A

PROJECT REPORT

ON

"POWER BI: SCOPE AND S.W.O.T ANALYSIS"

SUBMITTED TO

IN THE PARTIAL FULFILMENT OF THE REQUIREMENT OF

MASTER OF BUSINESS ADMINISTRATION (M.B.A.)

Under the guidance of

Submitted by

Rohit Bansal

MITU21MBDS0002: 2021-23

PROJECT GUIDE

Dr. Geeta Rao
Head of Department

Maharashtra Institute of Technology College of Management, Pune

Affiliated to Maharashtra Institute of Technology Art, Design and, Technology University, Pune

MIT College of Management, Pune

Certificate

This is to certify that Mr. **ROHIT BANSAL** has submitted a summer project on "**POWER BI: SCOPE AND S.W.O.T ANALYSIS**" to MIT-ADT University, Pune for the partial fulfilment of Master in Business Administration (M.B.A.)

We further certify that to the best of our knowledge and belief, the matter presented in this project has not been submitted to any other degree of diploma course.

Dr. Geeta Rao

Internal Guide **Head of department**

DECLARATION

I hereby declare that the following project report titled "**POWER BI: SCOPE AND S.W.O.T ANALYSIS**" is an original and authentic work done by me for the partial fulfilment of **Master of Business Administration in Applied Data Science** degree programme at "**Dish TV India Ltd.**"

I hereby certify that all the endeavours put in the fulfilment of the task are genuine and original to the best of my knowledge & I have not submitted it earlier elsewhere.

Rohit Bansal
Master of Business Administration in Applied Data Science
MITU21MBDS0002
MBA-2022-23
(Signature of the Student)

ACKNOWLEDGEMENT

I take this opportunity to express my heartiest gratitude to Maharashtra Institute of Technology College of Management for permitting me to undertake this research and supporting me during this research and otherwise also.

I would like to extent my hearty thanks to entire faculty members of MBA in Data Science department for their constant corporation and support to take decision during the course of my research.

I deem it my duty to record my gratitude towards my Internal Project Supervisor Dr Geeta Rao to guide me and encourage me to the best.

ROHIT BANSAL
MITU21MBDS0002

TABLE OF CONTENTS

CHAPTER 1

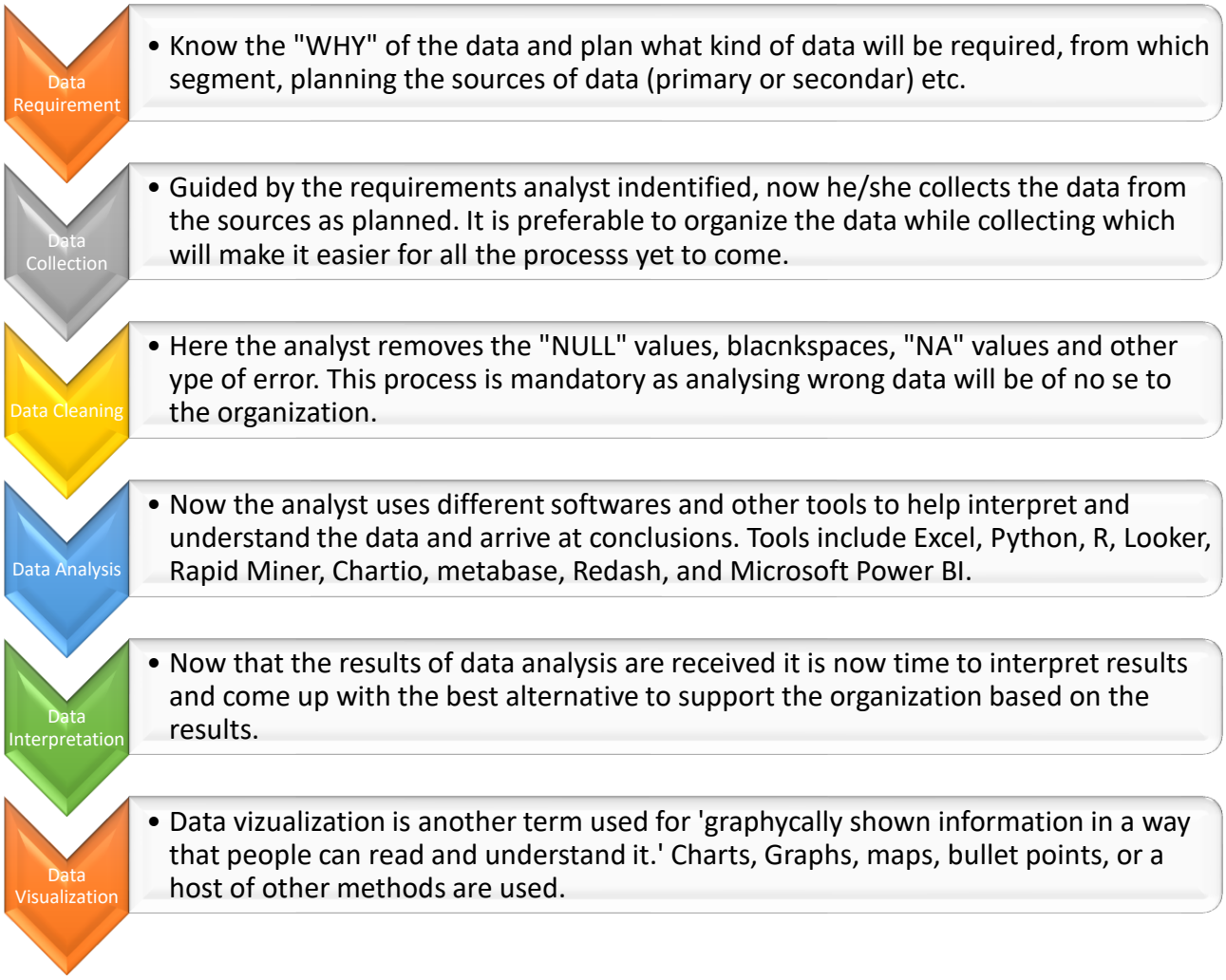
INTRODUCTION.

1.1 INTRODUCTION

To analyse the scope of Power BI we need to understand what is Power BI and what services does this offer to its users.

Power BI helps the analyst in various minor area which helps the analyst to better understand and present better and more effective insights. Along with such minor support systems one of the major task Power BI has is to visualize the data which in technical term is called data visualization.

