



BUSINESS INTELLIGENCE REPORT ASSIGNMENT 2

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ASSIGNMENT 2 FRONT SHEET

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		Student's signature	Huy

Grading grid

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INTRODUCTION

While the term “business intelligence” describes both a methodology and a category of enterprise software, the primary activity in business intelligence is data analysis. Business intelligence tools and applications correlate data about business performance and process it to determine the best course of action for a wide range of business functions.

Business intelligence (BI) leverages software and services to transform data into actionable insights that inform an organization’s strategic and tactical business decisions. BI tools access and analyze data sets and present analytical findings in reports, summaries, dashboards, graphs, charts, and maps to provide users with detailed intelligence about the state of the business.

Demonstrate the use of business intelligence tools and technologies

1. The business intelligence, tools, and techniques

1.1. Definition of Business Intelligence

BI(Business Intelligence) is a set of processes, architectures, and technologies that convert raw data into meaningful information that drives profitable business actions. It is a suite of software and services to transform data into actionable intelligence and knowledge.

BI has a direct impact on the organization's strategic, tactical and operational business decisions. BI supports fact-based decision making using historical data rather than assumptions and gut feeling.

BI tools perform data analysis and create reports, summaries, dashboards, maps, graphs, and charts to provide users with detailed intelligence about the nature of the business.

Business Intelligence importance because:

- Measurement: creating KPI (Key Performance Indicators) based on historic data
- Identify and set benchmarks for varied processes.
- With BI systems organizations can identify market trends and spot business problems that need to be addressed.
- BI helps on data visualization that enhances the data quality and thereby the quality of decision making.
- BI systems can be used not just by enterprises but SME (Small and Medium Enterprises)

Step Business Intelligence systems are implemented:

- **Step 1:** Raw Data from corporate databases is extracted. The data could be spread across multiple systems heterogeneous systems.
- **Step 2:** The data is cleaned and transformed into the data warehouse. The table can be linked, and data cubes are formed.
- **Step 3:** Using the BI system the user can ask queries, request ad-hoc reports or conduct any other analysis.

Examples of Business Intelligence System used in Practice:

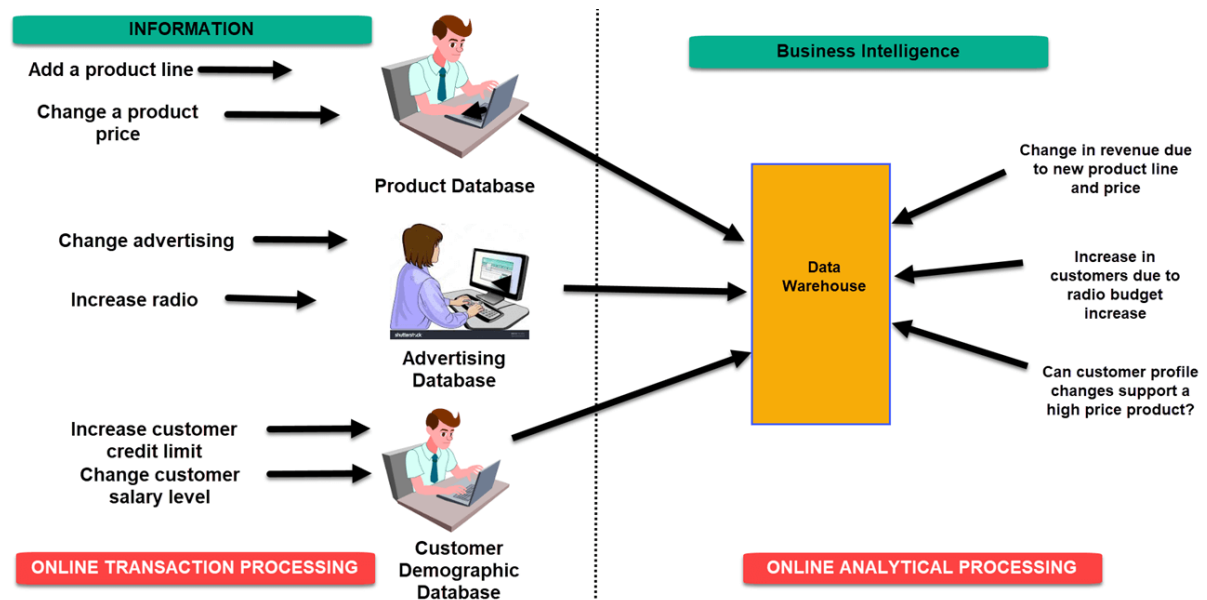


Figure 1. Example of a Business Intelligence System used in Practice

In an Online Transaction Processing (OLTP) system information that could be fed into the product database could be:

- add a product line
- change a product price

Correspondingly, in a Business Intelligence system query that would be executed for the product subject area could do the addition of the new product line or change in product price increase revenues

In an advertising database of OLTP system query that could be executed:

- Changed in advertisement options
- Increase radio budget

Correspondingly, in BI system query that could be executed would be how many new clients added due to change in radio budget

In OLTP system dealing with customer demographic databases data that could be fed would be:

- increase the customer credit limit
- change in customer salary level

Correspondingly in the OLAP system query that could be executed would be can customer profile changes support higher product price.

The most important types of business intelligence tool features and functionality are:

- Dashboards
- Visualizations
- Reporting
- Predictive Analytics
- Data Mining
- ETL
- OLAP
- Drill-Down

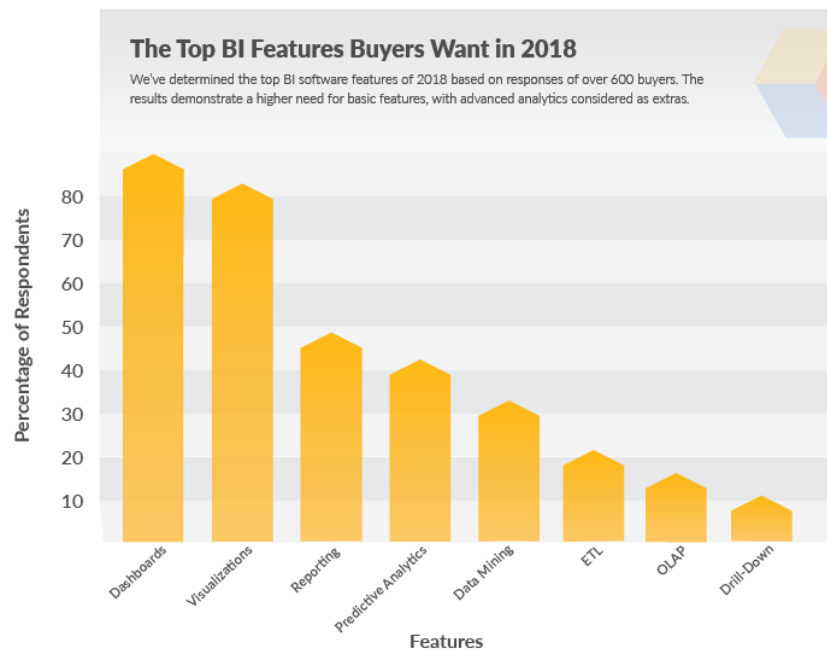


Figure 2. The Top BI features in 2018. (selecthub, n.d.)

Types of BI users:

- **The Professional Data Analyst:** The data analyst is a statistician who always needs to drill deep down into data. BI system helps them to get fresh insights to develop unique business strategies.
- **The IT users:** The IT user also plays a dominant role in maintaining the BI infrastructure.
- **The head of the company:** CEO or CXO can increase the profit of their business by improving operational efficiency in their business.
- **Business Users:** Business intelligence users can be found across the organization.

1.2. Tools and techniques

Business Intelligence Tools:

BI tools are all about helping better understand trends and derive insights from data to make strategic and tactical business decisions. Here's a rundown of a few popular business intelligence tools companies leverage to derive insights.

- **Sisense:**

The Sisense BI tool could be a great option. It is incredibly user-friendly and allows everyone within an organization to manage, analyze and visualize complex datasets without involving the IT department. This tool lets gather data from various sources, including Google Analytics and AdWords. Since this tool uses in-chip technology, data processing is faster compared to other BI tools.

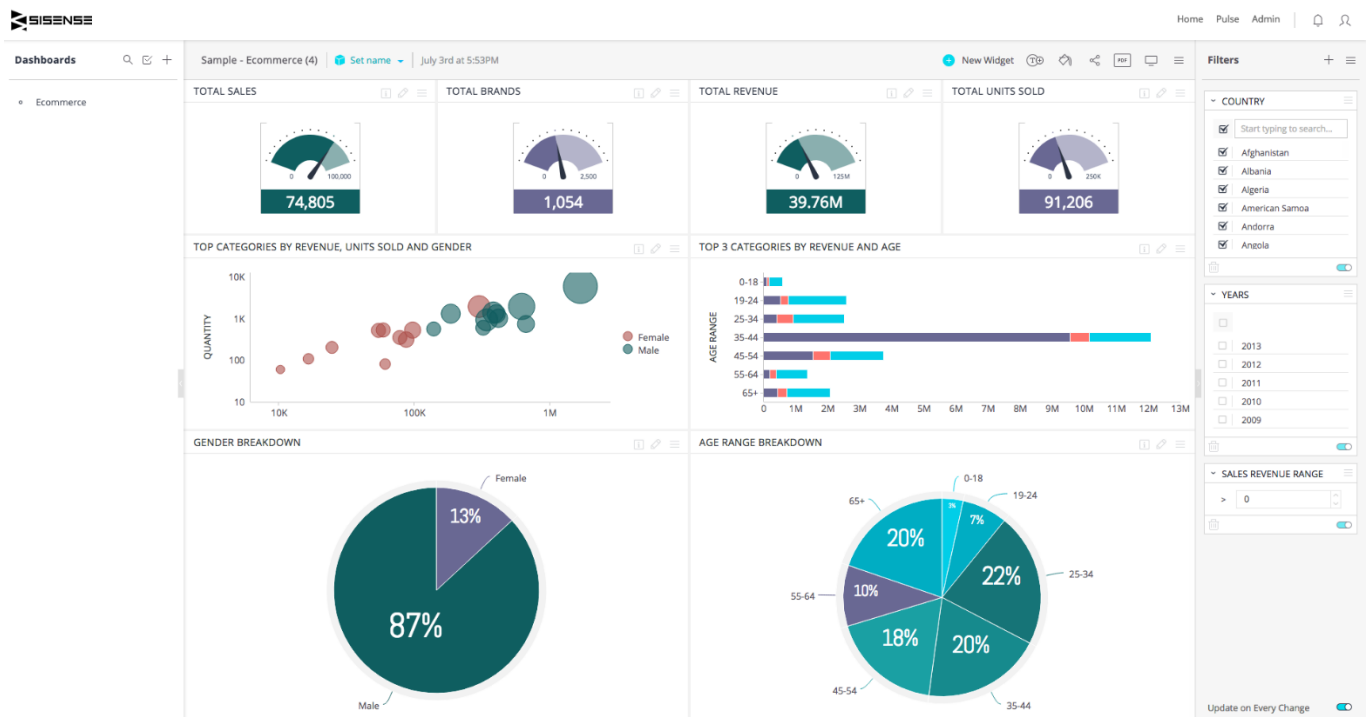


Figure 3. Sisense tool. (skyose, n.d.)

- **SAP Business Intelligence:**

SAP Business Intelligence provides an array of advanced analytics solutions including machine learning, BI predictive analytics, and planning and analysis. This enterprise-level applications for client/server systems offer data visualization and analytics applications, reporting and analysis, mobile analytics and office integration. SAP is a robust solution intended for all roles (management, end uses and IT) and offers a ton of functionalities in a single platform.



