Business Intelligences using Power BI

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Abstract- **For companies maintaining direct contact with large number of data, growing number of oriented application and create a new challenge: Real-time applications in integrating enterprise application. To learn from future, present, past, many companies are used in Business Intelligence systems and tools. Companies have importance goals defined through business intelligence concepts. It describes the role and requirement of real-time BI.These paper explore based on Business Intelligences concepts, Power BI feature, Benefits, components and BI techniques.**

I. INTRODUCTION

1.Business Intelligences:

Business Intelligences organization make a decision of source and competitive benfits. It explores a information to external environment to internal environment coditions.Business intelligence is gathered proactively and effectively to make decisions.

The objective of business intelligence is to improve the quality of information timeliness. Timely and good quality information is like having a crystal ball that can give an indication of what's the best course to take. Business intelligence reveals

• The position of the organization as in comparison to its competitors
• Changes in customer behavior and spending patterns
• The capabilities of organization.
• Market conditions, future trends, demographic and economic information
• The social, regulatory, and political environment
• What the other firms in the market are doing

Business Intelligence is a very competitive, changing business environment and fast paced and quick to adapt and respond. Business intelligence enables gather information from constantly and quickly changes. Business Intelligence (BI) comprises the technologies and strategies used for data analysis. Business Intelligence (BI)provides many benefits to firms utilizing it. It eliminates a lot of the guesswork within an organization, enhance communication among departments while coordinating activities, and enable companies to respond quickly to changes in financial conditions, customer preferences, and supply chain operations. BI improves the overall performance of the company. The Figure presents an understanding of Business Intelligence (BI). It is a combination of data warehousing and decision support systems. The figure also reveals how data from disparate sources can be extracted and stored to be retrieved for analysis. The basic BI functions and reports are shown in Figure
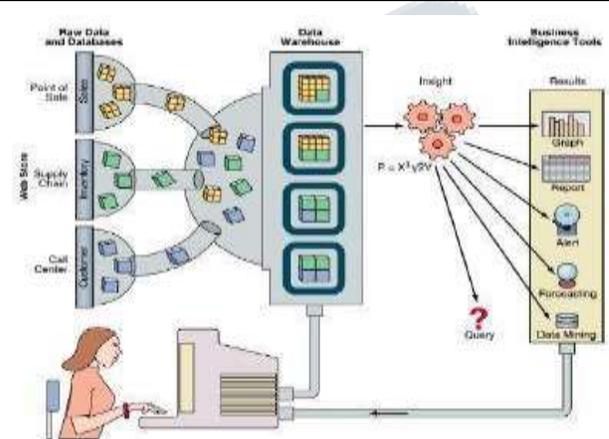

Figure1: Basic Business Intelligences

The primary activities are gathering data, preparing and analyzing data. The data itself must be in high quality. The multiple sources of data is collected, transformed, cleansed, loaded and stored in a warehouse. The related data is for business area that is extracted from the data warehouse. A Business Intelligence organization fully extracts data at every stage of the BI architecture as it progresses through various phases of informational metamorphosis. The raw data is in operational environments, where transactional data is from every source of the enterprise. Therefore, that is the business intelligent organization vision, a natural flow of data, from genesis to action. In addition, at each level in the flow, the data is completely extracted to ensure the increase of information value for the enterprise. BI data can include historical information, as well as new data gathered from source systems as it is generated, enabling BI analysis to support both strategic and tactical decision-making processes. Initially, BI tools were primarily for data analysts and data visualization for business users.However executive and workers are using Bi Software themselves.

II. BENEFITS OF BI

Business Intelligence (BI)[2] provides many benefits to firms utilizing it. It eliminates a lot of the guesswork within an organization, enhance communication among departments while coordinating activities, and enable companies to respond quickly to changes in financial conditions, customer preferences, and supply chain operations. BI improves the overall performance of the company. Information is the second most important resource a company has, so when a company can make decisions based on timely and accurate information, the company can improve its performance. Business Intelligence also expedites decision-making, as acting quickly and correctly on information before competing businesses do can often result in competitively superior performance. Some of them are listed below. With BI superior tools, now employees can also easily convert their business knowledge to solve many business issues, like increase response rates from direct mail, telephone, e-mail, and Internet delivered marketing campaigns. Firms can identify their most profitable customers and the underlying reasons for those customers' loyalty, as well as identify future customers with comparable if not greater potential. Business intelligence has best tools to overcome our companies data in rich visualization .This tools are reduce the data and visualized. These tools are user friendly and simple to use business analysts. In this visualization Power BI is an best tools to visualize our data through the mobiles apps, iOS, Android and Windows applications. Power BI is used for Intuitive Visualization, Server-Level Data Management, Integrate Analytics With Internal Software SystemsProvide Complex Information Within Your Own External, Software and AppStreamline Processes (Sales, Marketing, Operations, etc.), Visualize Details Easily