In the era where huge amount of data (big data) is generated every minute it becomes really complicated for the business to catch-up with the trends using the generated data. MNCs and other large-scale organizations hire data analysts, business intelligence, business analysts or data scientists to help them understand and present valuable insights to the decision-making teams. All these data analysts, business intelligence, business analysts or data scientists need to understand the data themselves first so that they can present their personal professional insights to the teams waiting for their presentation. data analysts, business intelligence, business analysts or data scientists follow multiple steps to understand the data:



With the goal of making and presenting the data in a manner that majority of the authorised users understand and can use the data, data visualization helps increase the pace of company's growth.

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

In the world of Big Data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decisions.

1.2 ADVANTAGES OF DATA VISUALIZATION

- Analysing in a better way: -

  Analysing reports helps business stakeholders focus on the area that require attention. The visual mediums help analysts understand the key points needed for their business. Whether it is a sales report or a marketing strategy, visual representation of data helps companies increase their profits through better analysis and better business decisions.

- Faster decision making: -

  Data visualization allows business users to gain insight into their vast amounts of data. It benefits them to recognize new patterns and errors in the data. Making sense of these patterns helps the users pay attention to areas that indicate red flags or progress. This process, in turn, drives the business ahead.

- Easily sharing information: -

  A large amount of data can be combined into a graph of half page. A pie chart can represent lakhs of data generated every second. Using proper and correct tool of visualisation data can be shared easily and quickly.

- Interactively explore opportunities: -

  Data visualization provides an interactive exploring opportunity using specific software and languages. For example, Power BI allows users to interact with the dashboard. Such interaction option lets the user select the required data and check the interpretations.

- Visualize patterns and relationships: -

  Data visualization helps make correct and logical relationships of data. The patterns of graph, divisions of pai chart, heights of bars in bar graphs, density and/or colour used on maps etc shows the patterns and make logical relationships between the data and respective sets.

CHAPTER 2

CONCEPTUAL BACKGROUND

The invention of computer technology makes the huge change on the way of visual representation of data. Data analyst has become quicker and more accuracy using computer graphical data visualization. Data visualization has become an important part of research in many fields including algorithms, human perception, animation, computer vision and so on. Data visualization is usually associated with the field of computer science in the contemporary society. As an emerging field, it is considered a sub-classification of visualization and is regarded as "the science of visual representation of 'data'. The technology of data visualization has evolved from using hand drawing in the earliest stages, to "photo-etching", to using computer technology, such as computing graphics and software. In particular, the development of computer software has advanced the application of data visualization, allowing users to manipulate a substantial amount of data for exploration and analysis in an easier and more affordable way. In this book, data visualization that focuses on the communication for understanding data rather than any other approaches is considered as traditional data visualization.

Traditional data visualization has a number of advantages. To begin with, it has the ability to represent a vast amount of data immediately. Secondly, it enables viewers to identify emergent properties (e.g. patterns) in the data immediately for formulating new insights. The third advantage is that it can be used for product quality control where the immediate identification of problems is made possible through the data analysis. The fourth is that it enhances the understanding of large-scale and small-scale data. In this regard, Gray, Mayer, and Hughes suggest that data visualization assists in the constructing of hypotheses.

Data visualization often results in graphical images of data or concepts, which assists making decisions. The development of computing technology facilitates data visualization, identifying useful information or deriving insights from the graphical images. The importance of data visualization is described as follows:

The success of data visualization is due to the soundness of the basic idea behind it: the use of computer-generated images to gain insight and knowledge from data and its inherent patterns and relationships. A second premise is the utilization of the broad bandwidth processes, and simulations involving data sets from diverse scientific disciplines and large collections of abstract data from many sources.

This statement emphasizes that data visualization as scientific research relies on computing technology and its utilization for the process of information. For this research, it is necessary to initially define the concept of data visualization in order to explore and identify the key forms and characteristics for designing a theoretical framework for Taoist data visualization.

2.1 The Ben Fry Visualizing Data Process

The Ben Fry visualizing data process is very helpful. It involves 7 steps. For more details, refer to his book: Visualizing Data.

1. Acquire: Obtain the data, whether from a file on a disk or a source over a network.

Data can be collected from many resources such as books, files and digital documents. This is the beginning and fundamental step of data visualization.

2. Parse: Provide some structure for the data's meaning, and order it into categories.

You may have collected immerse data, but it is necessary to restructure the collected data. This structure will make it easier to know convey to others what data you have by format, tags, names, and indices.

3. Filter: Remove all but the data of interest.

Not all data is useful. Filter out the data that cannot serve your goal. If you are focusing on the data of a specific period, remove the data of other periods.

4. Mine: Apply methods from statistics or data mining as a way to discern patterns or place the data in mathematical context.

Data visualization is to help viewers seek for insights that may not be gained from raw data or statistics. This step helps get basic understanding of the data that is significant for the whole process.

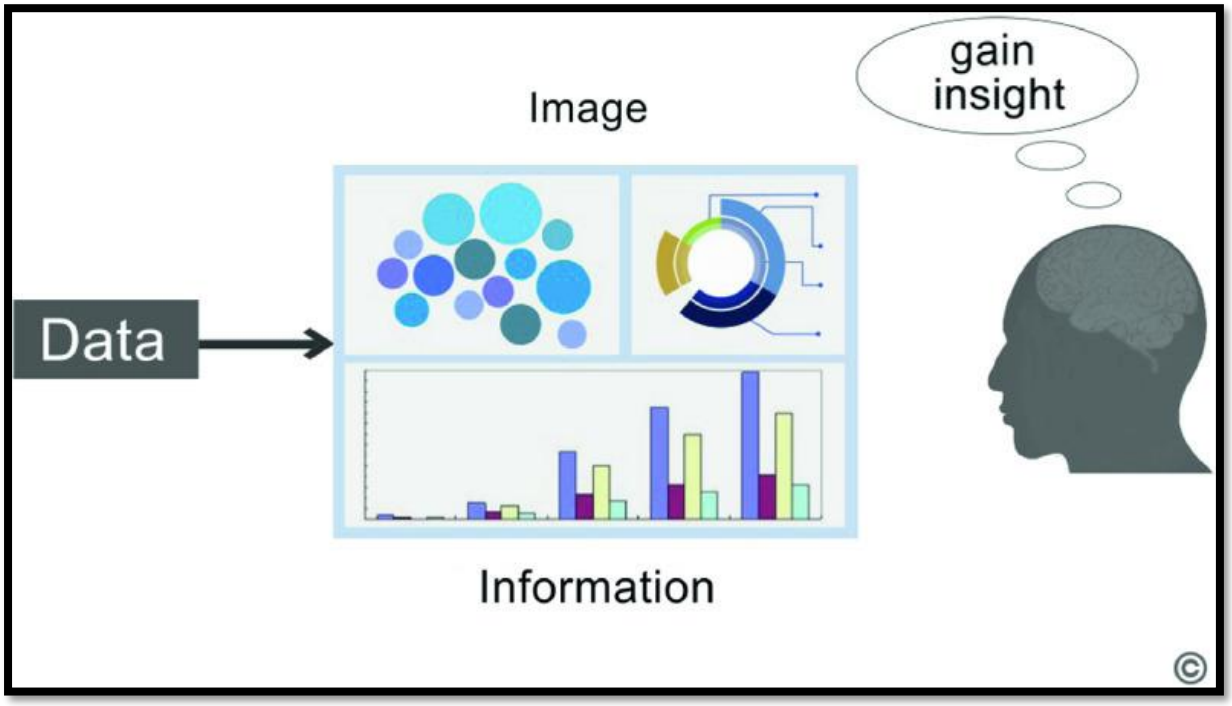
5. Represent: Choose a basic visual model, such as a bar graph, list, or tree.