Figure 4. SAP Business Intelligence. (sapanalytics, n.d.)

- **Dundas BI:**

Dundas BI is a browser-based BI tool that allows users to connect to multiple data sources in real-time. It provides great visualizations in tables, graphs, and charts that could be customized and viewed from mobile devices and desktops. Users can easily build reports and extract certain performance metrics for purposes of analysis. Dundas offers support to all company types and across different industries.



Figure 5. Dundas BI. (getapp, n.d.)

- **Tableau:**

Tableau is a powerful and fastest-growing data visualization tool used in the Business Intelligence Industry. It helps in simplifying raw data into a very easily understandable format.

Data analysis is very fast with Tableau and the visualizations created are in the form of dashboards and worksheets. The data that is created using Tableau can be understood by the professional at any level in an organization. It even allows a non-technical user to create a customized dashboard.

The best feature Tableau is:

- Data Blending
- Real-time analysis
- Collaboration of data

The great thing about Tableau software is that it doesn't require any technical or any kind of programming skills to operate. The tool has garnered interest among the people from all sectors such as business, researchers, different industries, etc.

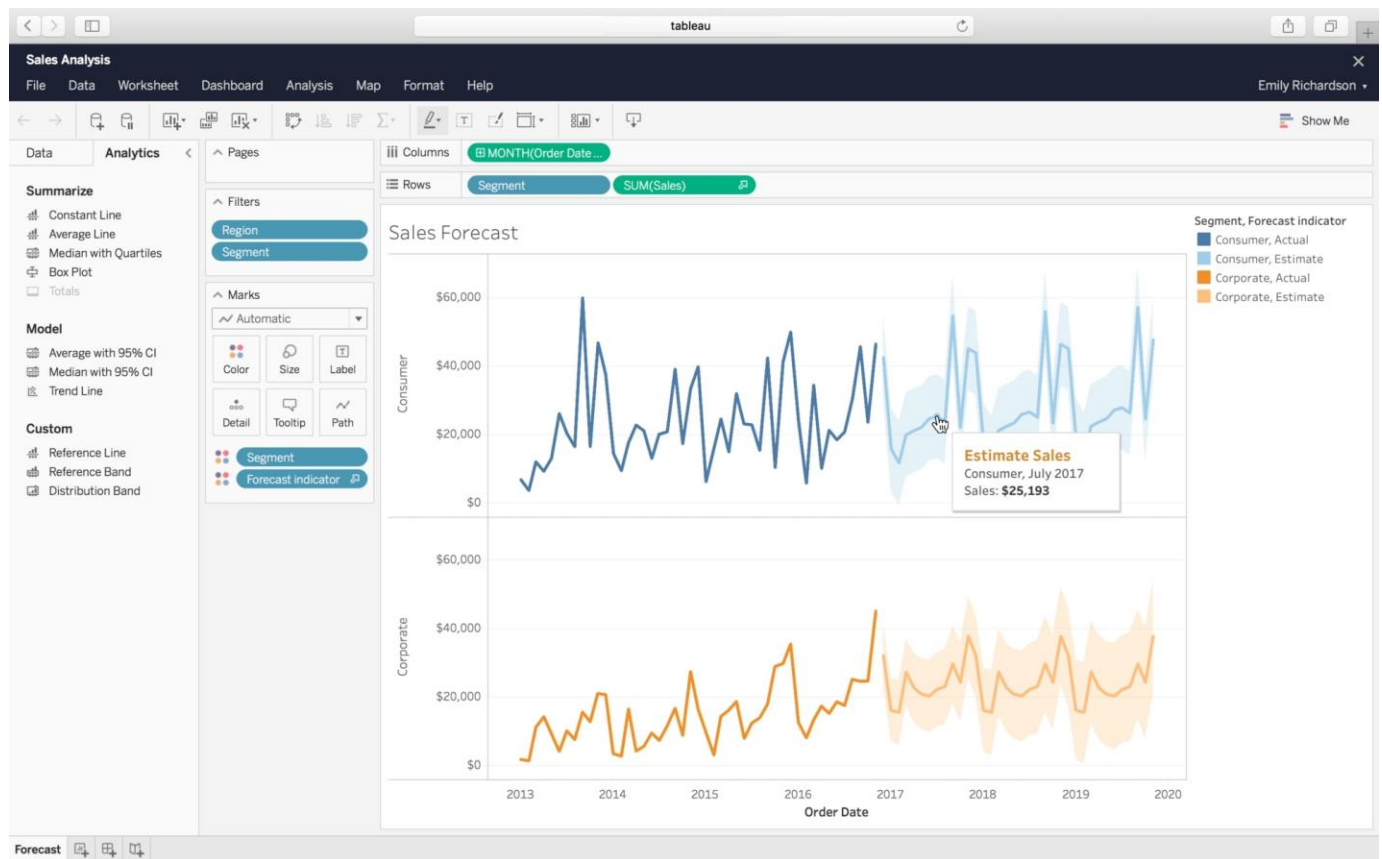


Figure 6. Tableau. (guru99, n.d.)

Business Intelligence Techniques:

There are several business intelligence techniques companies can put to use to gain valuable insights to inform decision-making. Here's a look at the most common BI techniques:

- **Analytics:**

Analytics is a business intelligence technique that involves the study of available data to extract meaningful insights and trends. This is a popular BI technique since it lets businesses deeply understand the data they have and drive ultimate value with data-driven decisions. For instance, a marketing organization can use analytics to establish the customer segments that are highly likely to convert to new customers, and call centers leverage speech analytics to monitor customer sentiment, improve the customer experience, and for quality assurance purposes, just to name a few.

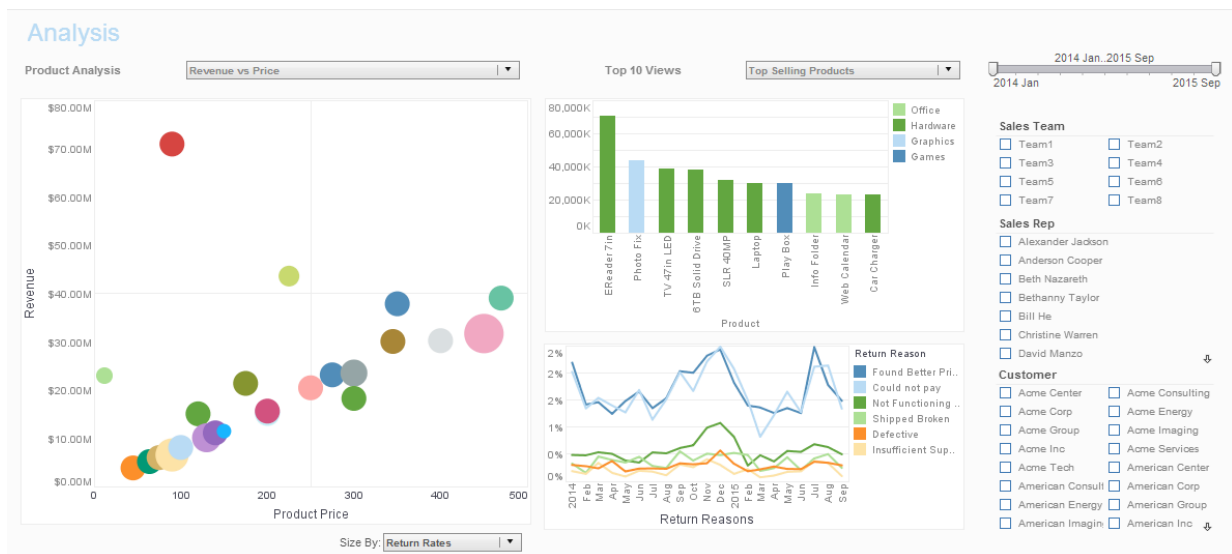


Figure 7. Analytics

- **Predictive Modeling:**

Predictive modeling is a BI technique that utilizes statistical techniques to create models that could be used in forecasting probabilities and trends. With predictive modeling, it is possible to predict the value for a particular data item as well as the attributes using multiple statistical models.

- **OLAP:**

Online analytical processing is a technique for solving analytical problems with different dimensions. The most important value in OLAP is its multidimensional aspect that lets users identify problems from different perspectives. OLAP could be used to complete tasks such as budgeting, CRM data analysis, and financial forecasting.

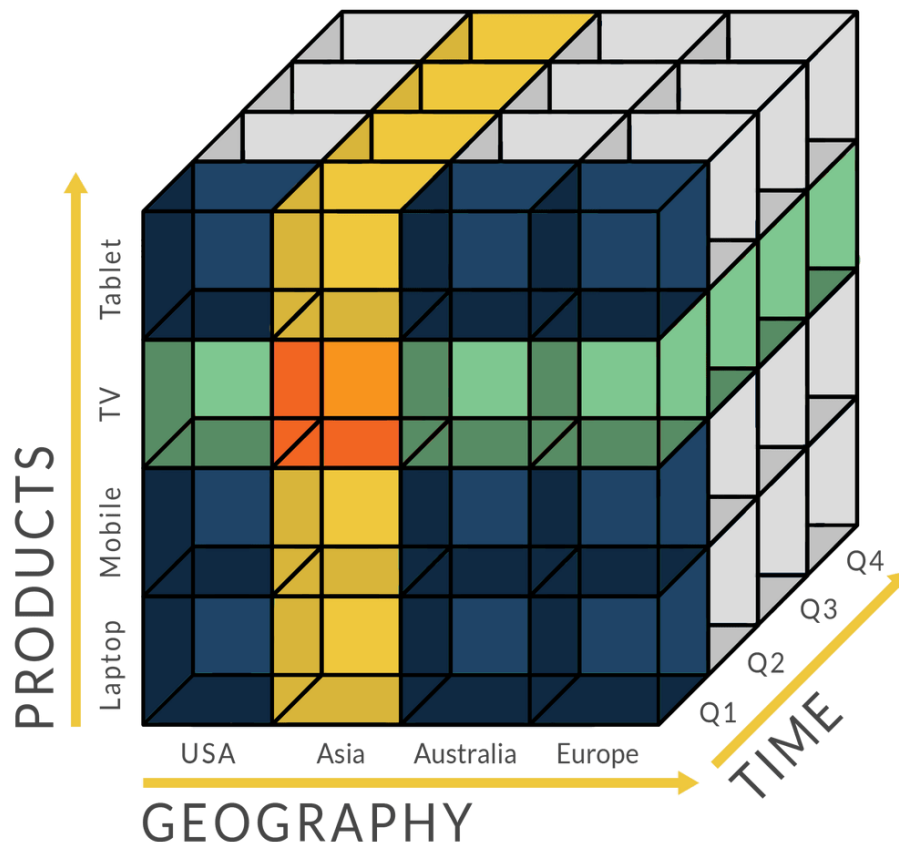


Figure 8. OLAP Technology. (olap, n.d.)

OLAP is an acronym for Online Analytical Processing. OLAP performs multidimensional analysis of business data and provides the capability for complex calculations, trend analysis, and sophisticated data modeling.

It is the foundation for many kinds of business applications for Business Performance Management, Planning, Budgeting, Forecasting, Financial Reporting, Analysis, Simulation Models, Knowledge Discovery, and Data Warehouse Reporting. OLAP enables end-users to perform ad hoc analysis of data in multiple dimensions, thereby providing the insight and understanding they need for better decision making.

- **Data Mining:**

Data mining is a technique for discovering patterns in huge datasets and often incorporates database systems, statistics, and machine learning to find these patterns. Data mining is an integral process for data management as well as the pre-processing of data since it ensures appropriate data structuring. End users could also use data mining to create models that reveal these patterns. For instance, a business could mine CRM data to predict which leads will most likely buy a certain solution or product.