3. Power BI:

Power BI is a cloud based big data analysis; we can be used for data analysis and reporting from a data source. Power BI is user friendly and simple power user for business analysts work benefits and work with it.Power BI is matures and powerful that can be used for business Intelligence and enterprise systems for complex modeling scenarios and mash-up.

Power BI Components

Power BI made of 6 main components, Components of Power BI are:

Power Query: Transformation tool and Data mash up

Power Pivot: Modeling tool in-memory tabular data.

Power View: Data visualization tool

Power Map: 3D Geo-spatial data visualization tool

Power Q&A: Question and Answering engine in natural languages

Power BI Desktop: A powerful companion development tool for Power BI

Figure 2 :Components of Power BI

- **Power Query**

Power Query is a ETL (Extract, Transform, and Load) and it is self-service tools which runs as an Excel. It allows users to pull data from manipulate and various sources for loading and suits their needs and also user allow to manipulate the pull data.

- **Power Pivot**

Power Pivot is a data modeling that enables a data storage, highly-compressed, calculation and fast aggregation. It also available as part of Excel, data models can be used to create an excel workbook. Power Pivot can load data by Power Query. It is extremely similar to the SQL Server Analysis Services model it is based on the server based version of Power Pivot.

- **Power View**

Power View is a data visualization tool we can drag and drop data quick and easy visualization of the data to the data models.

- **Power Map**

Power Map for Excel is a 3-D data visualization that looks information in new way. A Power map might and insights in 2-D charts and tables.

- **Power Q&A**

Q&A recognizes the words figures out and type to find the answer. Q&A also helps us to question with visual and textual aids, restatement, and auto-completion.

Power BI Desktop

Power BI Desktop Drag and Drop data through the attributes fields and explore a unified view of linked data, interactive visualization. Power BI content a fluid canvas and flexible data. In this Power BI we can extract data through the data base we can also insert, deleting and update data. Power BI features like clustering, grouping, forecasting and measuring.

4. Power BI Architecture:

Microsoft provides user capabilities can be easily applied and integrated to the enterprise platform. Second, business Intelligences provides a cloud based solution, Power BI, which BI capabilities in Excel and provides access

information online and user a platform to share. Third, Microsoft offers lots of product and they more efficient way. Third, Microsoft products with really high reputation used lots of widely and BI solution is well integrated products with others products. The main issues why organizations choose the Power BI.In addition, good quality of product and support, integrated with other applications and systems, good capabilities and development tools and clear infrastructure of Power BI.

advantage of Power BI is to represent a dash boards. For example, Data visualization visualization updates continuously, dashboards is connected to a real-time data sources, enabling analysis. Dashboard may contain data visualization through the multiple visualization. Dashboards are highly customizable – add or pin, any report to any dashboard. You may also add an image through the add data visualization through this Power BI.These Dashboards is popular in Saas offering like Sales force, Marketo, Google Analytics and many others. Once we connected to Saas solutions Power BI display reports and dashboards solutions.
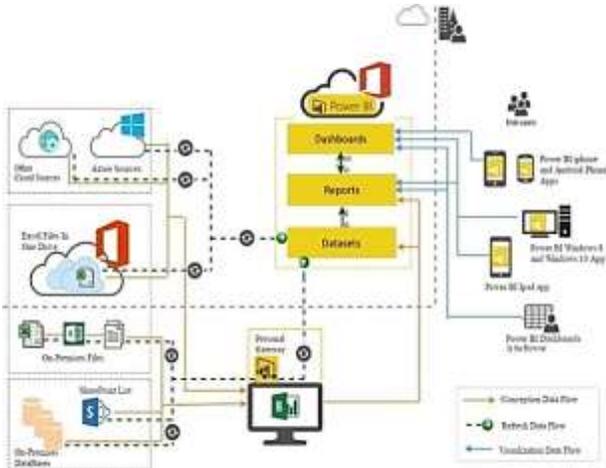

Figure 3: Power BI Architecture

Figure5 : Sample Power BI Dashboard

5. Power BI Service:

The Power BI service, intuitive experience for interacting data. From sharing and creating enhancing reports and exploring dashboards. Power BI makes it easy with data from heterogeneous source, business decision, fueling faster. Power BI is key information, no matter data stored in database. The individual capabilities and components of the Power BI service.