Various visual models are available. You need to select the suitable type that best suits your need. Edraw data visualization software helps you produce over 200 kinds of visuals instantly.

6. Refine: Improve the basic representation to make it clearer and more visually engaging.

Polish your work according to some basic colour and graphic design theory. You can also rely on Edraw by just choosing one theme which includes harmonious colour, font, and line style.

7. Interact: Add methods for manipulating the data or controlling what features are visible.



The process of data visualization, illustrated by Yaqin Fu

The forms of traditional data visualization. It shows the types and common forms of data visualization

Data visualization	**Common forms**
Information visualization: the process of representing abstract data in a visual way, which users can understand meaning of it	Tables; Charts; Trees; Maps; Scatter-plots; Diagrams; Graphs
Scientific visualization: the representation of data graphically as a means of obtaining comprehension and insight into the scientific data. It can also refer to visual data analysis	Simulations; Waveforms; Volume

CHAPTER 3

INDUSTRY ANALYSIS

The report is presented as a part of Master in Business Administration program specialization in Data Science hence the industry for the report selected was Data science industry.

According to an article published by IBM, data science majorly combines: -

- Maths.
- Statistics.
- Specialized programming.
- Advanced analytics.
- Artificial Intelligence.
- Machine Learning.
- Field knowledge.
- Strategic planning.

There are specific roles and responsibilities a data scientist must be able to do such as: -

- Know enough about the business to ask pertinent questions and identify business pain points.
- Apply statistics and computer science, along with business acumen, to data analysis.
- Use a wide range of tools and techniques for preparing and extracting data-everything from database and SQL to data mining to data integration methods.
- Use a wide range of tools and techniques for preparing and extracting data—everything from databases and SQL to data mining to data integration methods.
- Extract insights from big data using predictive analytics and artificial intelligence (AI), including machine learning models, natural language processing, and deep learning.
- Write programs that automate data processing and calculations.
- Tell—and illustrate—stories that clearly convey the meaning of results to decision-makers and stakeholders at every level of technical understanding.
- Explain how the results can be used to solve business problems.
- Collaborate with other data science team members, such as data and business analysts, IT architects, data engineers, and application developers.

A data scientist brings many benefits and increases the pace of growth proportionally to the quality and efficiency of the decisions the analyst makes. Below are some reasons any organization needs a data scientist: -

- **Adaption to Dynamics of the Industry**

A business analyst can help your organization deal with the changing landscape of the industry you belong to. They are apt at understanding the catalysts of change and design strategies to adapt to the rapidly changing dynamics.

If you are entering new markets, a business analyst can provide valuable information to navigate the unknown markets and achieve a positive stance.

- **Creating Backup Plans**

Every project comes with its own set of risks; hence, you must always have a plan "B" if things go sideways. A business analyst can develop backup strategies, processes, and protocols to deal with any mishaps.

They use both data and technology to define processes that can help your business sustain any damage caused by unforeseen circumstances. Having a backup plan can also prevent your business from having any reputational damage.

Sometimes, a business analyst can foresee the problems and create back up plans. However, they are also capable of developing and executing workable solutions when problems arise.

- **Identification of your Project's Needs**

A business analyst can help evaluate a project before its execution. This can help you avoid any roadblocks and ensure that your project will adhere to its timelines. For this, a business analyst will do the following

- Define the scope of the project
- Identify all roadblocks as well as opportunities for improvements
- Collaborate and communicate with all the stakeholders
- Assess if the current processes and/or operations need any enhancements
- Help you deal with any recommended changes
- Delivering results on time

- **Access to Expertise**

No matter how profitable your business is, you will always need an expert's touch to make it better. While hiring a project manager who can run analysis and oversee the execution of a project may cost you less, a specialist business analyst would definitely be far more advantageous.

For example, you hire a project manager who has to run business analysis as well. There is always a chance that they will start to struggle with both duties, which will be detrimental for the person's ability and the business.

Therefore, hiring a business analyst sounds more viable in the long run because it will let other team members focus on their individual roles.

- **Offering a Competitive Edge**

To be successful in the current business climate, you must capitalize on any competitive advantages you can get, and hiring a business analyst is one of them. Whether you are a small to medium-sized business or a full-scale multinational company, a business analyst or a team of them can be a valuable asset to your organization.

They can help you make the best moves at the right time. You can use their valuable knowledge to make both tactical and strategic moves in the market.

- **Bridging the Gap between Several Business Domains**

A business analyst can help bridge gaps between your company's technical, operational, and customer-focused departments.

These industry experts will act as translators between several business functions, resulting in a better understanding of the organization's strategies. This will result in controlled costs, efficient production, and meeting business goals.

- **Assistance in Test Scenarios**

While you are testing new business models and strategies, a business analyst can help design and execute test scenarios. This will help you run more analysis for a more productive and profitable outcome of a project.