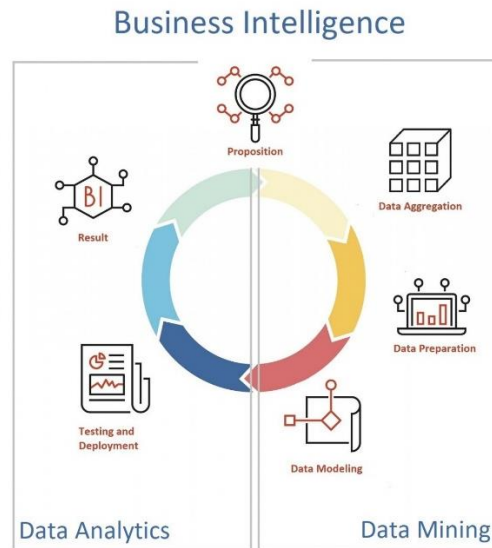


Figure 9. The life cycle of big data in healthcare. (healthitanalytics, n.d.)

- **Model Visualization:**

The model visualization technique is used to transform the discovered facts into histograms, plots, charts, and other visuals that aid in the proper interpretation of the insights.

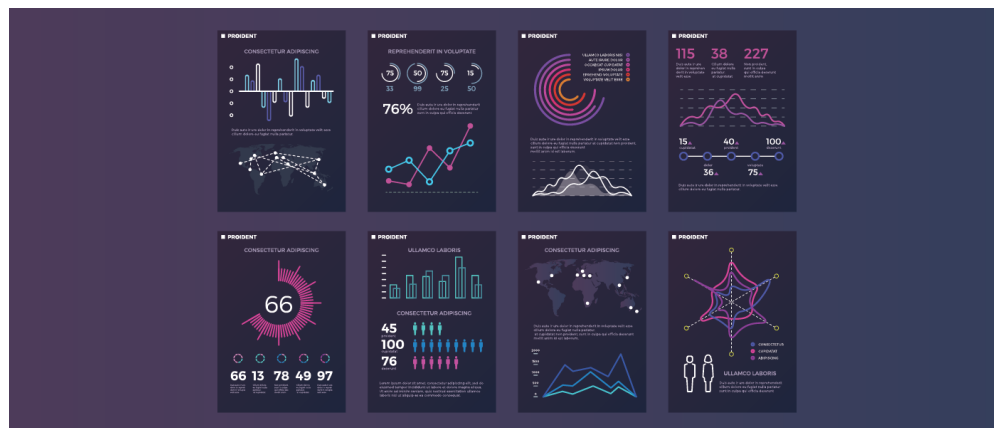


Figure 10. Data Visualization. (fingent, n.d.)

2. The design of a business intelligence tool, application or interface that can perform a specific task to support problem-solving or decision-making at an advanced level.

When talking about the actual integration of BI tools into an organization. The whole process can be broken down into the introduction of business intelligence as a concept for company employees and the actual integration of tools and applications. In the next sections, we will walk through the key points of BI integration into the company and cover some pitfalls.

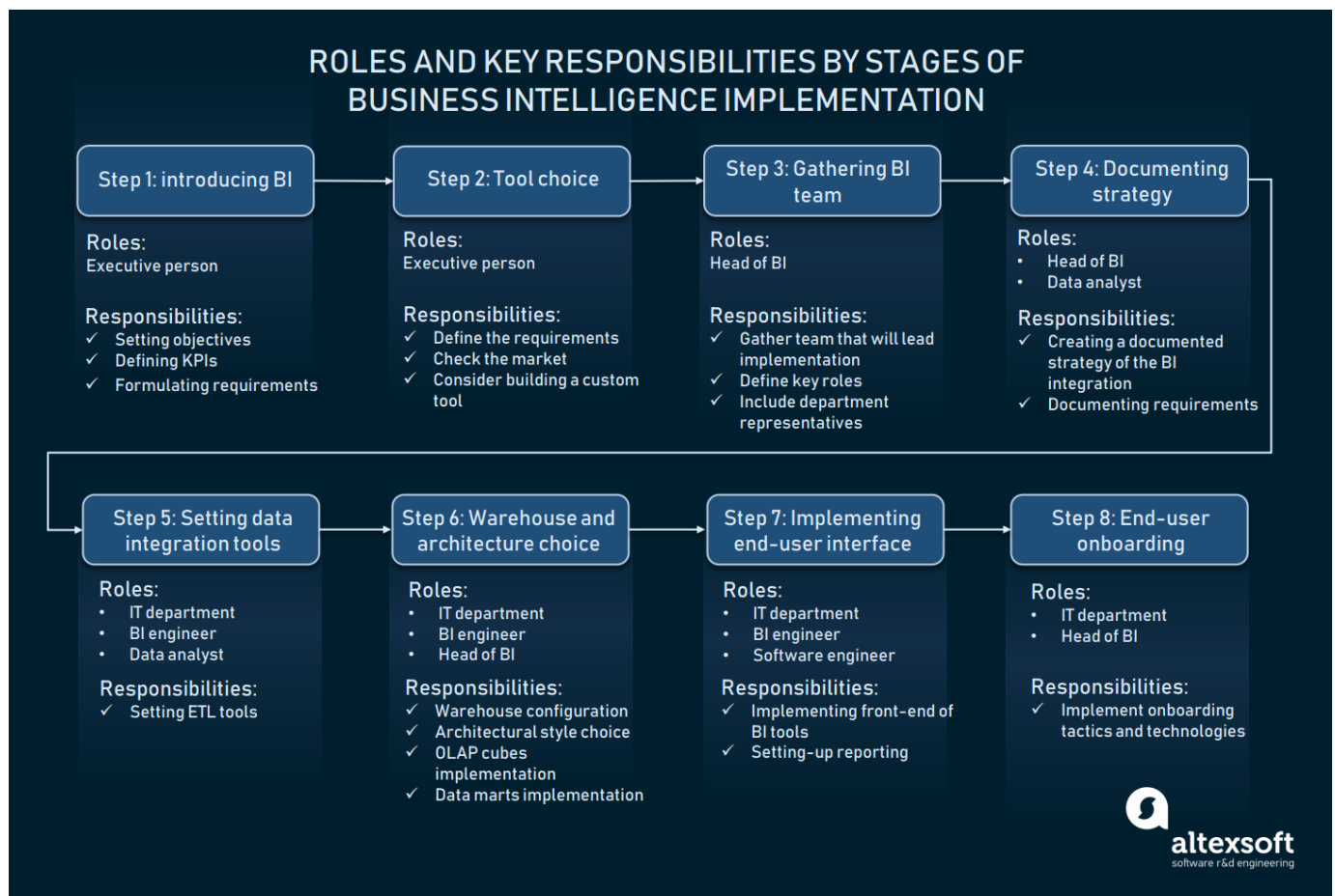
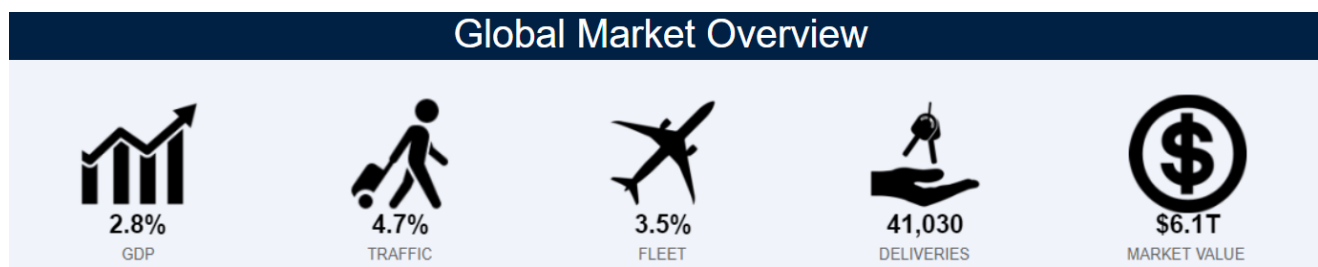


Figure 11. A scheme of business intelligence implementation by roles and stages. (altexsoft, n.d.)

Explore this dashboard by Boeing to understand the Fortune 100 company's forecasts for airplane demand over the next 20 years. By utilizing 10 different chart types, the viz audience can see a different perspective and discover new insights.

Step 1: Introduce business intelligence

Air travel has proven to be a resilient market over the last several decades, growing at an annual average rate of more than 5 percent per year. Boeing forecasts robust demand to continue over the next 20 years. Economic growth, increasing consumer spending on services, growing middle classes in emerging markets, and evolving airline business models support this long-term outlook. To serve an air travel market projected to be 2.5 times larger in 20 years, the global commercial jet fleet is projected to double in size by 2036. In addition to the need for new airplanes to meet growing demand, three-quarters of today's 23,500 commercial jets are forecast to need replacement over the next 20 years, contributing to the overall demand for 41,030 new airplane deliveries by 2036.



Picture 1. Global market Overview

Step 2: Choose tools

To support airplane in global market overview in initiating problem-solving and decision-making processes at an advanced level, this document will implement one of the most powerful Business Intelligence tools nowadays, **Tableau**, to analyze organization's orders data set and provide effective charts and dashboard, therefore can provide the most decent, data-driven statistics for stakeholders to make decisions to modify the way their organization works.



Picture 2. Tableau software.

Step 3: Gather a business intelligence team

- **Head of BI:** This person must be armed with theoretical, practical, and technical knowledge to support the implementation of strategy and actual tools. This can be an executive with knowledge of business intelligence and access to data sources. The Head of BI is a person that will make decisions to drive implementation.
- **BI engineer** is a technical member of the team who specializes in building, implementing, and setting BI systems. Usually, BI engineers have software development and database configuration background. They also must be well-versed in data integration methods and techniques. A BI engineer may lead the IT department in implementing BI toolset. Learn more about data professionals and their roles in our dedicated article.
- **The data analyst** should also become a part of the BI team to provide the team with expertise in data validation, processing, and data visualization.

Step 4: Document BI strategy

- **Data sources:** This is the documentation of chosen data source channels. These should include any type of channels, whether it is a stakeholder, analytics of the industry in general, or the information from employees and departments. Examples of such channels may be Google Analytics, CRM, ERP, etc.

The screenshot shows the Tableau interface with a dataset titled 'Global Market'. The interface includes a sidebar with 'Connections' (Global Market) and 'Table' (Tableau_2...FD_1_Group). The main view displays a table with columns for various indicators and rows for different countries. The table is sorted by 'Data source order'.

