Noida Institute of Engineering and Technology, Greater Noida

Elements Of Business Intelligence Solutions

Unit: 2

Business Intelligence and Data Visualization
(ACSAI0519)

Course Details
(B Tech 5th Sem)

Ruchika

Assistant professor

CSE-AI

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Course outcomes : After completion of this course students will be able to		
CO 1	Apply quantitative modelling and data analysis techniques to the solution of real-world business problems	K1, K2
CO 2	Understand the importance of data visualization and the design and use of many visual components	K2
CO 3	Understand as products integrate defining various analytical process flow.	K2
CO4	Learn the basics of troubleshooting and creating charts using various formatting tools.	K3, K4
CO 5	Learn basics of structuring data and creating dashboard stories adding interactivity dashboard stories.	K5, K6

1. Business Query and Reporting,

2. Scorecards Development,

3. Metadata models,

4. Automated Tasks and Events,

5. Mobile Business Intelligence,

6. Software development kit (SDK).

7. Stages of Business Intelligence Projects,

8. Project Tasks, Risk Management and Mitigation,

9. BI Design and Development, Building Reports,

10. Building a Report,

11. Drill-up, Drill-down Capabilities.

- This course introduces data visualization theories, techniques, and tools particularly for analyzing and presenting business data. Students will design, develop, and evaluate effective visualizations and dashboards, using various development tools.

- This course focuses on how business intelligence in Tableau uses business analytics tools that make it easy to combine data from multiple sources, analyze and visualize information. It helps trainees in making more informed and better decisions to guide the business. After the completion of the course trainee will be through with all the concepts of business intelligence and Tableau.

- The objective of this course is to assist the folks in running a business strategically. One of the main objectives of this training is to train you on all the concepts that are related to business intelligence and Tableau. The purpose of the Business Intelligence using Tableau training program is to support better business decision-making. Topics like BI – Business Intelligence, Business Intelligence with Tableau, are covered in the training program.

Course Outcome

- Business intelligence (BI) is essentially the collection of tools and processes that are used to gather data and turn it into meaningful information that people can use to make better decisions. Using Excel, you can create powerful reports, scorecards, and dashboards. You can bring data into Excel, sort, and organize data, and use it to create reports and scorecards. You can also use powerful analytic capabilities in Excel to visualize and explore data. Through these tutorials, we are going to understand business intelligence and data visualization using the Tableau tool. This training will help you learn about.

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1		2	2				1		1	1	1	
CO2	1	2	2	1	3	1		1	1	2	1	2	2	2	1
CO3	1	2	1	1	1	2				1	2	2		1	1
CO4	1	2			1	1			1	1	1	1	1	2	2
CO5	1	3	1	1	1		1	1				2		1	2
AVG	1.2	2	1.25	1	1.6	1.5	1	1	1	1.25	1.33	1.6	1.33	1.4	1.5

Discussion about Business Intelligence.

Basic Knowledge Of Business Intelligence.

Knowledge about Data mart Data warehouse.

- A **business query** is a specific request made to a database or data system in order to retrieve information that is valuable for decision-making. Businesses generate and store massive amounts of data, and queries allow users to access this data based on certain conditions.

- **Example**: A retail manager might use a query to extract sales data for a specific product within a certain time range to analyze its performance.

- Queries are written using specific languages, like SQL (Structured Query Language), or through graphical user interfaces provided by business intelligence (BI) tools like Tableau, Power BI, and others.

- The primary **purpose of business queries** is to retrieve meaningful information from large datasets that can help in informed decision-making. Businesses depend on accurate data to:

- Analyze past trends.

- Forecast future patterns.

- Monitor real-time operations.

- Queries enable users to extract specific data that answers key business questions, such as:

- What are the most popular products in the last quarter?

- How has the company's revenue grown over the past year?

- What is the customer churn rate in the current month?

- **Why it matters**: Without the ability to query data, businesses would be overwhelmed by the sheer volume of raw data, making it nearly impossible to extract useful insights efficiently.

- There are different types of business queries, depending on their purpose and method of implementation. Here are a few common types:

- **Ad-Hoc Queries**: These are unplanned or spontaneous queries designed to answer a specific business question that wasn't anticipated beforehand. They are typically run once or occasionally to gather real-time insights.

- **Example**: A marketing team might run an ad-hoc query to find out how many new customers signed up in the past week, in response to a sudden interest in tracking customer acquisition.

- **Pre-Defined Queries**: These are routine queries that are pre-written and scheduled to run at regular intervals. They are used to create standard reports, such as weekly sales summaries or monthly financial reports.

- **Example**: A company's finance department may schedule a pre-defined query to generate a monthly balance sheet.

- **SQL Queries**: Structured Query Language (SQL) is the most commonly used query language for relational databases. It allows users to perform various operations such as selecting data, updating records, and joining tables.

- **Example**: A query in SQL to get all sales from the month of January would look like this:

```
SELECT * FROM sales WHERE date BETWEEN '2024-01-01' AND '2024-01-31';
```

- **BI Tool Queries**: Modern business intelligence tools allow users to create queries without needing to write code. These tools provide visual interfaces where users can drag and drop fields to generate queries.

- **Example**: In Tableau, a user can drag the "Sales" and "Date" fields to create a visual representation of monthly sales trends without needing to write SQL code.

Importance of Reporting

- Reporting is a critical process in businesses, as it transforms raw data into useful insights that can guide decision-making and improve performance.

- Reporting helps organizations monitor, analyze, and communicate the performance of different aspects of their operations. Here's why reporting is essential:

- **Informed Decision-Making**:
  - Reports provide a clear, data-backed understanding of business performance. By presenting data in a structured format, managers and stakeholders can make informed decisions. For example, a sales report might indicate which products are performing well and which ones need improvement.

- **Transparency**:
- Reporting brings transparency to business operations. It enables all stakeholders (executives, managers, investors, employees) to have visibility into the company's performance, finances, and strategy execution.
- **Identifying Trends**:
- Through regular reporting, businesses can track trends over time. For instance, analyzing monthly sales reports can reveal whether revenue is growing or declining, allowing companies to spot trends early and adjust strategies accordingly.

- **Problem Identification**:
- Reports highlight areas where the business is underperforming. For instance, a financial report may show an increase in operational costs, signaling the need for cost-cutting measures.

- Business reports come in several types, each designed for different levels of the organization and purposes:

- **Operational Reports**:
  - These reports provide information on day-to-day business activities. They are generally detailed and focused on specific areas such as sales, inventory, production, etc. For example, a daily sales report would show the number of units sold and total revenue generated in a day.

- **Strategic Reports**:
  - – Strategic reports are used by senior management to make long-term decisions. They focus on higher-level business objectives such as profitability, market share, and competitive analysis. An annual report that summarizes the company's overall performance for shareholders is an example.
- **Analytical Reports**:
  - – These reports go beyond just presenting data; they provide analysis and recommendations. They often compare different data points and trends to give insights into how to improve operations or performance. An example would be a marketing effectiveness report that examines how successful different campaigns were in generating leads.