CHAPTER 4

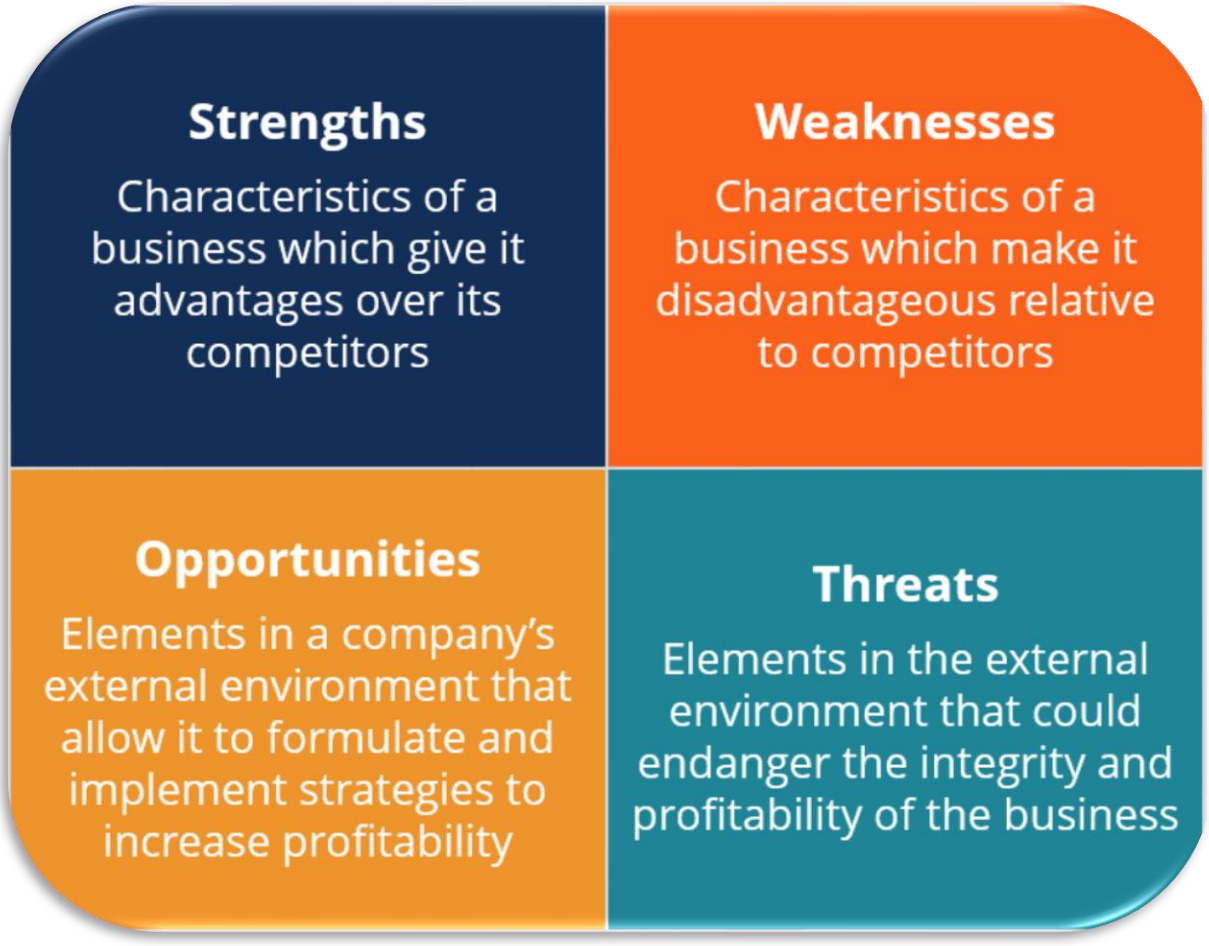
BUSINESS ENVIRONMENT ANALYSIS.

4.1 **S.W.O.T. Analysis of Power BI**

About S.W.O.T. analysis

Developed at Stanford University in the 1970s SWOT analysis is a technique frequently used in strategic planning. S.W.O.T. is an acronym which stands for: -

- **S**trengths.
- **W**eakness.
- **O**pportunity.
- **T**hreats.



SWOT analysis helps management better understand the current position which will encourage ideas and decision-making on how to build on strengths.

4.2 S.W.O.T. analysis of Microsoft Power BI

Being an emerging business analytical tool, which serves as one of the major pillar for the data analysis process it becomes important to study and analyse the software and check the efficiency of the software by doing an efficient SWOT analysis. To know about the software in more below are the key features of Microsoft Power BI: -

- Hybrid deployment support.
- Quick insights.
- Customization.
- User friendly.

i. STRENGTHS

- **Affordability**

The non-technical users as end user can access to Microsoft Power BI via desktops which only costs $9.99 per user, per month.

- **Brand Recognition**

As Microsoft is the largest brand in the market thus it will successfully integrate as well as concentrate to this business product of Microsoft's BI tool to provide the original front end interface to capture the market.

- **Great use for Excel users**

As a Microsoft Excel power user, it will be the great platform to analyze data to make the report by own practice because the tool navigation is very similar to excel.

- **Customer visualization capabilities**

Microsoft Power BI has around 16 different chart types which is a greater chance for customer to analyze data in a variety of formats and visualizations.

- **Extensive database connectivity capabilities**

Microsoft Power BI connects extensive databases where the cloud-based connection options do well for the connection of database connectivity.

ii. WEAKNESS

- **Risk in handling large data sources well**

Sometimes, when it is trying to connect and import large datasets, it is seen that lot of time is taken and delivers a slow performance.

- **Pretty complex**

Actually, it's very difficult to understand exactly what components of Power BI an end user may need and the component list is long whereas there are so many moving parts to this software and those more parts to the software have the chance to breakdown the system route that may create troubleshoot.

- **It doesn't have a solution for data quality**

There is an assumption that the data has already been properly scrubbed and cleaned up which is a great risk for the mean of data quality and it shows that is has no solution for data quality.

iii. OPPORTUNITIES

- **Fast and Accurate Data Access**

In future, Microsoft Power BI will be the source of fast and accurate data access platform.