World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv	World Indicators.csv
Country/Region	Ease of Business	Energy Usage	GDP	Health Exp % GDP	Health Exp/Capita	Hours to do Tax	Infant Mortality R...	Internet Usage	Lending Interest	Life Expectancy F...		
Algeria	null	null	26,998	\$58	3.5%	\$60	null	0.034000	1%	0.10000		
Angola	null	null	7,499	\$98	3.4%	\$22	null	0.128000	0%	1.03200		
Benin	null	null	1,983	\$28	4.3%	\$15	null	0.090000	0%	null		
Botswana	null	null	1,836	\$68	4.7%	\$152	null	0.054000	3%	0.15500		
Burkina Faso	null	null	null	\$38	5.1%	\$12	null	0.096000	0%	null		
Burundi	null	null	null	\$18	6.3%	\$7	null	0.092000	0%	0.15800		
Cameroon	null	null	6,310	\$98	4.4%	\$26	null	0.093000	0%	0.22000		
Central African Repub...	null	null	null	\$18	4.3%	\$11	null	0.113000	0%	0.22000		
Chad	null	null	null	\$18	6.3%	\$10	null	0.106000	0%	0.22000		
Comoros	null	null	null	\$8	3.5%	\$13	null	0.073000	0%	0.12000		
Congo (Kinshasa)	null	null	16,679	\$198	4.8%	\$14	null	0.115000	0%	null		
Congo (Brazzaville)	null	null	814	\$38	2.1%	\$22	null	0.077000	0%	0.22000		
Cote d'Ivoire	null	null	6,734	\$108	6.5%	\$42	null	0.100000	0%	null		
Djibouti	null	null	null	\$18	5.8%	\$44	null	0.080000	0%	null		
Egypt	null	null	40,658	\$1008	5.4%	\$79	null	0.036000	1%	0.13200		
Equatorial Guinea	null	null	null	\$18	2.4%	\$57	null	0.099000	0%	0.22000		
Eritrea	null	null	708	\$18	4.5%	\$7	null	0.058000	0%	null		
Ethiopia	null	null	25,242	\$88	4.3%	\$5	null	0.090000	0%	0.10900		
Gabon	null	null	1,463	\$58	2.9%	\$118	null	0.056000	1%	0.22000		
Gambia, The	null	null	null	\$18	4.5%	\$29	null	0.063000	1%	0.24000		
Ghana	null	null	7,736	\$58	4.8%	\$13	null	0.065000	0%	null		
Guinea	null	null	null	\$38	5.6%	\$19	null	0.103000	0%	0.19400		

Picture 3. Example dataset using in Tableau

- **Industry/custom KPIs:** Documenting standard KPIs of industry, as well as specific ones, may open the fullest picture of business growth and losses. Ultimately, BI tools are created to track these KPIs supporting them with additional data.
- **Reporting standards:** At this stage, define what kind of reporting required to extract valuable information conveniently. In the case of a custom BI system, we may consider visual or textual

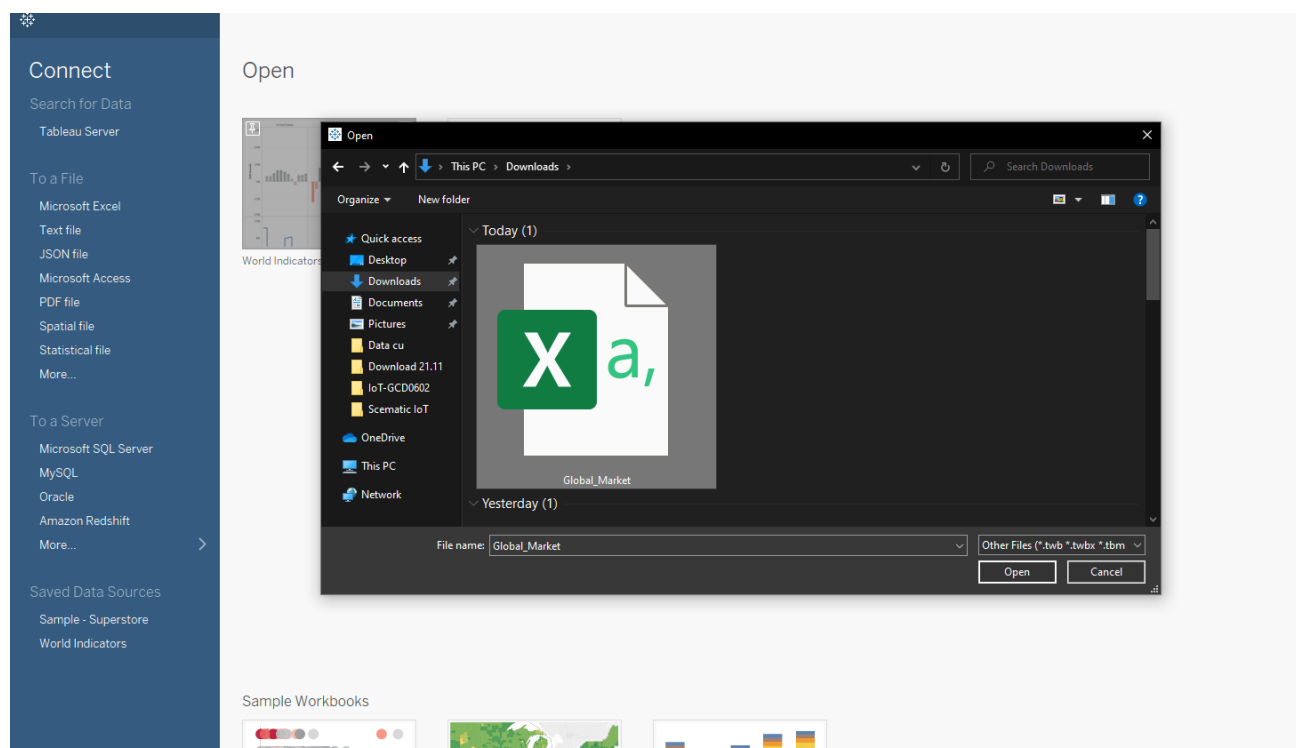
representations. If you have already chosen the vendor, you may be limited in terms of reporting standards, as vendors set their own. This section may also include data types you want to deal with.

- Reporting flow type and end-users: An end-user is a person who will observe data through the interface of the reporting tool. Depending on the end-users.

Step 5: Set up data integration tools

One of the core elements of any BI architecture is a data warehouse. The warehouse is a database that keeps your information in a predefined format, usually structured, classified, and purged of errors. If your data isn't preprocessed, your BI tool or your IT department won't be able to query it. For this reason, you can't directly connect your data warehouse with your sources of information. Instead, you must use ETL (Extract, Transform, Load) tools or data integration tools. They will preprocess raw data from the initial sources and send it to a warehouse in three consecutive steps:

- Data extraction: The ETL tool retrieves data from the data sources including ERP, CRM, analytics, and spreadsheets.
- Data transformation: Once extracted, the ETL tool starts data processing. All extracted data is analyzed, have duplicates removed, and then is standardized, sorted, filtered, and verified.
- Data loading: At this phase, transformed data is uploaded into the warehouse.



Picture 4. Connecting to data in CSVs

Step 6: Configure a data warehouse and choose an architectural approach

- **Data Warehouse:**

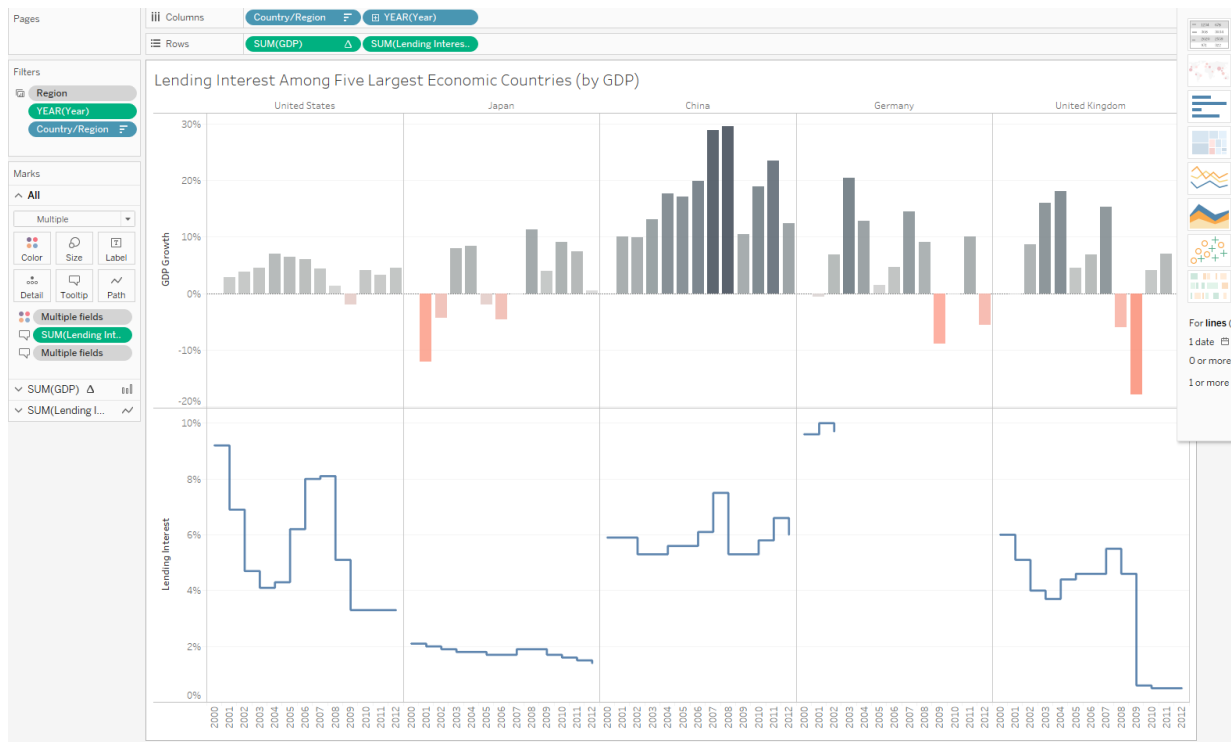
The resources do not have large volumes of data, the utilization of a simple SQL warehouse would be enough. Additional structural elements like data marts will cost you a lot without providing any value. This option fits small businesses or industries that operate relatively small amounts of data.

- **Data Warehouse + Online Analytical Processing Cubes**

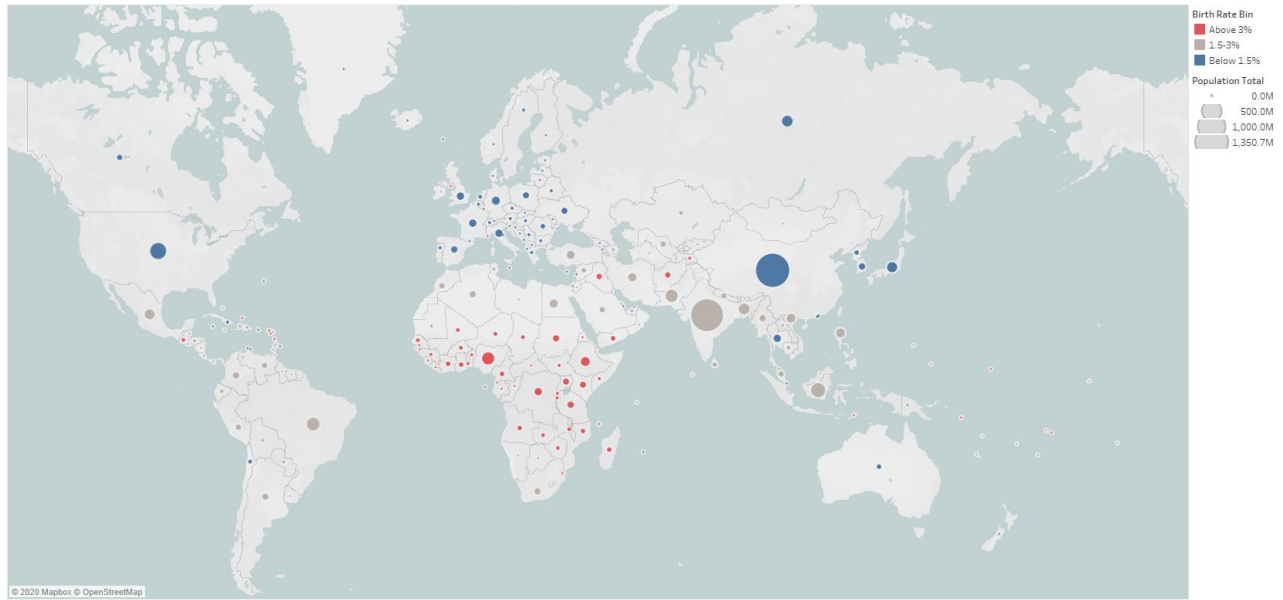
OLAP or online analytical processing is a technology that processes data and gives access to it from multiple dimensions at a time. Structuring your data in cubes helps to overcome the limitations of a data warehouse.