- **Performance Tracking**:
- Reports help businesses track key performance indicators (KPIs) such as sales growth, customer satisfaction, and operational efficiency. Tracking performance over time enables businesses to measure whether they are meeting their goals and adjust strategies as necessary.
- **Accountability**:
- Reports ensure accountability by providing concrete data on performance. Departments and individuals can be held accountable for their performance based on the insights presented in reports. For example, a marketing report showing low conversion rates may push the marketing team to rethink their approach.

- **Continuous Improvement**:
- By analyzing reports, businesses can identify what's working well and what's not, leading to continuous improvement. Reports on customer feedback, for example, may reveal dissatisfaction with a product feature, prompting necessary changes that enhance customer experience.

- The Stakeholder Requirements Document enables you to capture stakeholder requests and requirements so you understand their needs before planning the rest of the project details or strategy. It should answer the following questions:

- **Business problem:** What is the primary question to be answered or problem to be solved?

- **Stakeholders:** Who are the major stakeholders of this project, and what are their job titles?

- **Stakeholder usage details**: How will the stakeholders use the BI tool?

- **Primary requirements:** What requirements must be met by this BI tool in order for this project to be successful?

- Once you have established the stakeholder requirements, you can start thinking about the project requirements that need to be met to achieve the stakeholder requirements. The Project Requirements Document contains the following details:

- **Purpose:** Briefly describe why this project is happening and explanation of why the company should invest its resources in it.

- **Key dependencies:** Detail the major elements of this project. Include the team, primary contacts, and expected deliverables. Are there any inter-team deliverables required?

- **Stakeholder requirements:** List the established stakeholder requirements, based on the Stakeholder Requirements Document. Prioritize the requirements as: R - required, D - desired, or N - nice to have.

- **Success criteria:** Clarify what success looks like for this project. Include explicit statements about how to measure success. Use SMART criteria.

- **User journeys:** Document the current user experience and the ideal future experience.

- **Assumptions:** Explicitly and clearly state any assumptions you are making.

- **Compliance and privacy:** Include compliance, privacy, or legal dimensions to consider.

- **Accessibility:** List key considerations for creating accessible reports for all users. Who needs to access this feature? How are they viewing and interacting with it?

- **Roll-out plan:** Briefly describe the expected scope, priorities and timeline. Consider at what points during the rollout will measurements be made to determine whether the feature is performing as expected? Is there a rollback plan and timeline if this feature does not meet its intended goals?

- Finally, you will create a Strategy Document for your project. This is the final phase of the planning process. The Strategy Document is a collaborative place to align with stakeholders about project deliverables. You will work together to establish information about dashboard functionality and associated metrics and charts.

- This is a time to flesh out what metrics will be required, how metrics are calculated, and any limitations or assumptions that exist about the data. Stakeholders think through these details and help the BI professional make final project decisions. Then, the BI professional provides stakeholders with a dashboard mockup to get valuable feedback.

- Generally, the BI professional will create the document and request review and sign-off from important stakeholders. Then they can begin working on the project with all of the details they need

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- The **Strategy Document exemplar** is the longest document and has more missing information. But because this is the stage where you can determine what kinds of charts you might make, many of your answers can be left to your best judgment. Unless the stakeholder tells you what kinds of charts they want, you will need to use your BI expertise to decide what works best. In this scenario, the stakeholders didn't give you any chart type suggestions. This means you can make the decisions yourself or decide to follow up with the stakeholder for more guidance.

- The Strategy Document is also where you might include a sketch of a mockup.

- This mockup includes filters for timescales, such as daily, weekly, and monthly. It features the current status and historical charts of the following metrics: sales completed, listings posted, listings removed, and popular search terms. It has a bar chart comparing total site utilization with the average site utilization per user. It also has a bar chart with the distribution of contact methods used to submit support requests.

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- ## Types of Dashboards
- Often, BI professionals will tailor a dashboard for a specific purpose. The three most common categories are:
- **Strategic**: focuses on long-term goals and strategies at the highest level of metrics
- **Operational:** tracks short-term performance and intermediate goals
- **Analytic:** consists of the datasets and the mathematics used in these sets

- **Strategic dashboards**
- A wide range of businesses use strategic dashboards when evaluating and aligning their strategic goals. These dashboards provide information over the longest time frame—from a single financial quarter to years. They typically contain information that is useful for enterprise-wide decision-making. For example, a strategic dashboard could focus on key performance indicators over a year.

- **Strategic dashboards**


Revenue and Customer Overview – Q1
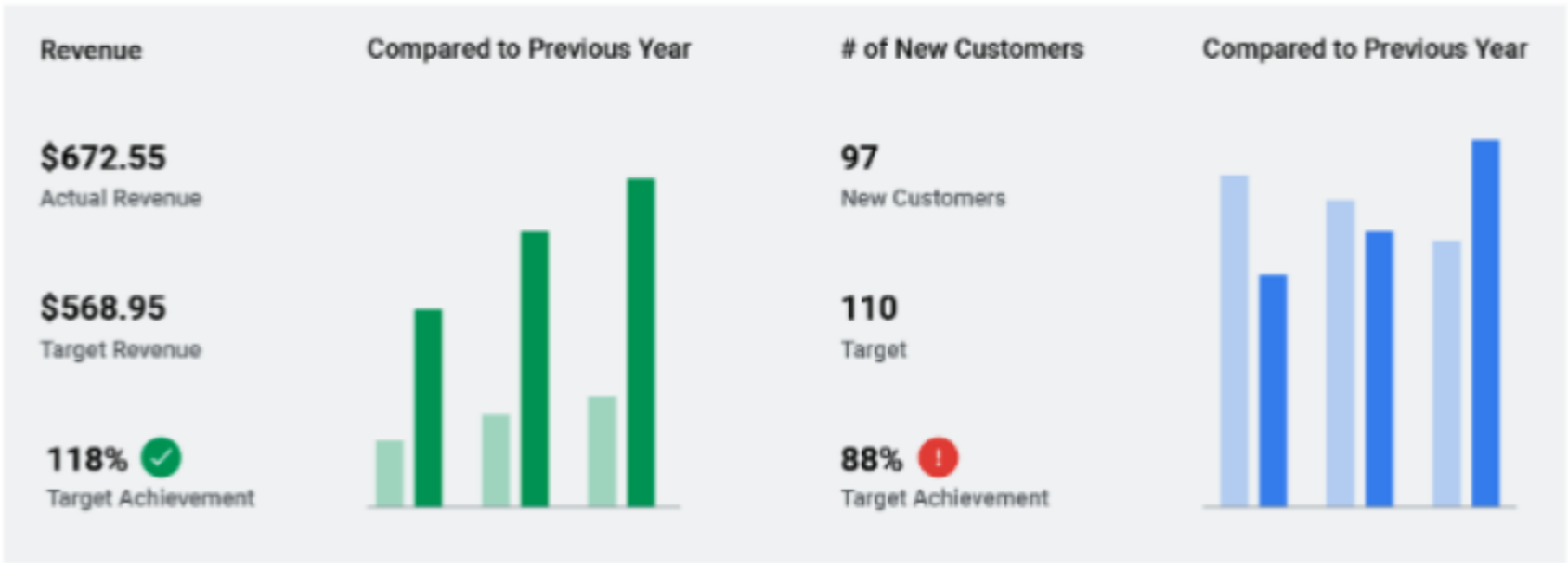
- **Operational dashboards**

Operational dashboards are arguably the most common type of dashboard. Because these dashboards contain information on a time scale of days, weeks, or months, they can provide performance insight almost in real-time. This enables businesses to track and maintain their immediate operational processes in light of their strategic goals. An operational dashboard could focus on customer service team performance.