- **Focus on Innovation**

Microsoft always focus on the significant Innovation of their products from their Centre where research and development make the system more reliable and training make the best use of system.

iv. THREATS

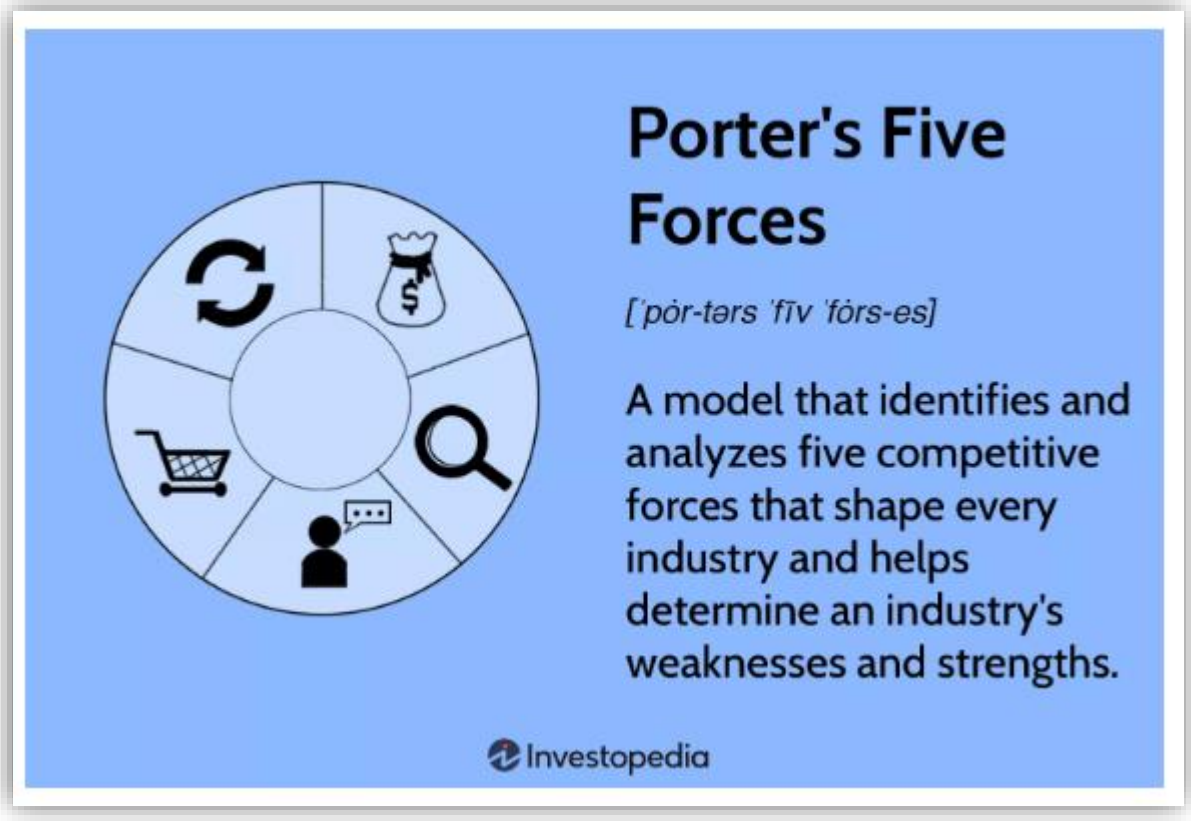
- **Cloud computing tools development by others**

Cloud computing is the form of innovation which is being delivered by many organizations, thus it may create a threat.

- **System performances break down**

Once the system breakdown there is a chance of losing huge database, thus the system should be utilized properly.

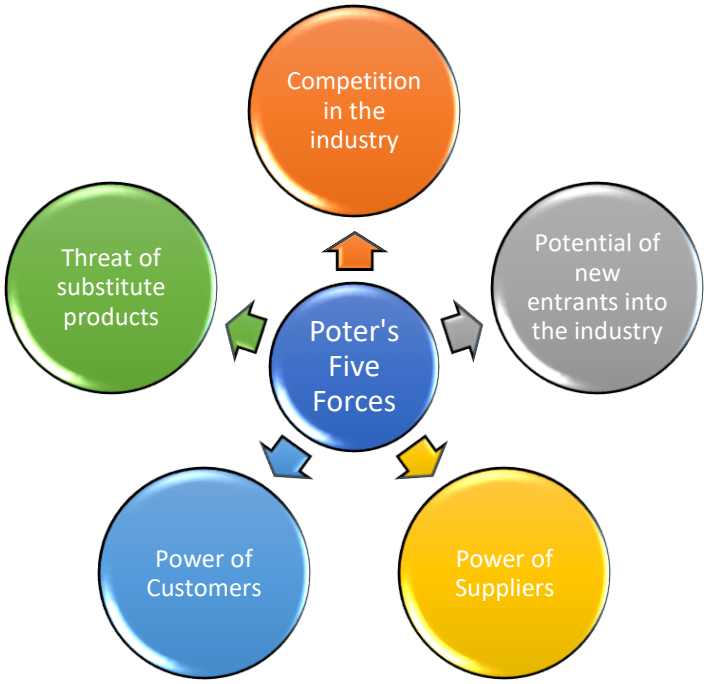
4.3 POTER's FIVE FORCES MODEL



What Are Porter's Five Forces?

Porter's Five Forces is a model that identifies and analyses five competitive forces that shape every industry and helps determine an industry's weaknesses and strengths. Five Forces analysis is frequently used to identify an industry's structure to determine corporate strategy.

Porter's model can be applied to any segment of the economy to understand the level of competition within the industry and enhance a company's long-term profitability. The Five Forces model is named after Harvard Business School professor, Michael E. Porter.
Porter's 5 forces are:



1. Competition in the Industry

The first of the Five Forces refers to the number of competitors and their ability to undercut a company. The larger the number of competitors, along with the number of equivalent products and services they offer, the lesser the power of a company.

2. Potential of New Entrants Into an Industry

A company's power is also affected by the force of new entrants into its market. The less time and money it costs for a competitor to enter a company's market and be an effective competitor, the more an established company's position could be significantly weakened.

3. Power of Suppliers

The next factor in the Porter model addresses how easily suppliers can drive up the cost of inputs. It is affected by the number of suppliers of key inputs of a good or service, how unique these inputs are, and how much it would cost a company to switch to another supplier. The fewer suppliers to an industry, the more a company would depend on a supplier.

4. Power of Customers

The ability that customers have to drive prices lower or their level of power is one of the Five Forces. It is affected by how many buyers or customers a company has, how significant each customer is, and how much it would cost a company to find new customers or markets for its output.

5. Threat of Substitutes

The last of the Five Forces focuses on substitutes. Substitute goods or services that can be used in place of a company's products or services pose a threat. Companies that produce goods or services for which there are no close substitutes will have more power to increase prices and lock in favourable terms. When close substitutes are available, customers will have the option to forgo buying a company's product, and a company's power can be weakened.

4.4 FIVE FORCES FOR POWER BI

1. Competition in the industry

As the need for data analysis and data management increases the need for software to assist also increases, which results in increasing chances for competitions. There is already great competition in the industry but only the most trustworthy companies and software are successful.