Step 7: Implement the end-user interface: reporting tools and dashboards

Formed into digestible, thematically related chunks of information in Online Analytical Processing cubes or data marts, the data is finally presented via a user interface of BI tools. That is where descriptive analysis brings its value to the end-user.



Picture 5. Create an Economy report with tableau



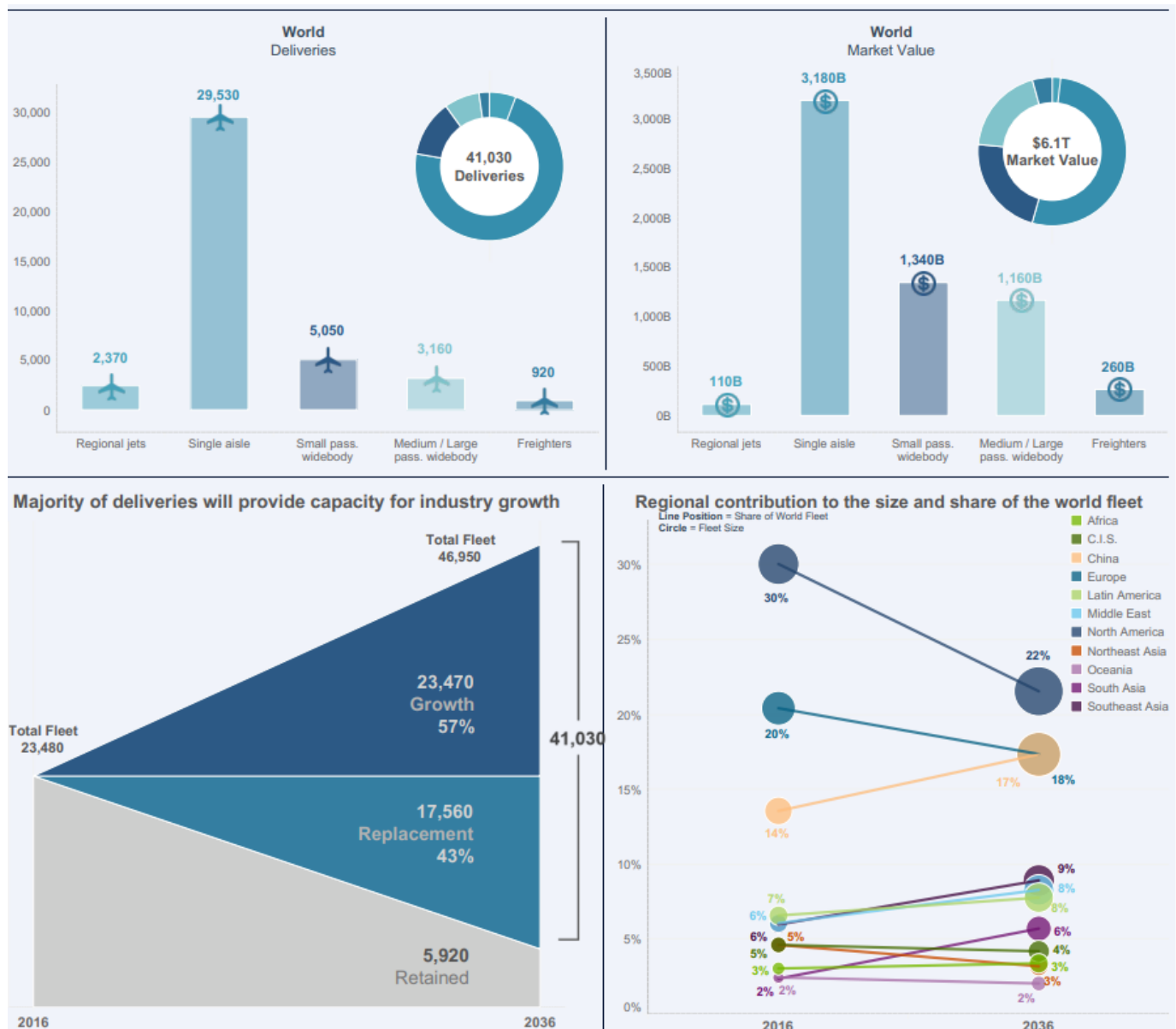
Picture 6. Create map report with tableau

Step 8: Conduct training for end-users

To make the onboarding process smooth for your employees, we strongly recommend conducting training sessions. Those sessions may have a different form: if you use an embedded analytical tool in your CRM or ERP, you can use onboarding practices like video-hints or interactive onboarding tools that lead users through steps.

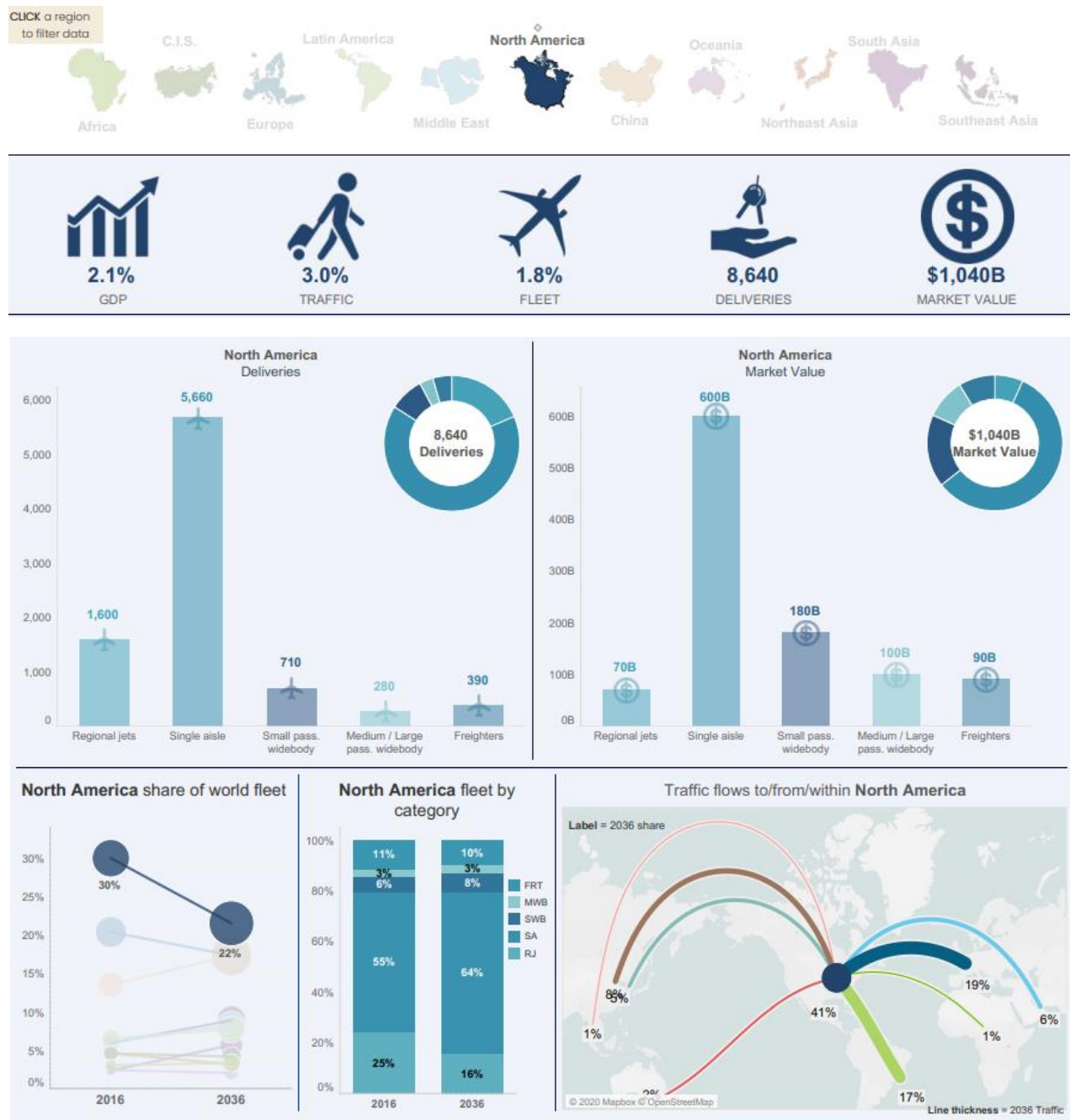
3. Customize the design to ensure that it is user-friendly and has a functional interface.

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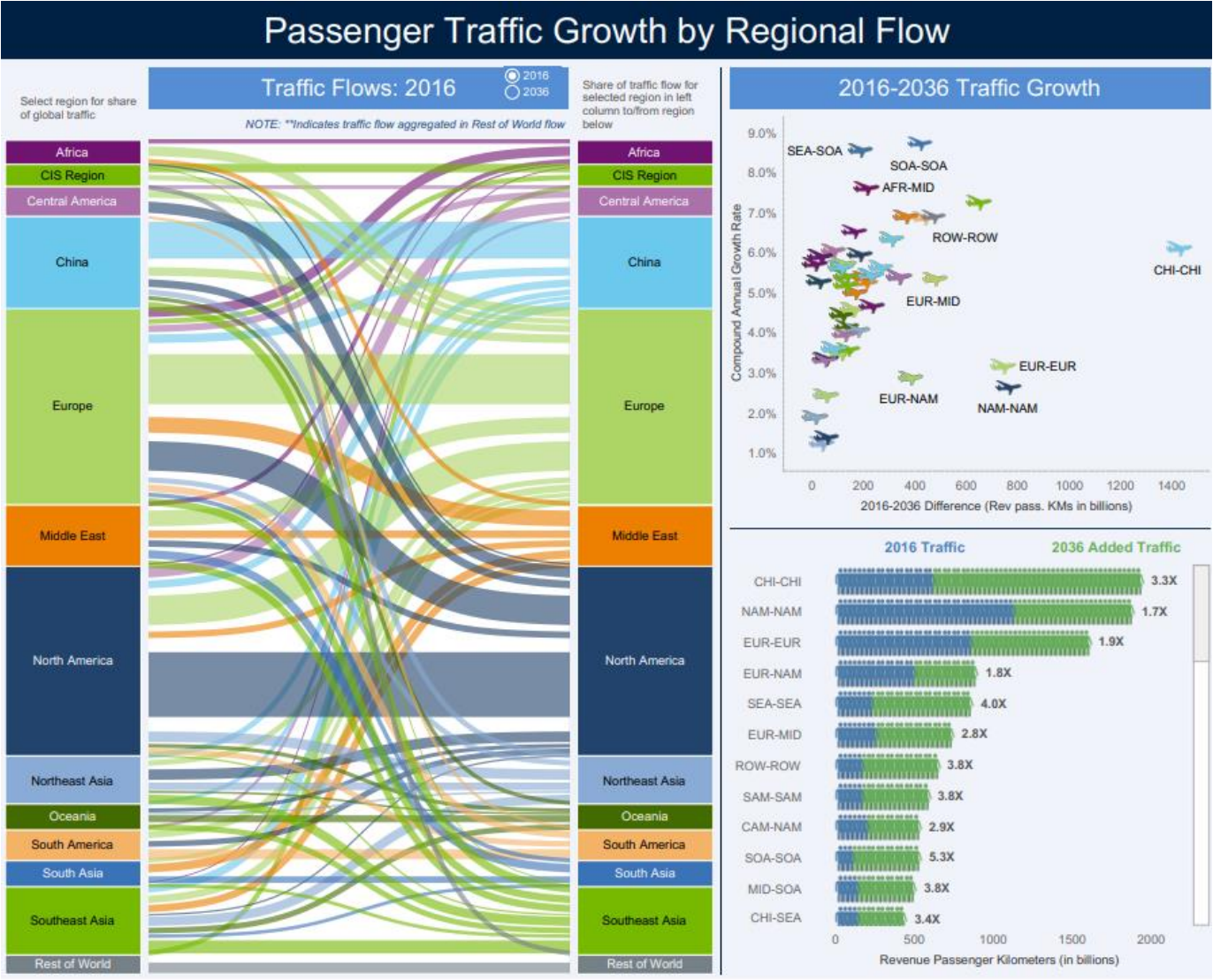


Picture 7. Global market overview

Following restructuring in the last decade, the North American fleet has begun to grow again, up 6 percent over the last two years. With the region accounting for more than half of the global airline industry profitability since 2013, airlines are well-positioned to expand and refresh their fleets over the next 20 years. Long-term traffic growth of 2.6 percent in today's largest intra-regional market is projected to boost the single-aisle share of the fleet from 62 percent today to 71 percent in 20 years. Small widebody airplanes, projected to account for 72 percent of widebody passenger deliveries over the next 20 years, offer North American airlines the ability to operate additional nonstop flights from hubs as well as secondary markets to capture international growth opportunities.