- **Operational dashboards**


Customer Service Team Dashboard
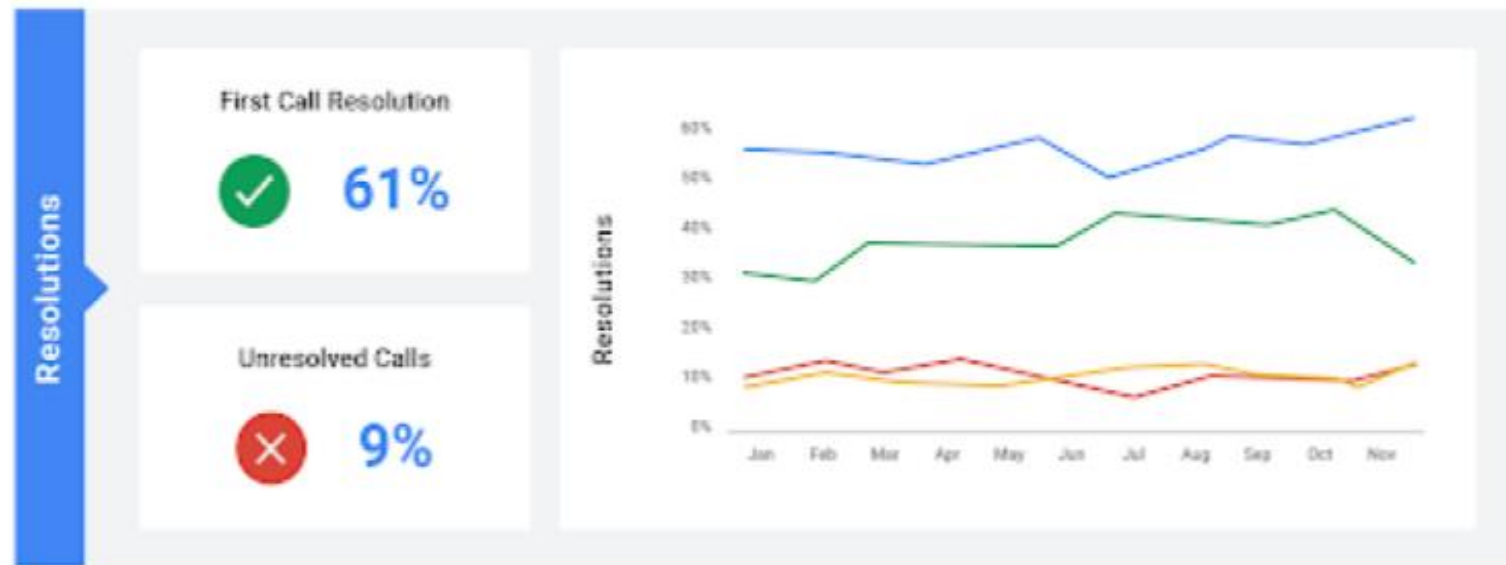
- **Analytic dashboards**

Analytic dashboards contain the details involved in the use, analysis, and predictions made by data scientists. Data science teams usually create and maintain the most technical category, analytic dashboards. An example of an analytic dashboard could focus on metrics for a company's financial performance.