2. Potential of new entrants into the industry

The more difficult it is for new entrants to enter the industry the more benefit old organizations enjoy. Power BI does allow new entrants to enter into the market but the trust which is earned through years of connection between the users and the company is really difficult to make.

3. Power of suppliers

The supplier to the company has certain powers which can influence the price of the service the company wishes to provide. In our case Microsoft Power BI needs to maintain a smooth server network for the best user experience. Also to maintain and store user data Microsoft needs huge data storage servers which is generally outsourced to data server companies.

4. Power of customers.

To maintain the balance between the parties, Microsoft Power BI gives certain powers to the customers such as, it is in the hands of customer if he/she wishes to cancel out the premium membership and stop paying the company, it is in the hands of customer what cookies and system permissions he/she is comfortable to share with the company.

5. Threat of substitute products.

As the need for data management increases there area already many potential substitute products available against Power BI. Microsoft Power BI does have many unique features but below are some products which are potentially the substitutes of Microsoft Power BI: -

- Tableau
- Domo
- SAP
- Looker
- Fusion Charts

CHAPTER 5

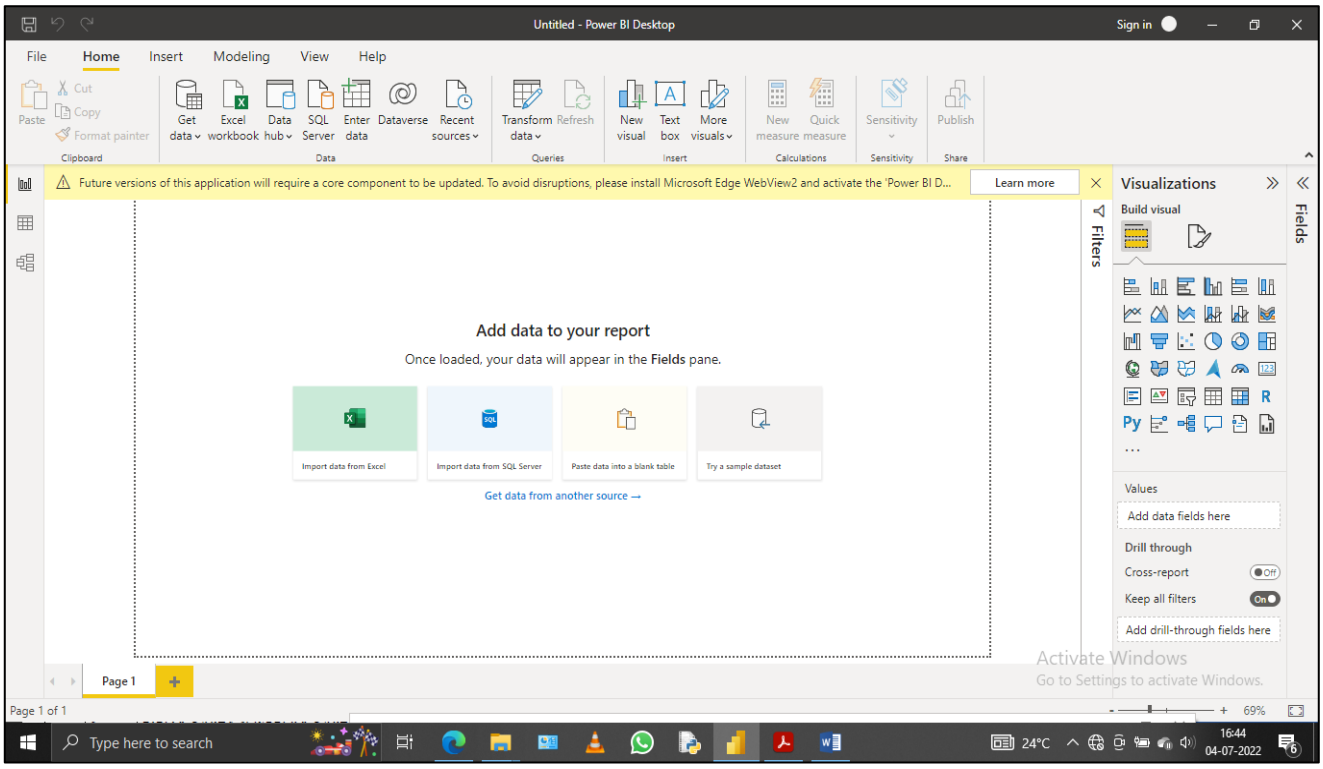
FINDINGS

Microsoft Power BI is a self-service business intelligence cloud service that provides non-technical business users the service of analysing, visualizing and sharing data to the connected servers from where the stakeholder can get the data for their data analysis. Along with this huge support, it is the great innovation to store, maintain huge database.