Picture 8. North America Market Outlook



Picture 9. Passenger Traffic Growth by Regional Flow

Airplane Market Sectors

SINGLE AISLE PASSENGER AIRPLANES		WIDEBODY PASSENGER AIRPLANES	
Single Aisle	Regional Jets	Medium / large	Small
Boeing 707, 757 Boeing 717, 727 Boeing 737-100 through -600 Boeing 737-700, -800, -900ER Boeing 737-MAX7, MAX8, MAX9, MAX10 Airbus A318, A319, A320, A321 Airbus A319neo, A320neo, A321neo Boeing/MDC DC-9, MD-80, -90	BAe 146-300, Avro RJ100 Bombardier CRJ-1000 Bombardier CS100, CS300 Embraer 190, 195 Embraer 190E2, 195E2 Comac C919 Fokker 100 UAC MS 21-200/300 Ilyushin IL-62 Tupolev TU-154, TU-2014, TU-214 Yakovlev Yak-42	Antonov An-148, -158 AVIC ARJ-700 Avro RJ70, RJ85 BAe 146-100, -200 Bombardier CRJ Dornier 328JET Embraer 170, 175, 175E2 Embraer ERJ-135/140/145 Fokker 70, F28 Mitsubishi MRJ Sukhoi Superjet 100 Yakovlev Yak-40	Boeing 747-8 Boeing 747-100 through -400 Airbus A380 Boeing 777, 777X Boeing 787-10 Boeing/MDC MD-11 Airbus A340 Airbus A350-1000 Ilyushin IL-66
Boeing 767, 787-8, -9 Boeing/MDC DC-10 Airbus A300, A310 Airbus A330-200, -300, -800, -900 Airbus A350-900 Lockheed L-1011 Ilyushin IL-96			

Bold: Airplanes in production or launched.

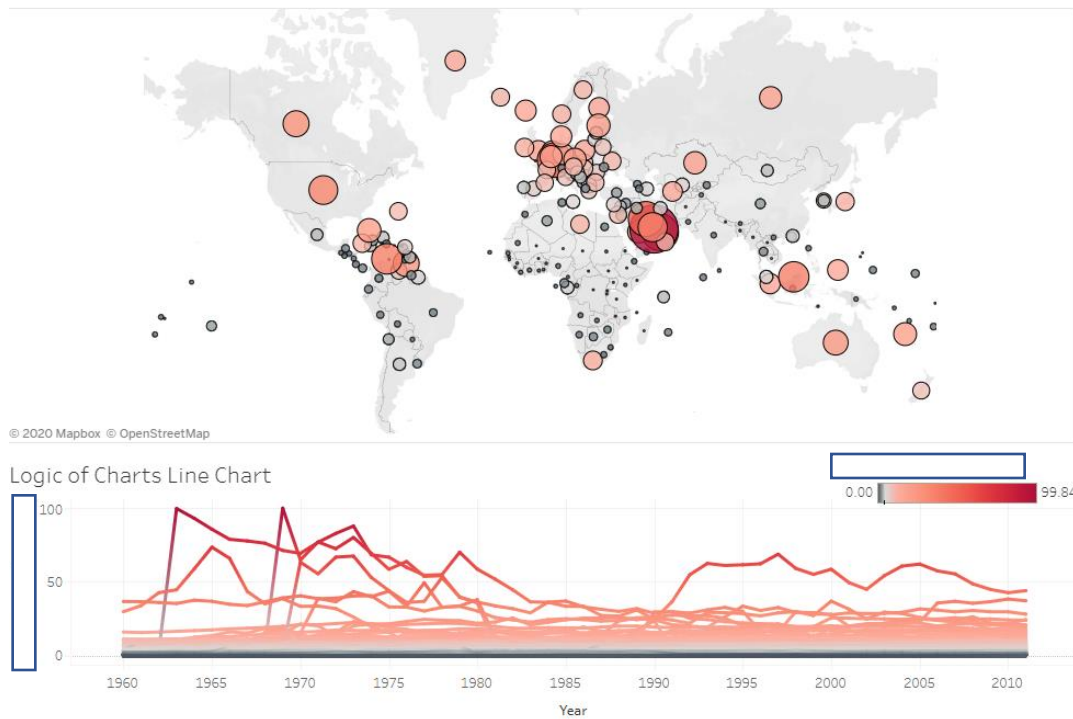
FREIGHTER AIRPLANES

Large freighter More than 80 tonnes	Medium widebody 40 to 80 tonnes	Standard-body Less than 45 tonnes
Boeing/ MDC MD-11 Boeing 747-100 through -400 Boeing 777 Airbus A350 Ilyushin IL-96T Antonov An-124 Boeing 747-8F	Boeing 767 Lockheed L-1011SF Boeing /MDC DC-10 Boeing 787 Airbus A300 Airbus A330 Ilyushin IL-76TD	BAe 146 Boeing/MDC DC-8/9 Boeing 737 Boeing 727 Bombardier CRJ Tupolev Tu-204 Boeing 707 Boeing/MDC MD-80 Boeing 757-200 Airbus A320, A321

Production and conversion (SF) models assumed for each type unless otherwise specified

Picture 10. Airplane Market Sectors

First Charts Map



Picture 11. Create a Chart with airplane data

4. The critical review of the design in terms of how it meets a specific user or business requirement and identify what customization has been integrated into the design.

4.1. Why using Tableau?

In this report, the result looked at how Tableau data extracts are built and used by Tableau. Tableau is like a Data Science career hack which easy and fast.

Tableau is the leading visualization tool in the world. It is widely used in the business intelligence industry. The best part of Tableau is, it can convert the raw data into an understandable format without any coding and technical skills.

Users can also do data analyzation at a rapid pace in Tableau and search for data visualization in both worksheets and dashboards. Tableau also offers you to get actionable insights and create awesome dashboards. It is one of the best business intelligence tools.

Users can use it to generate reports, dashboards, and analysis of the huge data from multiple sources. As the report mentioned above, this is the most excellent data visualization tool. It offers interactive data visualization to understand the data and make insights. It is quite useful for all types of organizations and business users.

Tableau is offering simple drag and drops features. It is quite easy to analyze the key data, share critical insights across the enterprise. It also uses to create innovative visualization and reports with ease. Users can also embed the dashboard of your existing business applications such as SharePoint with Tableau.

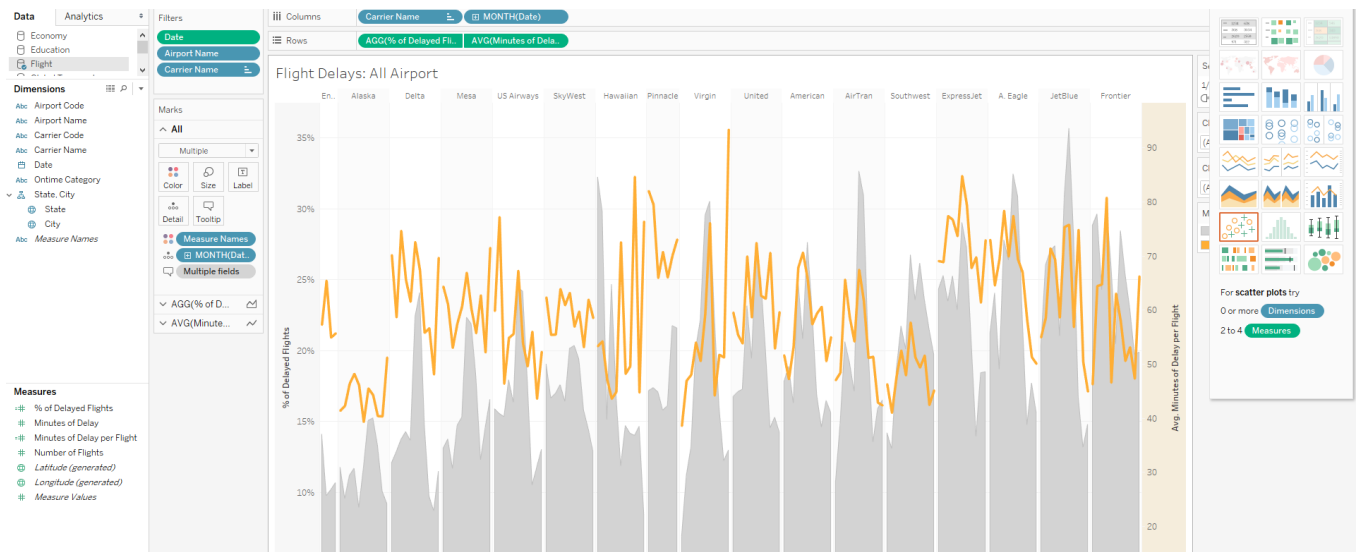
There are some reasons for using Tableau:

- **Quick and Interactive Visualizations:**

Specializing in beautiful visualizations, Tableau offers instantaneous insights with simple drag-and-drop-features, thus helping you easily analyze key data and share crucial insights.

- **Easy to Use:**

Compared to other BI tools, Tableau lets you create rich visualizations in just a few seconds! It lets you perform complex tasks with simple drag-and-drop functionalities, hence answering your questions in no time.



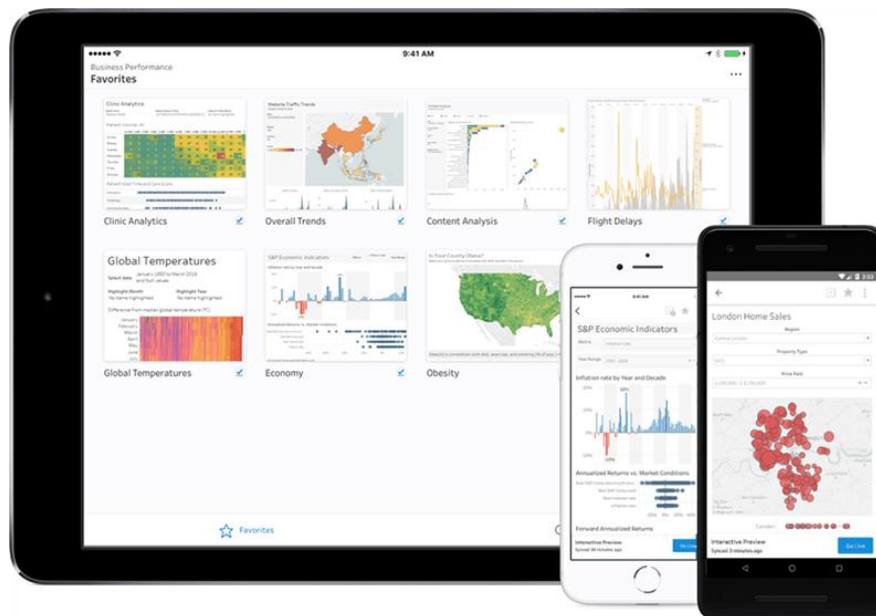
Picture 12. Easy to use Tableau to create a report

- **Handles Copious Amounts of Data:**

Need all 100 columns or all the records for the past 10 years? Tableau can handle millions of rows of data, without impacting the performance of the dashboards. It supports native SPSS, Excel, etc. and can even connect to live data sources to provide companies with real-time results on key business metrics.