- **Analytic dashboards**
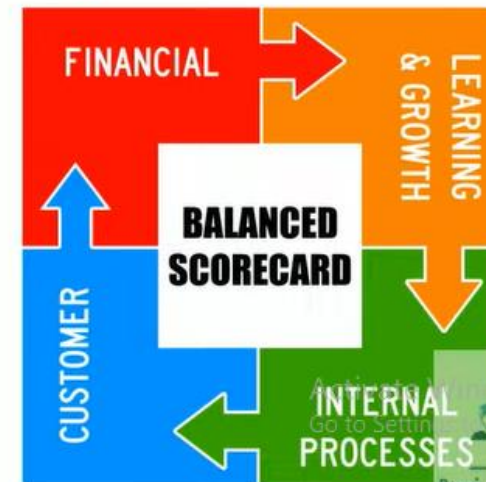

Financial Performance Dashboard
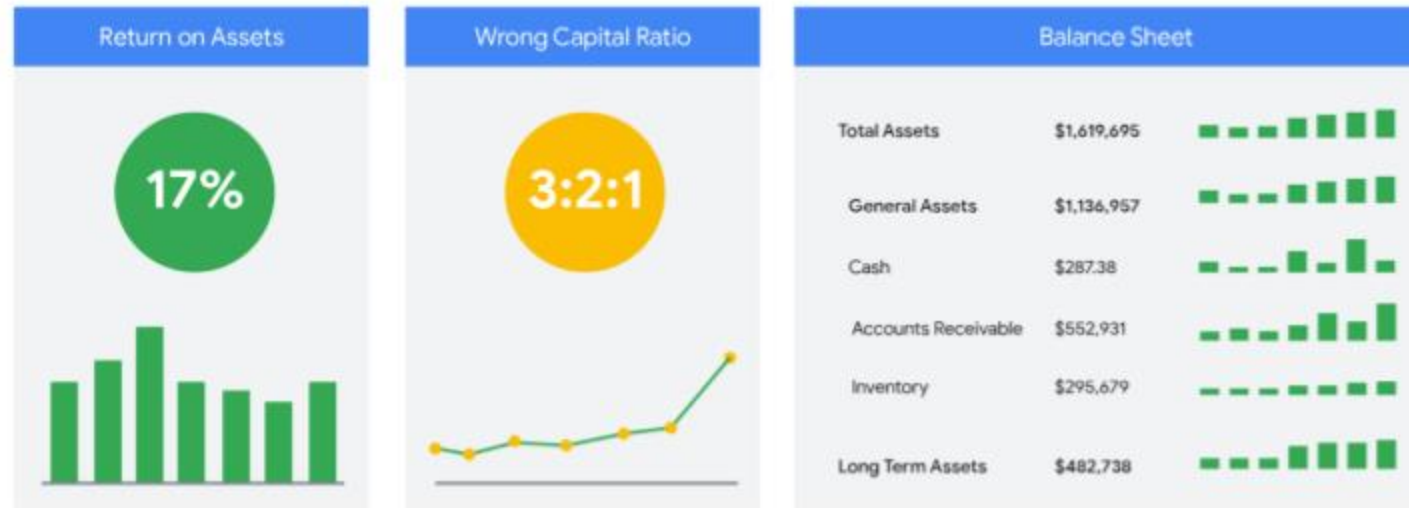
Sales Dashboard
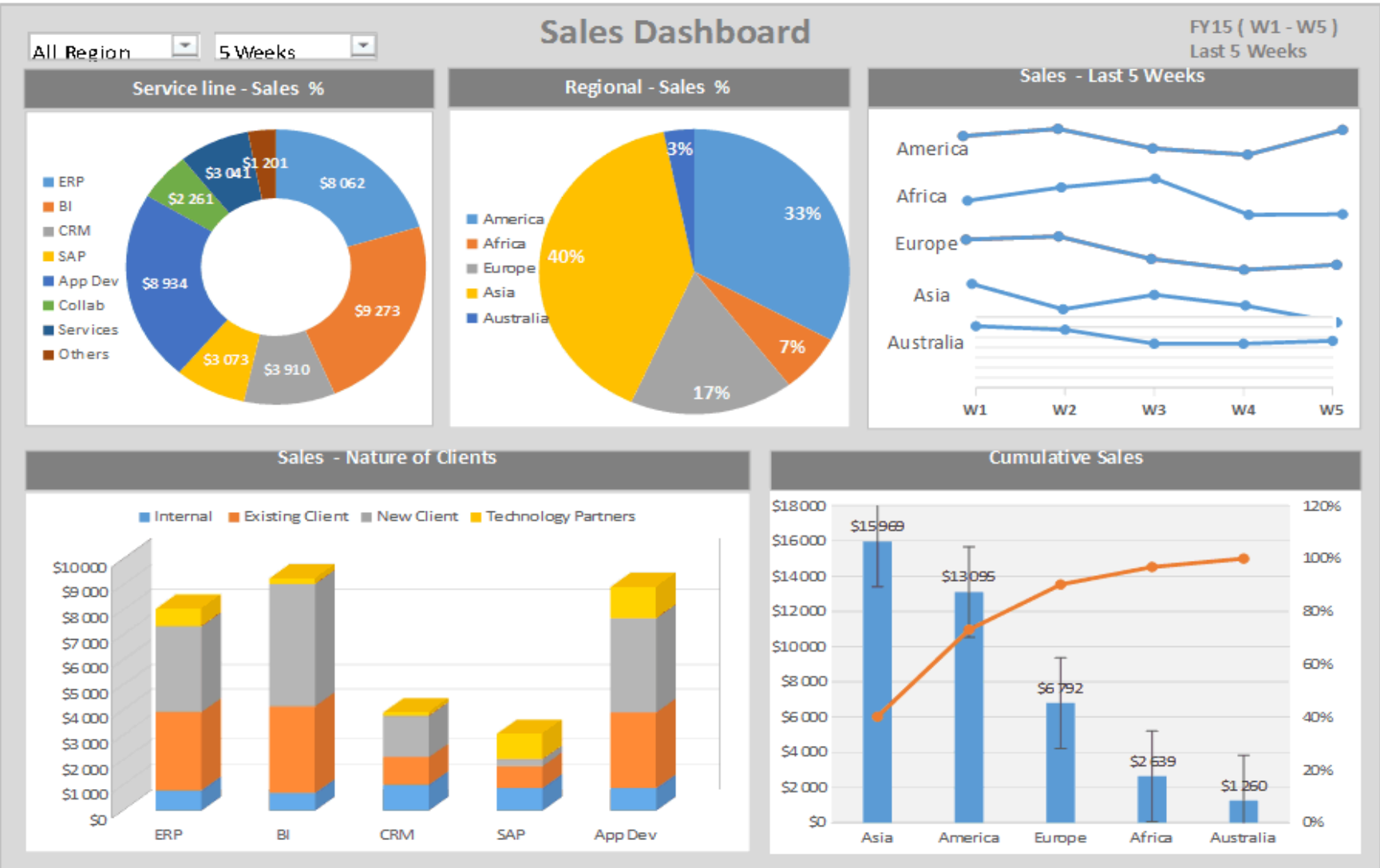
1. What is Balanced Scorecard?

*Balanced scorecard, or BSC, is a visual tool used to measure the effectiveness of an activity against the strategic plans of a company.

*Often used during strategic planning to make sure the company's efforts are aligned with the overall strategy and vision.

*A framework for measuring organizational performance using a more balanced set of performance measures.

Robert Kaplan   David Norton

HARVARD UNIVERSITY

FINANCIAL
LEARNING & GROWTH
BALANCED SCORECARD
CUSTOMER
INTERNAL PROCESSES

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2. Four Perspectives

1. Financial Perspective

Sales Numbers, Profit Margins, Return on Investment (ROI)

2. Customer Perspective

Number of Social Media Posts, Number of Tickets Resolved, Customer Satisfaction Surveys, Customer Service Calls

3. Internal Processes Perspective

Operating Efficiency, Equipment Utilization, Machine Set-up Time, Quality Control

4. Learning & Growth Perspective

Employee Retention, Training Hours/Employee, R&D ratio, Work-Life Balance

3. How to Develop a Balanced Scorecard?

Step 1. Develop Your Company Vision

Update them regularly!

Step 2. Determine Your Strategic Objectives

Step 3. Analyze What Factors Will Bring Success

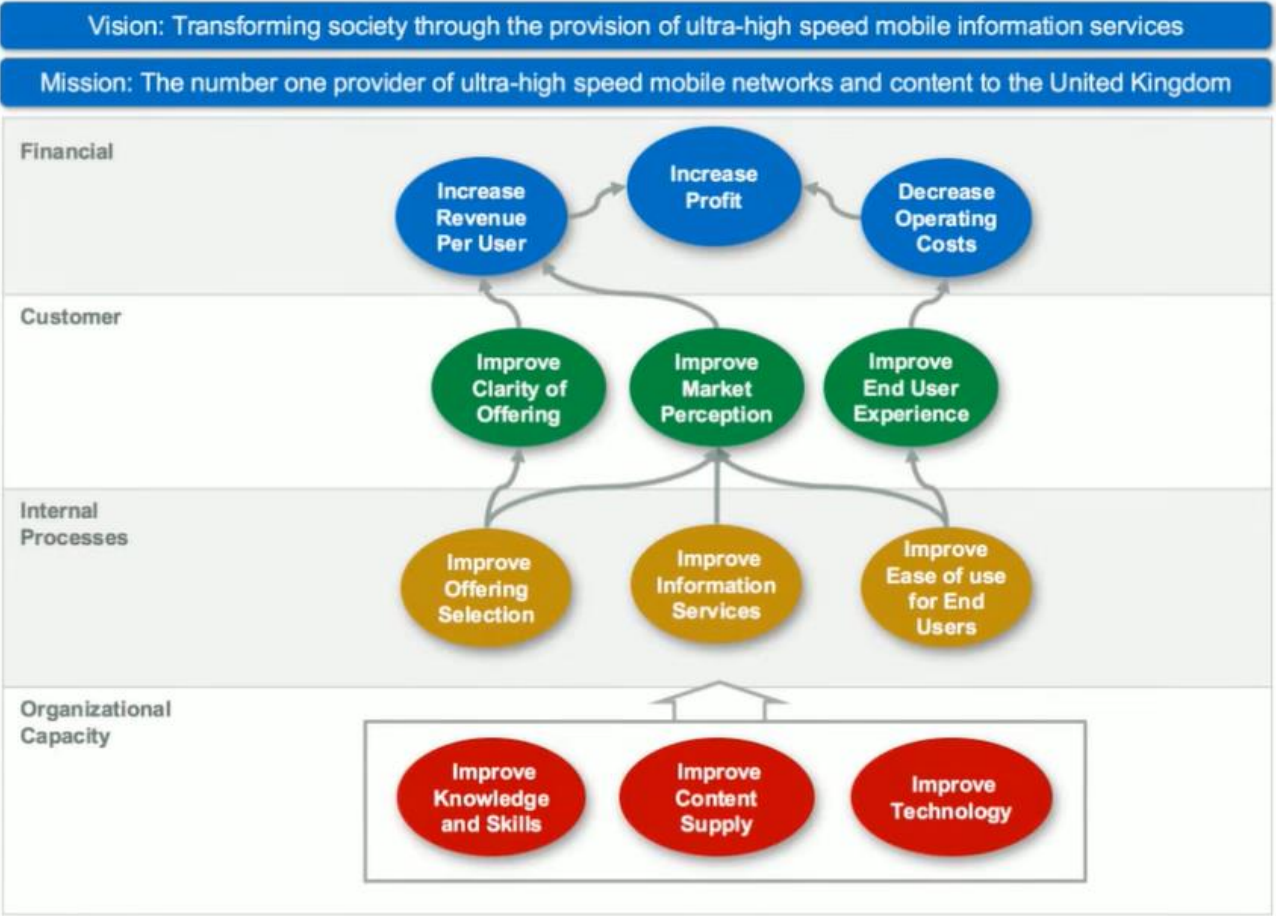Step 4. Choose Your Key Performance Indicators