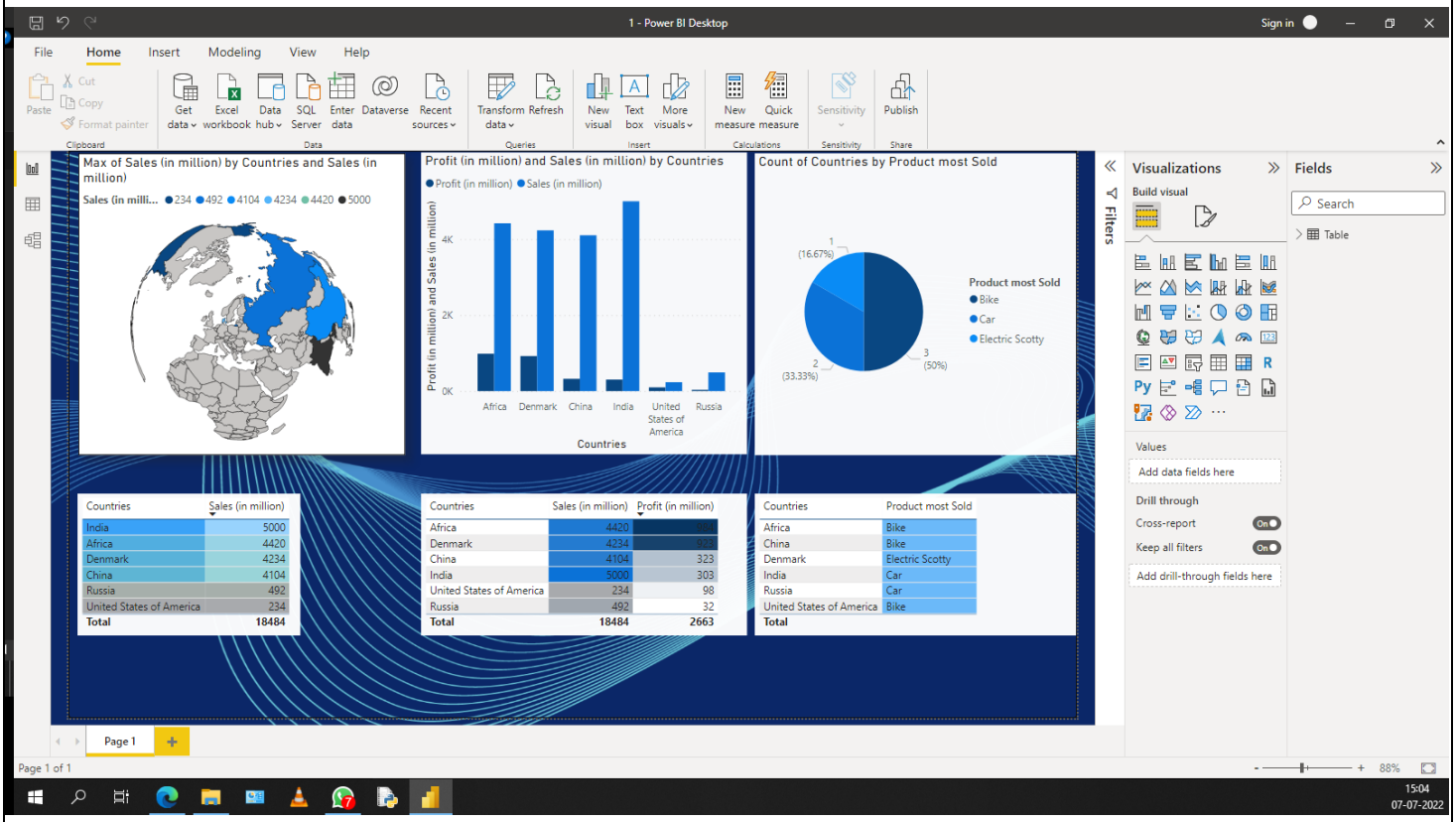
Being a software emerging from such a reputed and established brand Powe BI still needs few updates to be accepted by the users in more quantity. Even after such a great branding and brand position Power BI can do more better in its field. Following are the major findings from the report: -

- Power BI has a very restricted and limited use as compared to its supplementary options.
- As the velocity of data increases the volume of data also increases simultaneously which results in need for large storage. When the analyst inputs data now the speed of software does get impacted. In coming days, it is important for Power BI to upgrade and run smoothly even with more data volume.
- When compared to other options available in the market against Power BI it was found that users feel more comfortable with the UI of power BI than other data visualization software.
- Options available in Power BI are wider and has more scope. More effective and better interactive data visualization tools are available for the analyst which in result helps in formation of more efficient and logical data visualization dashboards.

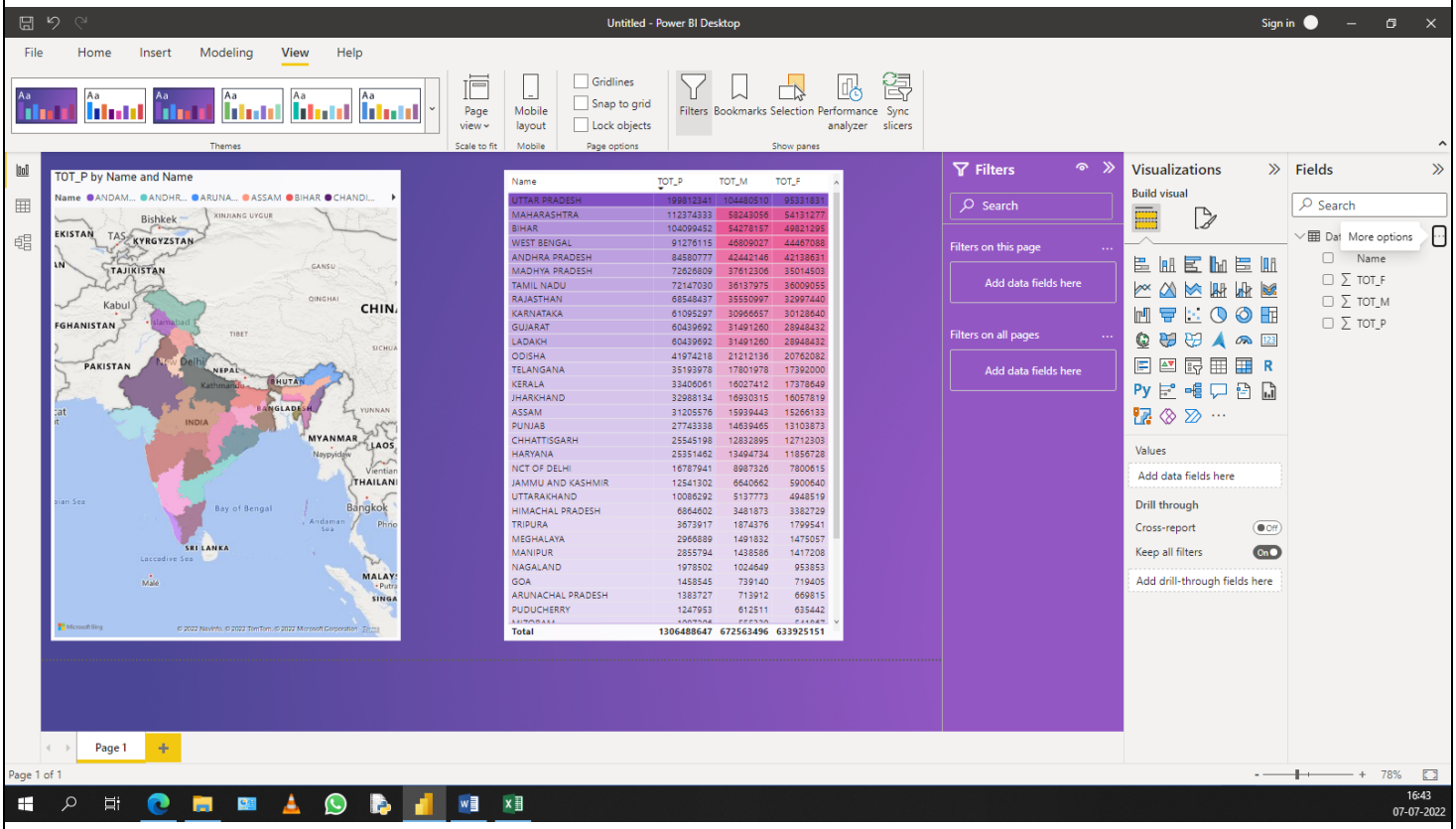
Few examples of Power BI dashboard



Above figure shows an empty Power BI dashboard. Analyst uses multiple tools and templets to design an interactive dashboard which can be used by the organisation decision-makers for effective and quality decisions.