- **Mobile-Friendly Dashboard:**

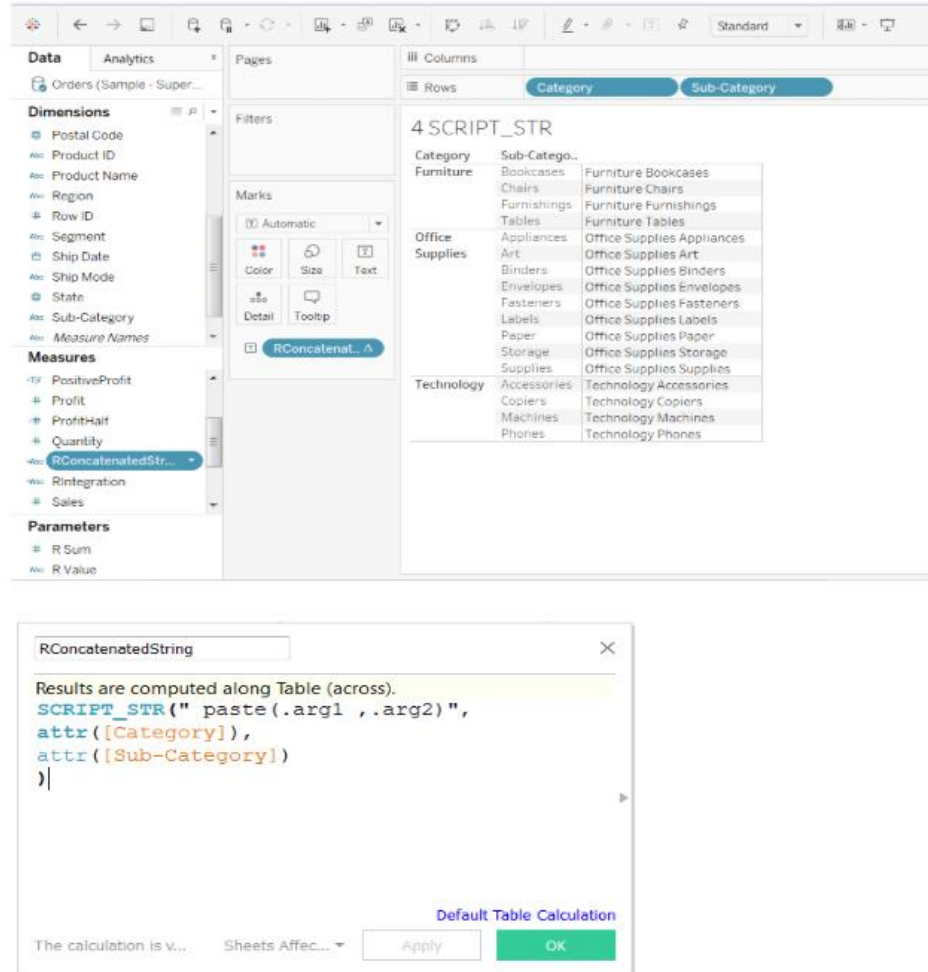
Tableau dashboards can be viewed and operated on several devices such as your laptop, mobile, or even a tablet! You aren't required to perform any additional steps to make your dashboards mobile-friendly. Tableau automatically understands the device that you're viewing the report on and makes adjustments accordingly.



Picture 13. Mobile-friendly Dashboard

- **Integrates with Scripting Languages:**

While users can perform basic calculations in Tableau itself, you might want to go ahead and do some complex calculations! The BI tool lets you integrate with R or Python, thus helping you amplify data with visual analytics.



Picture 14. Connecting Tableau to R language

4.2. Compare Power BI and Tableau

- **Data Access:**

Power BI is not the most influential business intelligence tool. Thus it does not allow you to connect your application with the Hadoop database. But you can connect it with some of the less powerful and small in size databases like Salesforce and google analytics.

On the other hand, Tableau is the most influential business intelligence tool. You can connect it with the Hadoop database. It also can identify the resource automatically. You can connect it with an enormous database.

- **Visualizations:**

Both Tableau and Power BI offer the business managers to set up sophisticated visualizations. This visualization helps in spot patterns, reduce costs, speed up processes, and generate consensus. PowerBI offers numerous data points to provide data visualization.

It is offering more than 3500 data points for drilling down the dataset. There is no need to have any coding knowledge to work with the Power BI. It also helps you to create visualization by asking queries with natural language. It is done with the help of personal digital assistant Cortana in Power BI.

On the other hand, Tableau is known for its data visualization functionality. The users can 24 different types of baseline visualizations in Tableau. These visualization includes heat maps, line charts, and scatter plots. You can use it without having the coding knowledge to develop sophisticated and complex visualizations.

- **Customer Support:**

Power BI provides limited customer support to its users with a free Power BI account. All you can have the support in Power BI but the paid users will get faster support as compared with the free one. It also offers the best support, resources, and documentation. It includes guided learning of a user community forum. Besides, it also provides a sample of how partners use the platform.

On the other hand, Tableau has excellent customer support. It has a large community forum for discussions. It has also categorized online support into an online desktop and server. Tableau also has over 150,000 active users participating in over 500 global user groups in their community. You can get the direct support on the phone, email as well as logging into the customer portal.

- **Deployment:**

Power BI is based on the Saas model, ie. Software as a Service. On the other hand, Tableau is available in both the options i.e., the cloud-based and on-premises installation. It works best when there is a vast data in the cloud. On the other hand, Power, BI doesn't work better with a massive amount of data.

- **Pricing:**

Power BI offers three subscriptions to its users. It is divided into Desktop, Pro, and Premium. The desktop is free for a single user. Pro subscription starts at \$9.99 per user per month. Pro subscription offers additional features like data governance and content packaging and distribution.

You can also avail of the 60-day free trial of the pro package. The last but not least premium subscription starts at \$4,995 a month. Premium subscription is based on per dedicated cloud compute and storage resource

On the other hand, Tableau also offers the three kinds of subscription offering to tailor the user needs. The subscription is as follows Creator, Explorer, and Viewer. All the prices are listed as per user, per month. But the bill charges annually.

Let's explore the subscription one by one. The creator plan costs you \$70 per user per month. User needs to pay the same amount for the on-premise or cloud platform. The Explore plan costs you \$35 for on-premises and \$42 for the cloud deployment.

Note that Tableau Viewer should have at least 100 viewers to purchase the plan. Users can also get the 14 days free trial from Tableau. In this way, you can test it before you buy it. It also offers the \$500 per user, per year packages for the more in-depth level of usage with no data limit.

- **Conclusion:**

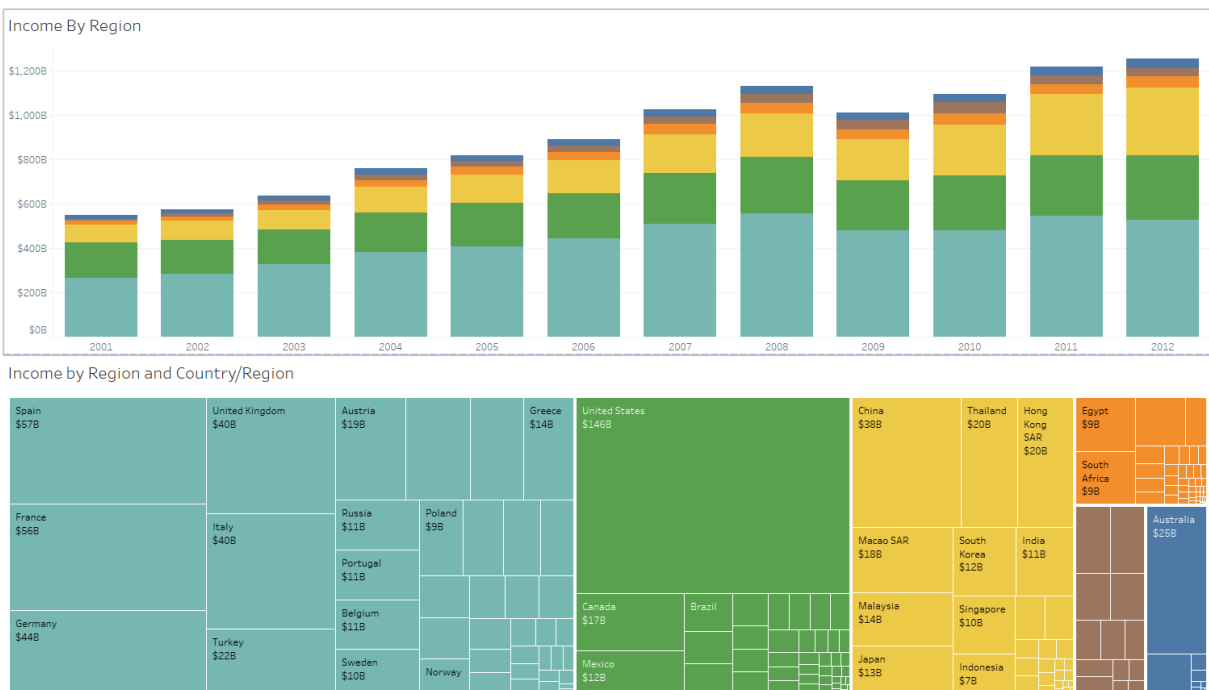
On the other hand, if your business is large enough then you should about for Tableau. Because it is the most powerful business intelligence tool that can work at any scale of business. It is also expensive than Power BI. But if you have a large business, you should use Tableau. It is a value for money products for large enterprises. Because of its unique features or you can call it as strengths also, Tableau gains advantage over other BI tools. (quora, n.d.)

4.3. Customize it and integrate a report into the design

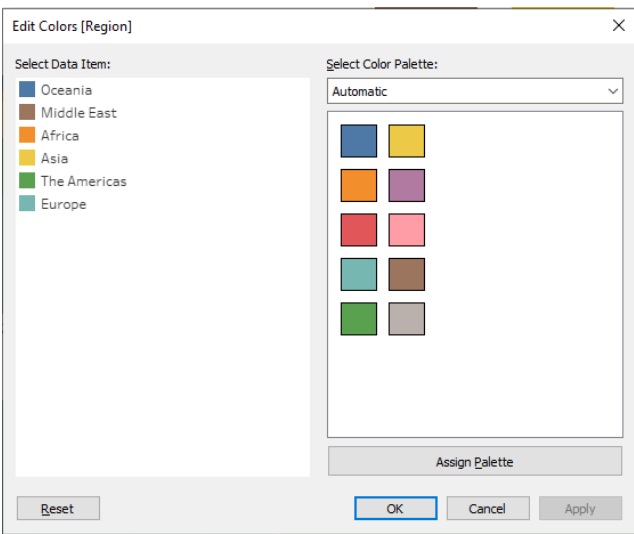
Base on explores the dashboard by Boeing to understand the Fortune 100 company's forecasts for airplane demand over the next 20 years. The customer needs a more overview of the figures with a reasonable picture and graph.