Step 5. Set Your Targets, Plans, and Initiatives

Activate Windows
Go to Settings to activate Windows.

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4. A step-by-step Example (A UK–based Telecommunication Company)

Vision: Transforming society through the provision of ultra-high speed mobile information services

Mission: The number one provider of ultra-high speed mobile networks and content to the United Kingdom

Financial
- Increase Revenue Per User
- Increase Profit
- Decrease Operating Costs

Customer
- Improve Clarity of Offering
- Improve Market Perception
- Improve End User Experience

Internal Processes
- Improve Offering Selection
- Improve Information Services
- Improve Ease of use for End Users

Organizational Capacity
- Improve Knowledge and Skills
- Improve Content Supply
- Improve Technology

4. A step-by-step Example (A UK-based Telecommunication Company)

Vision	Transforming society through the provision of ultra-high speed mobile information services		
Mission	The number one provider of ultra-high speed mobile networks and content to the United Kingdom		
Strategic Priorities	**Content Partnerships**	**Customer Service**	**Brand Awareness**
Strategic Results	Strong supply chain for content and information services, exclusive agreements	Clarity in offering that surpasses anything in the market today, best user interface	Reinvigorated brand based on successes, attract a wider and younger audience

Business Objectives and Strategy Map	Measures	Targets	Initiatives
Financial — Increase Revenue, Increase Profitability, Decrease Operating Costs	• Net Profit • Operating Costs • Revenue in target markets	• ↑ 5% per year • ↓ 3% per year • ↑ 12% per year	• Implement new financial accounting system • Simplify billing operations
Customer — Improve Clarity of Offering, Improve Market Perception, Improve End User Experience	• % Market Share Index • % Customer Satisfaction Index	• ↑ 3% per year • ↑ 5% increase in index next period then stabilize	• Competitive end user requirements market studies for new UK regions • "Improve the Offering" two year programme
Internal Processes — Improve Offering Selection, Improve Information Services, Improve Ease of Use for End Users	• New products as % of sales • Brand awareness score • End User experience score	• 12% this year • ↑ 5% per year • > 90% every reporting period	• Create improved offering selection process • Hook into 'Improve the Offering' programme • Training programme for new offerings and user interface
Organizational Capacity — Improve Knowledge and Skills, Improve Content Supply, Improve Technology	• Employee development plans • Technology training index • Information Efficiency Index	• 95% in place • 90% efficient • 95%	• Product and marketing training programme • 2 year Content supply agreements • Technology improvement programme

Customer Focus - Integrity - Quality - Helpfulness - Community - Efficiency

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Internal

External

6. Advantages and Disadvantages

Advantages:

1. Makes communication easier

2. Facilitates better alignment

3. Connects the individual worker to organizational goals
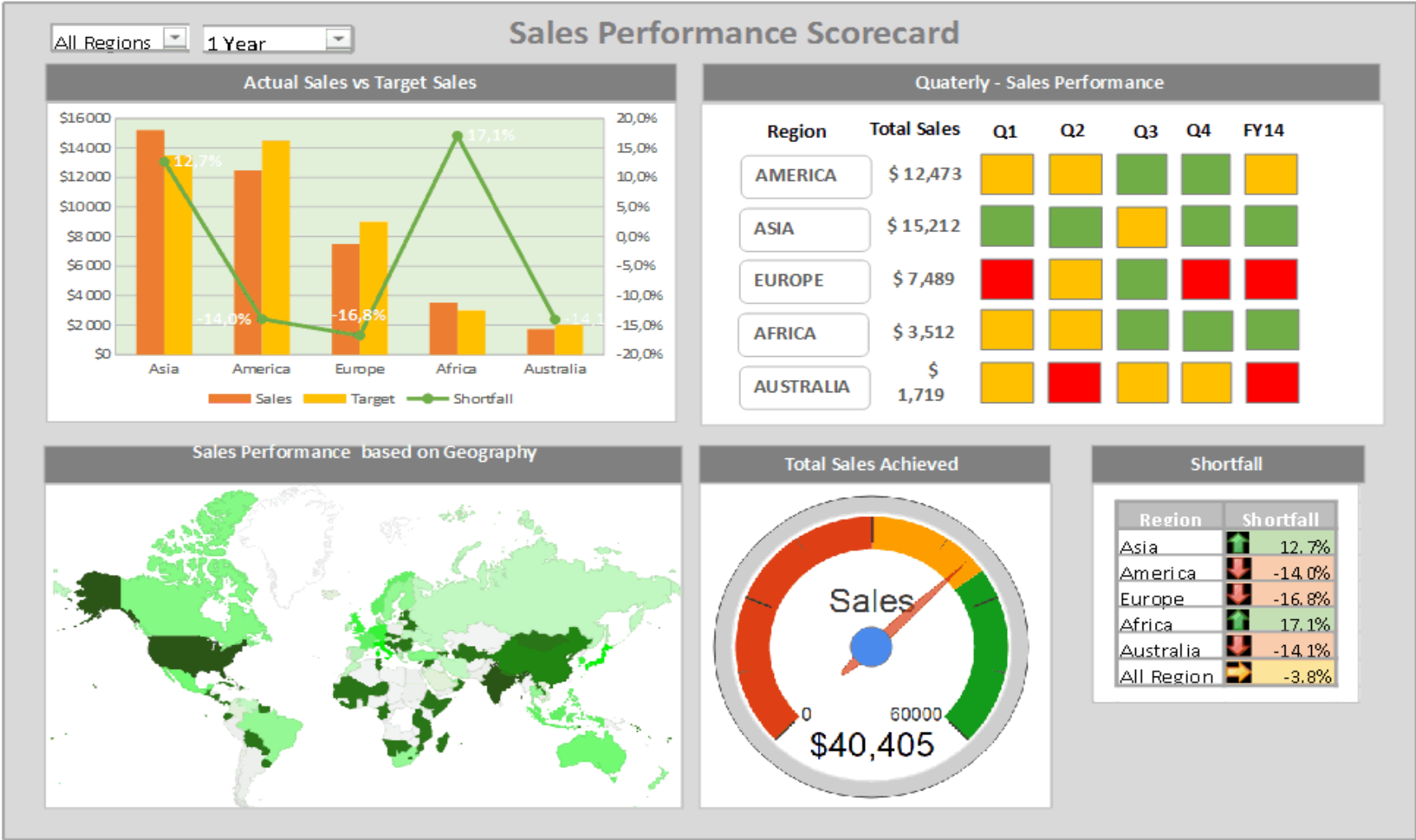
4. Keeps strategy front and center

Disadvantages:

1. Must be tailored to the organization

2. Needs buy-in from leadership to be successful

3. Could get complicated

4. Requires a lot of data

Activate Windows
Go to Settings to activate Windows.