Figure 4: Power BI Overview

1. Live Dashboards

A Power BI dashboard is a set chart, data visualization from one or more reports, and needs to an expertise needed. An

2. Interactive Reports

Power Bi is a user-friendly interface to interactive reports, create rich visualization. A report is based on the underlying datasets. You may select pre-authored reports and construct reports such as reports for a given attributes in the Power BI Desktop. Reports can be customized- for example adding new visualizations and modifying visualizations reports. They need different types of operations using same datasets.

3. Data Visualizations

Reports andDashboards are built using charts or visualizations. Power BI offers a variety of visualization, present data in a compelling and visually manner. Power BI visualization can be applied to any other datasets. It has geographical charts, relationship charts, composition charts, composition charts, mixed comparison based on the results in power BI Desktop visualization.

Figure6: Sample Power BI Visualizations

4. Mobile Applications:

Power BI supports secure dashboard access on any device and connects with iOS, Android and Windows. To enhance the viewing experience, user should be optimized they display. Settings are ease to analysis and access data in the specific visualization. Mobile App in Power BI includes several mobile-specific features. You can also visulized our data through the zoom in and zoom out our visualization. To stay on set up alerts, top of changes, receive a notification in certain thresholds. Take a screenshots of visualization or reports, highlight features. We can also share our data through the SMS or email.

5. Natural language query

Natural language query is also known as Q&A with best feature of Power BI let's ask questions based on charts, new visualizations, plain English. Ask anything of your data- Q&A on aggregates, displays data and groups based on key words in the question asked. Activate Q&A simply by typing in the Q&A at top of the dashboard, as shown in Figure. In power BI we can generates a charts, modify it by asking more quest ions and Pin the chart to the dashboard if desired desktop. Dashboard can contain multiple datasets and charts in involve datasets. Q&A provides the best results and set up with natural key phrasing.
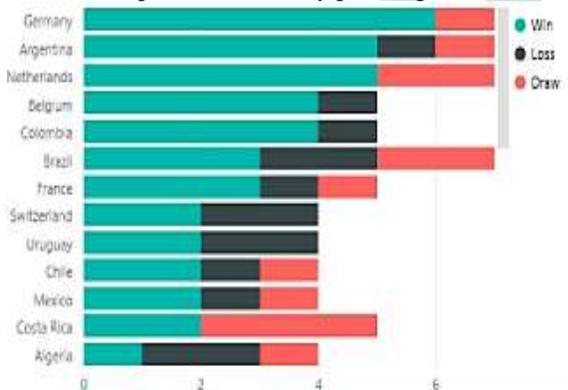

Figure7:Ask Questions of your data

6. Data refresh in Power BI

Power BI keeps all of your current data with automatic, real-time updates, and scheduled   refreshes, and live connectivity depending on the data source.

1. Real-time visibility and live connectivity

Real-time visibility is available via Power BI API and Azure Stream Analytics. These data will be directly enter into Power BI Desktop and uncover real-time insights. . For example, data from Internet of Things (IOT) devices such as real-time analysis. Live data will be connect to the on-premises data sources, including SQL Server Analysis Services (SSAS).there is no need to refresh data .Data is accessed through the live queries. When you are click on the live data from the data sources. We can also set our timing the power BI desktop.

