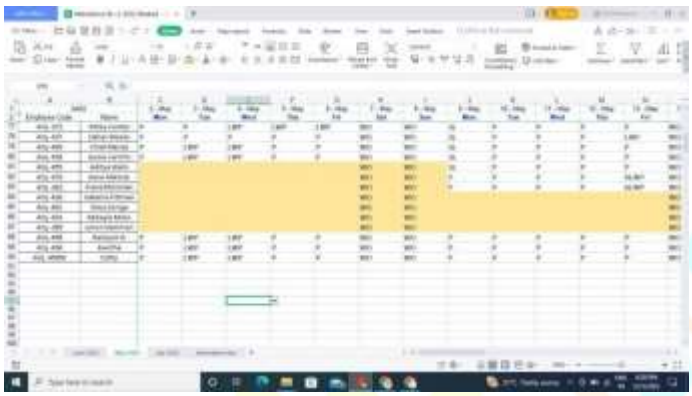


Figure 1: Sheet before Automatic Refreshment.

Name	Monday, May 02, 2022	Tuesday, May 03,
Aditya Walls		
Adriel Pace	P	P
Adyson Moyer	P	P
Ana Little	P	P
Anu	P	LWP
April Ayers	P	P
Athena Rios		
Ayanna Atkins	P	P
Bo Cordova	P	P
Boston Morse	P	P
Briley Orr	P	FFL
Total	**HPL**	**FFL**

Figure 2: After adding a new employee name.

Figure 3: Dashboard before Automatic Refreshment.

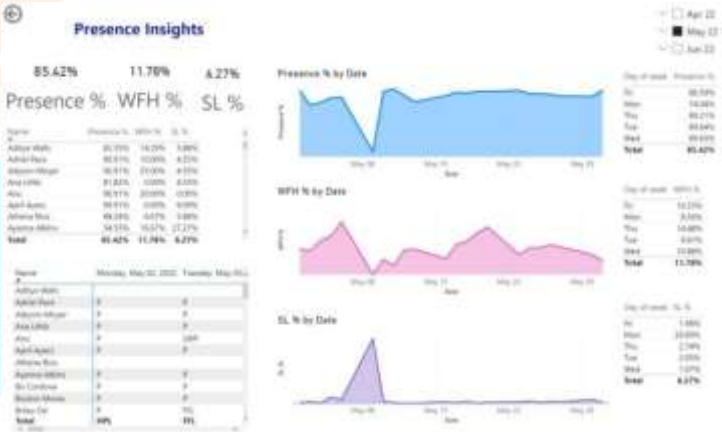


Figure 4: Dashboard after Automatic Refreshment.

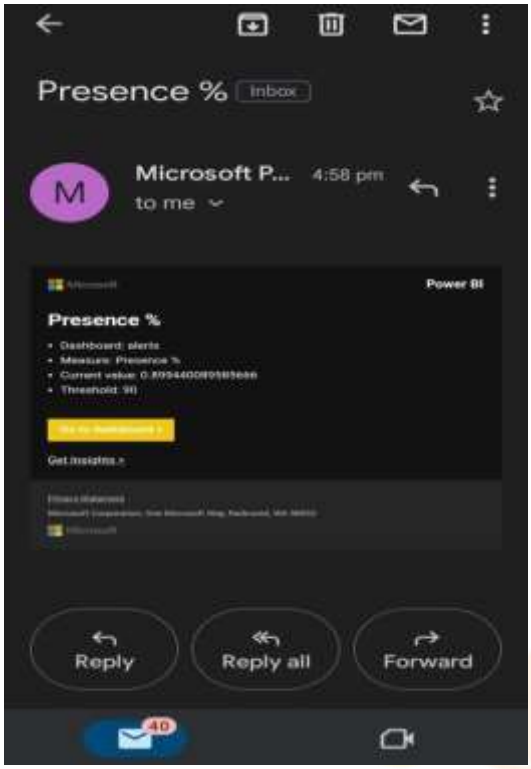


Figure 5: Notification for automatic refreshment Failure due to no internet connection.

V. CONCLUSION:

In this undertaking we had made HR Dashboard device which gives initially of perspective on key execution markers applicable to a HR goal or business process intended to empower HR administrators to screen labor force measurements without any problem. This assists leaders in making decisions to improve the work environment and boost employee output. The organization's metrics for employee attendance serve as the foundation for this dashboard. As of now this dashboard device is planned in such a manner it is totally robotized and can be revived all alone with web network at a time frame. When the dashboard's threshold value is reached while it is being updated, this dashboard tool can also send email notifications as alerts.

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