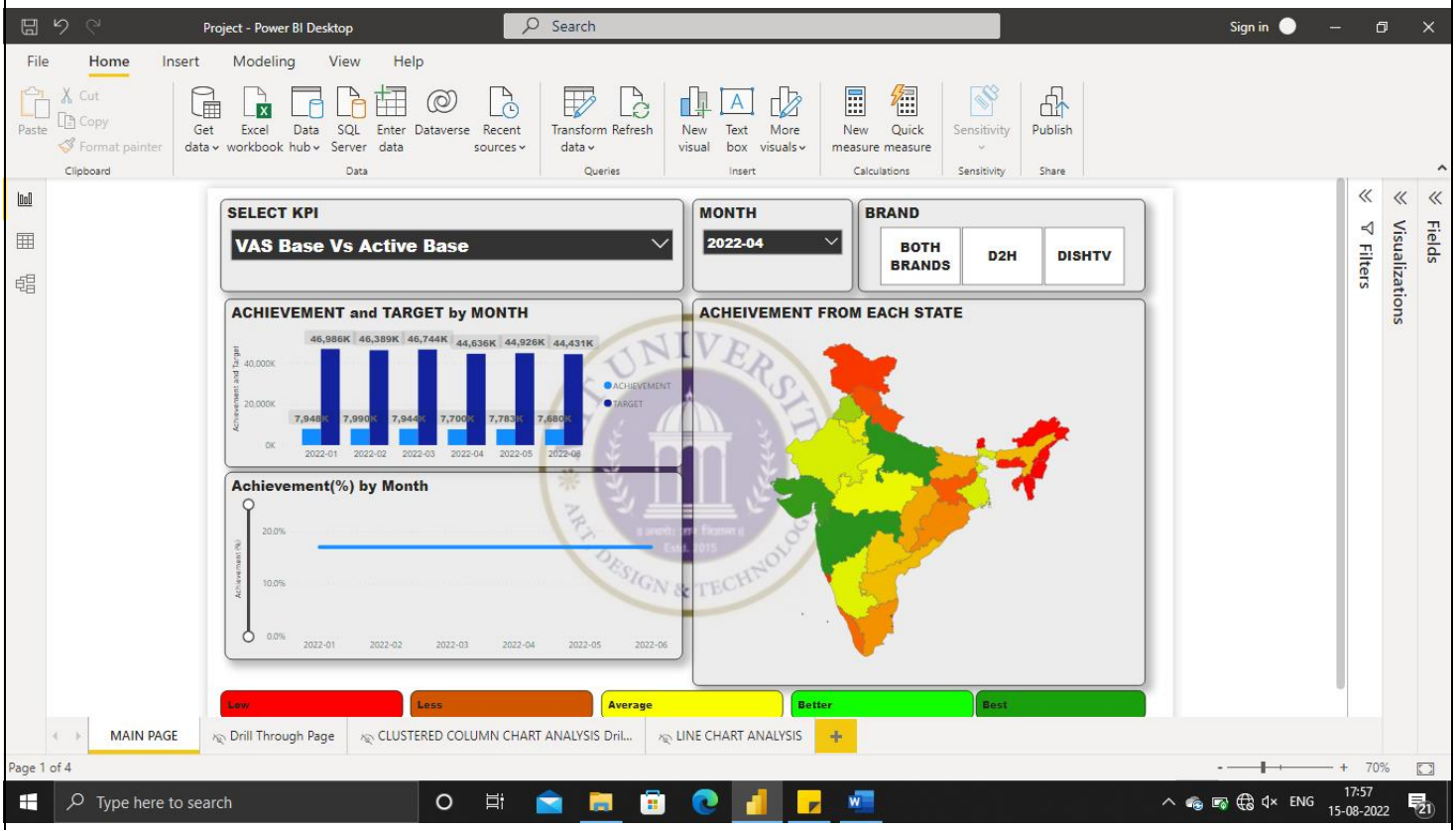


Above figure represents a random set of data formed just for practice. The tools used represents the data in various forms. This dashboard shows the scope and range of tools available in power BI.



Name	TOT_P	TOT_M	TOT_F
UTTAR PRADESH	199812341	104480510	95331831
MAHARASHTRA	112374333	58243056	54131277
BIHAR	104099452	54278157	49821295
WEST BENGAL	91276115	45809027	44467088
ANDHRA PRADESH	84580777	42442146	42138631
MADHYA PRADESH	72626809	37612306	35014503
TAMIL NADU	72147030	36137975	36009055
RAJASTHAN	68548437	35550997	32997440
KARNATAKA	61095297	30966657	30128640
GUJARAT	60439692	31491260	28948432
LADAKH	60439692	31491260	28948432
ODISHA	41974218	21212136	20762082
TELANGANA	35193978	17801978	17392000
KERALA	33406061	16027412	17378649
JHARKHAND	32988134	16930315	16057819
ASSAM	31205576	15939443	15266133
PUNJAB	27743338	14639465	13103873
CHHATTISGARH	25545198	12832895	12712303
HARYANA	25351462	13494734	11856728
NCT OF DELHI	16787941	8987326	7800615
JAMMU AND KASHMIR	12541302	6640662	5900640
UTTARAKHAND	10086292	5137773	4948519
HIMACHAL PRADESH	6864602	3481873	3382729
TRIPURA	3673917	1874376	1799541
MEGHALAYA	2966889	1491832	1475057
MANIPUR	2855794	1438586	1417208
NAGALAND	1978502	1024649	953853
GOA	1458545	739140	719405
ARUNACHAL PRADESH	1383727	713912	669815
PUDUCHERRY	1247953	612511	635442
Total	1306488647	672563496	633925151

Above figure represents the population of India using two major Power BI tools. 1st tools used is the Map tool and 2nd is the Matrix tool.



Above figure is the representation of the data by Dish Tv Pvt. Ltd. During the cource of my internship. The dashboard shows the user generated data of 2 lakh plus Dish TV users. The volume of data can be even more but the space and tools can still be same and accurately effective.