- **Use different colors to represent different data:**

With each different data will be assigned by different colors. This makes it easy for users to distinguish the good elements in charts or reports. From there make the comments and decisions in the future.



Picture 15. Using different colors to represent different data

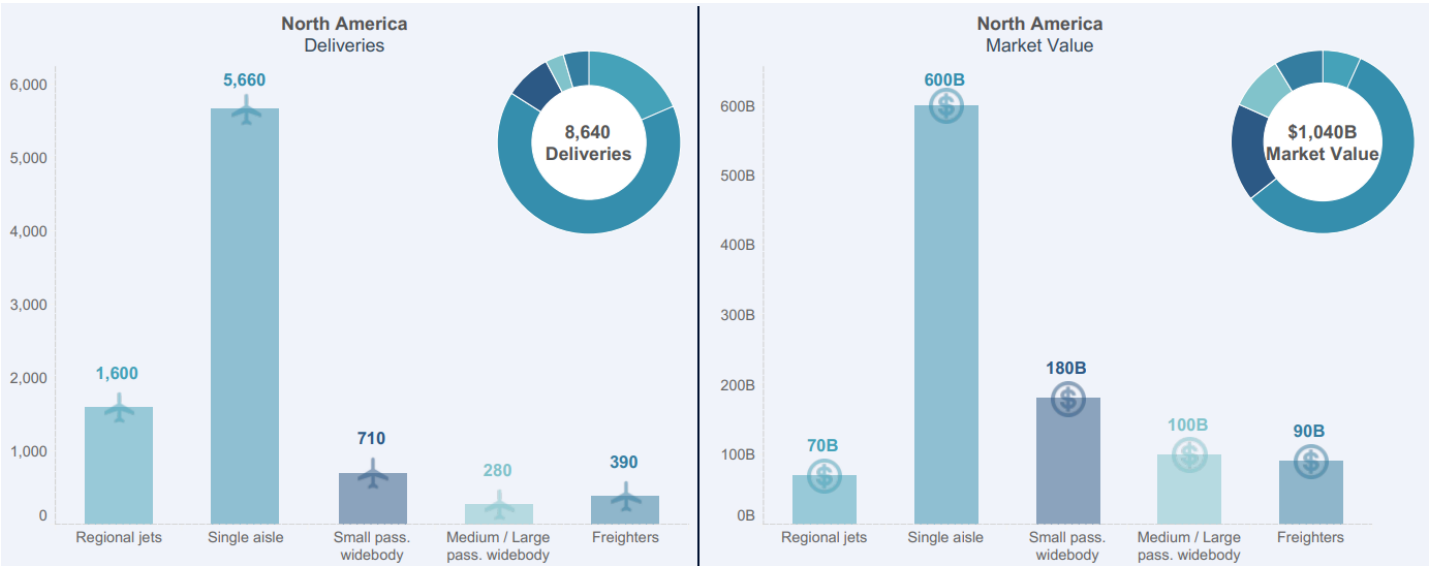


Picture 16. Example color assigned for each region

- **Illustrative image for each data:** With specific images of data types, users will have an overview and easier to understand the report.

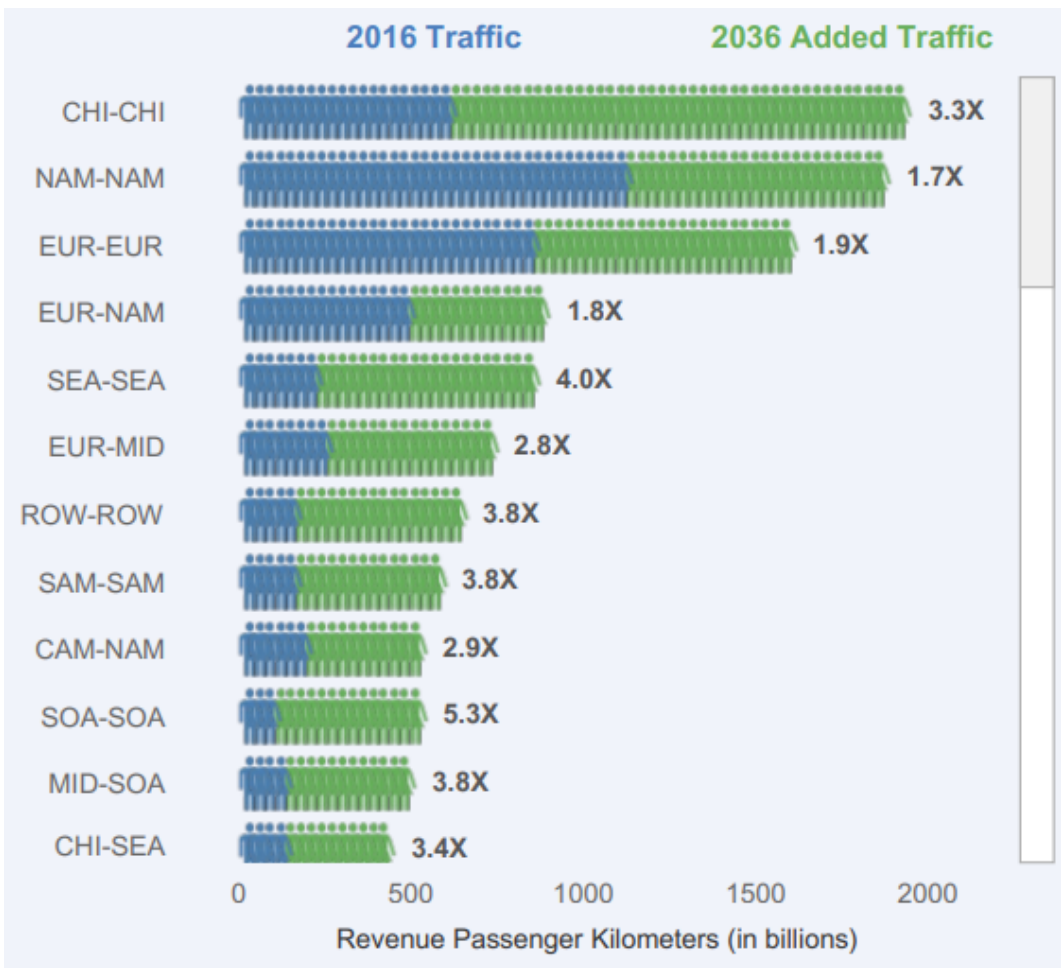


Picture 17. Illustrative image for each data



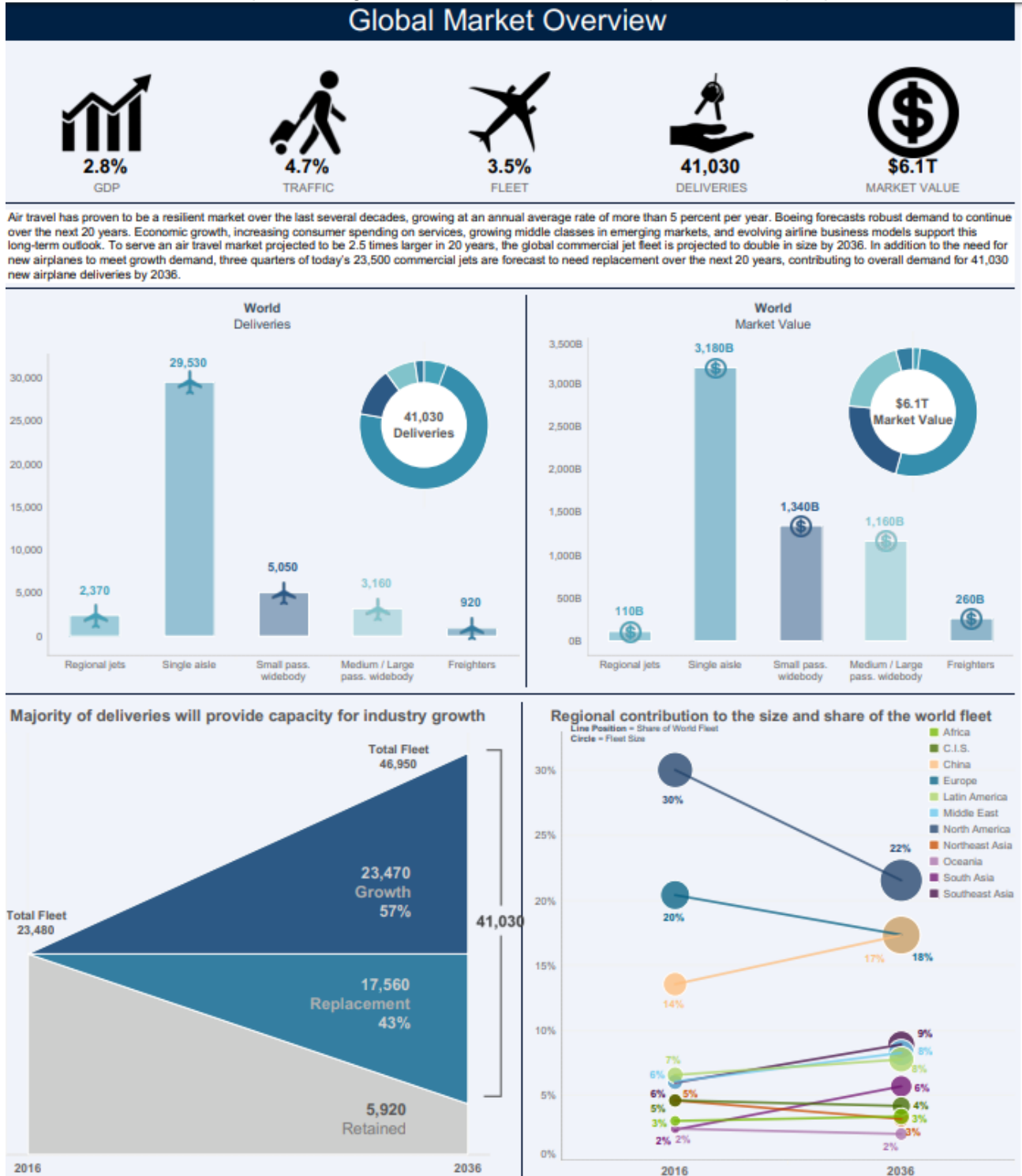
Picture 18. The report has an image for each data

- **The values will be displayed on each column in the chart:** For charts with values, it is very difficult for users to evaluate discrepancies. Therefore, expressing specific values will help users understand the details of the issues to make decisions.



Picture 19. Display value on each column

- **Using Infographics to help users access data:** Instead of designing a report board with values , as usual, the use of template designs makes it easier for the report to reach people.



Picture 20. Make a report like infographics

CONCLUSION

Business Intelligence Tools are, as I can see, very versatile and provide me with a lot of useful information regarding my business' performance and where it's headed. However, while great for collating data from various sources and helping me to make sense of it, it does little in terms of collecting data directly from my customers.

The voice of the customer is a critical factor in not only boosting my profits (as I mentioned before) but also creating a sense of loyalty among my customers and appreciation for my efforts to provide them with a meaningful online experience

Business intelligence software helps to support better decision making at the drop of a hat. The advanced and next-gen BI application helps make the decision easier and save my valuable time by giving the exact business information with facts and figures. Further, I need not have to rely on mere guesswork and instincts. I have the real-time facts and figures ready to be leveraged at any point in time.

And, if I intend to use BI then the self-service capability of Tableau holds great importance. With this BI, I can learn to use business intelligence with greater ease. So, should I be needing a premier BI-partner who can help me with BI initiatives?

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