Business School 101
By Dr. Yang

- A major difference between the dashboards and scorecards is that a scorecard focuses on a given metric and compares it to a forecast or target, whereas a dashboard will present multiple numbers in different ways.

- In short, a dashboard is a performance monitoring system, whereas a scorecard is a performance management system.

Comparison based on	Dashboard	Scorecard
Purpose	Performance Monitoring	Performance Management
Parameters	Performance Metric	KPI (Metric + Target)
Measures	Performance	Progress (Current value versus the target)
Updates information	Real Time Basis	Periodically (Weekly/Monthly/Quarterly)
Focused On	Short Tem Goal	Long Term Goal
Decision Influences	Daily Operations	Companies Policies
Nature of Decisions	Tactical	Strategic
Supported By	Individual Managers	Top Management
Provides	Snapshot of Business Performance	Trends and changes in business activity over period of time.
Nature of Data	Real Time data obtained	Summarized/ Consolidated

- Mobile business intelligence (BI) is the use of mobile devices to access and analyze business data and dashboards. It allows users to make data-driven decisions in real time from anywhere.

- Benefits of Mobile BI:

- Improved decision making: Users can make quick decisions based on data
- Increased efficiency: Users can improve the efficiency of their work
- Better customer service: Users can provide real-time data access to customers
- Improved employee productivity: Users can identify areas for improvement by monitoring employee activity
- Increased revenue: Users can increase revenue through improved performance

- A software development kit (SDK) is a set of tools that allow developers to write or use an existing framework to develop applications for a given platform. SDKs are often the backbone of many popular applications, games, and apps. What's in your SDK toolbox varies from platform to platform so it makes sense for you to know what SDK tools are available on your chosen software development kit before starting any SDK-related project.

- SDK tools are not only limited to the frameworks but also include everything else within it. This could be anything from testing and debugging, all the way through to hardware access like controllers or sensors for your software development kit. Having SDK means you can go beyond just creating an app on a platform by giving developers SDK-level access which is essential if they want their application to function optimally with that particular system. The benefits of SDKs aren't without consequence however as some platforms choose not to offer SDK tools due to security concerns (Apple's iOS being one example).

- Business Intelligence is generally divided into four different stages which together form the process of BI that businesses working

- **1. Information gathering**

- During the information gathering stage, data is either prepared from existing sources (existing contact data, ERP data, financial database) or collected externally through the use of in-person or online surveys, polls, questionnaires or forms.

- Feedback data can be gathered from customers, staff or advisors, and consideration given to anonymity and privacy in order to provide the most honest and reflective data possible. with data should be aware of. **2.Analysis**

- This is one of the key areas of turning raw data into information. BI makes it easier for the user to explore the data and turn it into useful information. There are three common types of analysis:

- **Spreadsheet Analysis** - probably the oldest form of analysis where data from a spreadsheet application is translated into tables, pivot tables and graph.

- **Reporting** Once data has been analyzed it needs to be reported on. Reporting is the act of taking the analyzed data and presenting it in a way that makes a human connection, or some sort of focus where advantages are to be gained through actions.

- Depending on the tools involved, reporting can happen as an extension of the analysis phase, but for BI to be effective it must be reported on after being filtered or defined during the analysis stage before being presented as a report.

- **4. Monitoring and Prediction**

- BI is a circular process, and therefore the forth stage of monitoring and prediction can flow on back to the first stage, being information gathering. **Monitoring** allows the user to monitor data and information in real-time. Monitoring provides snapshots between reporting periods or when making decisions. The three main types of monitoring are:

- **Dashboard** – A central location where all useful and actionable metrics and data are contained. They are usually represented graphically to make it easier for users to

- **Risk management** is the process of identifying, assessing, and prioritizing potential risks that could affect a project, business operation, or investment. It involves developing strategies to minimize or mitigate the impact of those risks. In the context of **Business Intelligence (BI)**, risk management ensures that BI systems and processes operate smoothly, providing accurate, timely, and actionable insights without disruptions.

- **Data Integrity**: BI heavily depends on data quality. Risk management helps protect the integrity of data by identifying risks like data corruption, inaccurate data entry, or inconsistent data integration.
- **System Downtime**: BI tools often gather data in real-time or near real-time. Unexpected system downtime can lead to missing insights. Risk management ensures contingency plans are in place to prevent or minimize downtime.
- **Security Threats**: BI systems store and process sensitive business data. Proper risk management addresses threats like data breaches, ensuring that confidential information is protected through encryption, access controls, and audits.
- **Decision-making Impact**: Poor or inaccurate data can lead to wrong decisions. Risk management helps mitigate the chances of erroneous data inputs, ensuring that decisions based on BI are reliable.
- **Regulatory Compliance**: Many industries have strict regulations regarding data privacy and reporting. Effective risk management helps a BI system stay compliant with legal standards, avoiding fines or legal issues.
- **Project Success**: During BI project implementation, risk management helps foresee potential obstacles, such as scope creep, budget overruns, or delays, ensuring the project is delivered on time and within budget.

- # The 4 essential steps of the Risk Management Process are:

  - Identify the risk.
  - Assess the risk.
  - Treat the risk.
  - Monitor and Report on the risk.

Four Steps of the Risk Management Process

1. Identify Risks

- This initial step involves recognizing potential risks that could impact the BI processes, systems, or projects.
- **Types of Risks**: Risks can be technical (system failures, data breaches), operational (process inefficiencies, data quality issues), financial (budget overruns, cost overruns), or compliance-related (regulatory violations).
- **Techniques**: Common methods for identifying risks include:
  - **Brainstorming Sessions**: Engaging stakeholders, including data analysts, IT staff, and business users, to gather insights on possible risks.
  - **Checklists**: Using pre-defined risk checklists tailored to BI projects can help ensure comprehensive identification.
  - **SWOT Analysis**: Assessing strengths, weaknesses, opportunities, and threats related to BI initiatives can uncover risks.
  - **Interviews and Surveys**: Collecting information from various departments can highlight areas of concern.
- **Documentation**: Once identified, risks should be documented in a risk register, detailing their nature, sources, and potential impact.

2. Assess Risks

- After identifying risks, the next step is to evaluate them to understand their potential impact and likelihood.
- **Risk Analysis**: This can be qualitative, quantitative, or a mix of both.
  - **Qualitative Analysis**: Categorizes risks based on their severity (e.g., low, medium, high) and likelihood (e.g., unlikely, possible, likely). This method is often faster and easier to implement.
  - **Quantitative Analysis**: Assigns numerical values to risks, estimating potential costs and impacts using statistical methods or models. This approach can provide a more detailed understanding of risks.
- **Impact Assessment**: Determine how each risk could affect BI objectives, such as data accuracy, project timelines, or overall decision-making. Consider:
  - **Financial Impact**: Assessing costs associated with a risk materializing.
  - **Operational Impact**: Evaluating effects on BI operations and service delivery.
  - **Reputation Impact**: Understanding how risks might affect the organization's credibility or stakeholder trust.
- **Prioritization**: Rank the risks based on their assessment results, focusing resources on the most significant threats that require immediate attention.