In Saas solution, we can refresh our data in two ways. Power Bi will be automatically refreshes data daily.
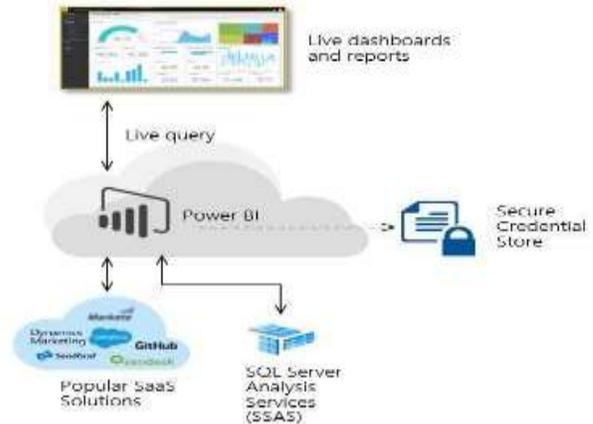
Figure 1: Sample Power BI Visualizations

You can refresh data on-demand. Reports based on SQL Queries, Excel files, Drives through the data base it can be automatically refresh our data in any version file will be available. Power BI Desktop connect to a variety of cloud based data sources, including Sales force, Facebook, Table storage, Azure SQL, Azure Marketplace.

3. Scheduled refresh using Power BI Personal Gateway

The Power BI Gateway easily and securely sync in on-premises data. Power BI Desktop business analysts can import data from on-premises sources and publish. The Gateways sync with dashboards and reports in Power BI Desktop.The Personal Gateway will be easy to access our data. If the Personal Gateway is running on the computers, data will refresh. The Personal Gateway helps analysts to refresh and started in Power BI.Power BI is an self-service Prepare your data: Connect to your data source Power BI connects to data sources, Query functionality.

- File (such as Excel and CSV files),
- Database (such as Oracle and SQL Server databases),
- Azure (a variety of Azure services), and
- Other (sources such as Facebook, Google Analytics, and the Web). Quickly locate thedata source you need with an intuitive search function.

7. Features of Power BI:

Power BI adds cloud-based Power Query and Power Map features to Microsoft Excel, and it lets users work with internal and external sources accessed online through a Private Data Catalog and the Azure Data Marketplace. The preview features include: Dashboards: These combine multiple data visualizations in a single interface, offering an easy way to monitor key performance indicators, whether tied to internal or external data sources.

- New visualizations: The list includes combo charts, fill maps, gauges, tree maps, and funnel charts.
- Connectors for popular SaaS services: These connectors tap into services including Microsoft Dynamics CRM Online and Dynamics Marketing, Marketo, Salesforce Github, Send grid, and Zen desk.
- Live connectivity to SQL Server Analysis Services: Here's another no-brainer. Now you can use the cloud-based Power BI service without having to move data from Microsoft SQL Server instances into the cloud. Microsoft says these connections are secure.

8. Data Source Limitations and Issues:

- Not able to change data source type in Power BI report
- Not supported to use SQL statements as source in Power Query
- Unsupported data types
- Fields in Power View reports are not updated when changed in Power Pivot
- Not able to update fields in Power
- Pivot when using Power Query
- Scheduled data refresh max time span
- Not able to cancel a scheduled data refresh
- Not able to disable a report once enabled in Power BI

9. Uses of Power BI
Intuitive Visualization
Server-Level Data Management
Integrate Analytics With Internal Software Systems
Provide Complex Information Within Your Own External Software and App
Streamline Processes (Sales, Marketing, Operations, etc.)
Visualize Details Easily

10. Dashboard Development:
In this section, a sample dashboard development to shows the visualization in Power BI Desktop and we will represent the modules in the whole dashboard. We will consider information in the organization. The dashboard represents different visualizations to represent in the different visuals these attributes are taken from Oracle Database.
Power BI has advanced features like Data Connectivity Gateways can access on-premises data, live data sources and publish organizational and many more. Features of Power BI availability of Dashboard.
Figure shows data visualization produced in organization. The data sources include database and Excel sheets.

Figure 9: Power BI dashboard

III. CONCLUSION

Data visualization is the major concern in the organizations to represent data in a pictorial or graphical format. It enables decision makers to see analytics presented visually. Excel is the basic visualization application but it has some disadvantages. Now-a-days plenty of Business Intelligence(BI) tools are available in the market to represent data graphically. Power BI is one of the business Intelligence and Analytical tool available in the market with better features and functionalities like easy to use, Data updating, Security, Interaction, Large datasets, Publishing and Sharing. It visualize large amounts of complex data is easier than poring over spreadsheets. Power BI is a cloud-based business analytics service that gives you a single view of your most critical data.

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