3. Treat Risks

- In this step, strategies are developed and implemented to mitigate or manage the identified risks.
- **Risk Treatment Options**: Common strategies include:
  - **Avoidance**: Altering plans to eliminate risks (e.g., changing data sources that are unreliable).
  - **Mitigation**: Implementing measures to reduce the likelihood or impact of risks (e.g., adopting data validation techniques to enhance data quality).
  - **Transfer**: Shifting the risk to another party (e.g., outsourcing data storage to a third-party provider with better security measures).
  - **Acceptance**: Acknowledging the risk and deciding to accept it without further action, often when the cost of mitigation outweighs potential consequences.
- **Action Plans**: Develop detailed action plans that outline specific measures, responsible parties, timelines, and resources needed for risk treatment.
- **Communication**: Ensure all stakeholders are aware of the risk treatment plans and their roles in implementing them.

3. Monitor Risks

- The final step involves continuously tracking and reviewing risks and the effectiveness of the treatment strategies.

- **Ongoing Monitoring**: Regularly review the risk environment to identify new risks or changes in existing risks. This can be done through:

  - **Regular Risk Reviews**: Scheduled assessments to check on the status of identified risks and the success of mitigation strategies.

  - **Key Risk Indicators (KRIs)**: Establishing metrics to monitor risk factors, enabling proactive responses to emerging risks.

- **Reporting**: Maintain communication with stakeholders about the current risk landscape, treatment effectiveness, and any new developments.

- **Adjustments**: Be prepared to revise risk treatment plans based on monitoring results and changes in the business environment. Adaptability is crucial in ensuring that the BI system remains resilient against evolving risks.

- **Documentation Updates**: Continuously update the risk register to reflect the current state of risks and treatment actions.

- Risk mitigation is the process of developing and implementing measures to minimize the impact to an acceptable level. It helps address potential threats and vulnerabilities to safeguard an organization's operations and assets.

- Risk Mitigation Starategies:

- Risk mitigation strategies are action plans to minimize, eradicate or control the impact of risks that organizations may face. Different risks call for different response mechanisms and the speed at which organizations respond can go a long way in better decision-making and better risk mitigation.

Market risks

Any volatility in market conditions such as changes in interest rates, market demand, technological breakthroughs, etc. can bring market risks. So if an increase in the market rate of interest impacts your borrowing costs or the entry of a new competitor affects your sales, it is a market risk.

Regulatory and compliance risks

Regulatory and compliance risks refer to any issues that the organization faces due to violations of regulatory laws or compliance failures. These can be legal proceedings, financial damages, cancellation of certification, business disruptions, negative publicity, etc.

Financial risks

The risks of financial losses because of the impact on your investments, income, expenditure, or credit are known as financial risks. There can be various reasons for such risks. A failure on the part of a borrower to repay debt can for example, bring credit risk, while improper management can bring liquidity issues.

Operational risks

Operational risks are associated with hindrances in day-to-day activities of the organization. A human error leading to a data breach can pose a business continuity risk. Similarly, system or process failures, regulatory infringements, some external events etc. can bring operational risks for an organization.

Cybersecurity risks

Risks that affect the confidentiality, integrity and availability of information assets of the organization are cybersecurity risks. Social engineering, malware, password attacks etc are some examples. Cybersecurity risks can result in financial losses, regulatory issues, theft of information security etc.

Reputational risks

Risks that can tarnish your brand image and pose a threat to its reputation are categorized as reputational risks. An ethical or compliance lapse may put you in negative stories or an employee behaviour such as harassment can put a dent in your public perception.

Environmental risks

Any unanticipated environmental changes like pollution, calamities, land use patterns, etc. that can impact the environment and in turn bring operational hiccups for your organization are environmental risks. Any resource depletion for example, can affect the dependent supply chain.

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RISK MITIGATION
STRATEGIES

Risk Avoidance:
Elimination of risks by avoiding risky activities

Risk Transfer:
Shifting of risks to third parties and reducing impact

Risk Reduction:
Controlling risk occurrence probability or its impact

Risk Acceptance:
Acknowledging the risks that come along a decision or activity

1. Risk avoidance

Risk avoidance strategy calls for the elimination of activities or withdrawal from situations that pose a risk to the organization. Any business project that has a high probability of bringing along negative consequences such as legal, financial, or operational trouble must be avoided.

However, this strategy only applies if the severity of the potential risk is too high. Ceasing an activity is an easy solution but the business may miss out on big business opportunities.

2. Risk transfer

Risk transfer is the strategy of passing on the risk to a third party through contracts, insurance, or any other transfer arrangement.

Signing a contract with the third-party or purchasing an insurance policy can help shift the financial burden of a potential risk. But it can be expensive and the risk coverage may not include complete coverage.

3. Risk reduction

Risk reduction is the strategy of controlling or lessening the probability of risk occurrence or its impact. This involves implementing various mitigation controls to minimize the likelihood of risk or to protect the organization from its impacts.

The strategy helps in safeguarding the organization from financial, market, and reputational risks etc. and building organizational strength against such risks. It can however be heavy on the company's pocket and difficult to monitor. If the risk still occurs, it can be hard to analyze how effective the measures were and how much risk was reduced.

4. Risk acceptance

Risk acceptance is when the organization chooses to bear the impact of a potential risk that comes from a decision, activity, or project. It is a deliberate act where the key stakeholders decide to proceed with a risky endeavour, resisting the urge to avoid mitigation.

Often, the decision for risk acceptance is taken when the cost of reduction, avoidance, or transfer is too high or when the outcomes the risk brings can bring about positive change.

- ## Drill Down

- **Drill down** refers to the process of moving from a higher-level summary of data to a more detailed view. It allows users to explore finer details and understand the underlying factors contributing to the aggregated data.

Example:

- Imagine a retail business with sales data structured hierarchically as follows:

- **Country**: USA
  - **Region**: California
    - **City**: Los Angeles
      - **Store**: Store A
      - **Store**: Store B
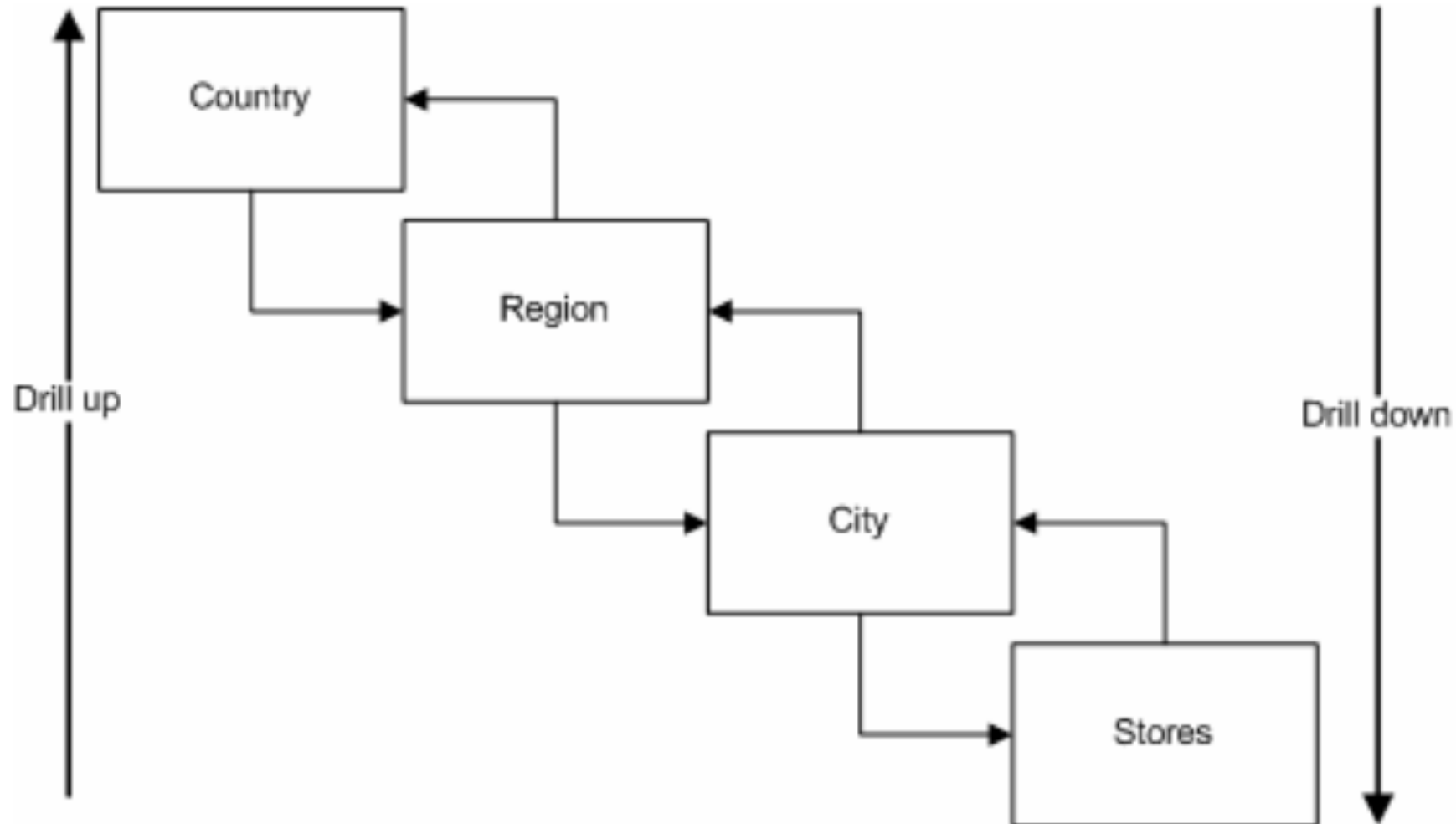
- In this scenario, if a BI analyst starts at the country level and wants to see sales performance specifically for the USA, they may see total sales of $1 million.
- **Drill Down Process**:
- The analyst drills down from the **Country** (USA) to the **Region** (California).
  – The sales for California might show $500,000.
- Next, the analyst drills down from **Region** (California) to the **City** (Los Angeles).
  – The sales for Los Angeles might show $300,000.
- Finally, the analyst drills down from **City** (Los Angeles) to the **Store** (Store A and Store B).
  – Store A generates $150,000.
  – Store B generates $150,000.

  This drill-down process helps the analyst understand where sales are coming from and identifies which specific stores contribute to the total sales figures.

- **Drill up**, on the other hand, involves moving from a more detailed level of data to a higher-level summary. This allows users to aggregate data and see the overall picture.

- Example:

- Continuing with the same retail business example, if the BI analyst wants to get a broader view of sales after analyzing individual store performance, they can drill up.

- **Drill Up Process**:
- The analyst starts from the **Store** level (Store A and Store B) and aggregates their sales.
  - Total sales for both stores: $150,000 (Store A) + $150,000 (Store B) = $300,000.
- Next, the analyst drills up from the **City** (Los Angeles) level to the **Region** (California).
  - They find that the sales for California total $500,000, which includes other cities as well.
- Finally, they can drill up from the **Region** (California) to the **Country** (USA).
  - They can now see the total sales for the USA, which is $1 million.

- Are you one of those new to Business Intelligence (BI)? Then new concepts come along with new vocabulary, which could be the major learning obstacles you'll encounter. That's until you face a database that is more akin to a garbage can than a well-arranged library.

- Drill up, drill down, drill through—what does drilling have to do with reporting and dashboards? Was the individual coined these terms connected to a woodpecker? Here's a quick overview of the major differences between these three: Drill Down

- The ideal way to learn how the drill down function works is to tell yourself that you are walking through various hierarchy levels. By definition, it needs the usage of hierarchical definition where values are categorized into levels.

- **Drill down and drill up reports in Microsoft Power BI**

- A drill down BI report allows users to pilot a different layer of data by steering and clicking a certain data element in an application or data element. Drill down lets users discover multidimensional data through steering from one level down to a more detailed level.

- That also enables users to see aggregated, summary information and then hierarchically discover deeper data levels for a more particular analysis. Also, drill down is one of the major functions of OLAP, allowing users to answer complicated multidimensional data concerns.

REPORTING ON LOCATION

We are often asked, "Which view do I use for reporting on my locations?" The main view you will want to use for reporting on your stores is found within locations and employees (called "Locations and Employees").
Expand this view to find the different levels you may want to bring into view, such as Store, District or Region.

•Business intelligence (BI) is a broad category of application programs which includes _____
a) Decision support
b) Data mining
c) OLAP
d) **All of the mentioned**

• BI can catalyze a business's success in terms of _____
a) Distinguish the products and services that drive revenues
b) Rank customers and locations based on profitability
c) Ranks customers and locations based on probability
d) **All of the mentioned**

• Which of the following areas are affected by BI?
a) Revenue
b) CRM
c) Sales
d) All of the mentioned

• _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Balanced Scorecard
b) Data Cube
c) Dashboard
d) All of the mentioned

Q.1 What Are The Different Types Of Business Intelligence?

Q.2 Explain Data Visualization .

Q.3 Explain data warehouse .

Q.4 Explain the tools of BI.

Q.5 Explain the function of BI

- https://www.shaalaa.com/question-paper-solution/university-of-mumbai-be-data-warehousing-mining-business-intelligence-semester-7-be-fourth-year-2014-2015-old_9

- Business intelligence uses technology, such as software programs like Excel, to analyze data and provide actionable information to help business executives make informed choices and decisions.
- BI can be applied to making both operational and strategic business decisions.
- Business intelligence is created by a team of professionals that includes data engineers, data analysts, and data visualization specialists.
- Data visualization is the representation of data through use of common graphics, such as charts, plots, infographics, and even animations. These visual displays of information communicate complex data relationships and data-driven insights in a way that is easy to understand.
- Data visualization is the visual presentation of data or information. The goal of data visualization is to communicate data or information clearly and effectively to readers. Typically, data is visualized in the form of a chart, infographic, diagram or map.

Thank You