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| **Assignment number and title: 1 BI for business improvement and decision support** | | | |

1. Differentiate the types of decisions and the available support for them at different levels in the company.

Answer:

First, there are three types of decision-making in the company or organization, which are structured, semi-structured, and unorganized. We also have three types of support available for decision-making at the levels of the company or organization:

First, the level of senior managers:

which includes decision-making, strategic and long-term decisions that affect the general direction and performance of the company or organization, so unstructured decisions are usually non-routine decisions, which may include support for decision-making at this level, tools such as strategic planning frameworks, scenario analysis tools, and tools Advanced data visualization that helps senior managers collect and analyze relevant and relevant data, evaluate strategic options, and make informed decisions based on a combination of objective and subjective considerations.

Secondly, middle-level managers:

Which includes decision-making in coordinating and aligning different activities, departments or functions within the company or in an organization, and also managers rely on semi-structured data and therefore to make their semi-routine decisions usually and also care and focus on how to make their decisions and choices that are consistent with the objectives of the company or organization in the medium term.

Third, at the level of the operations manager:

Which usually includes decision-making for routine and recurring decisions that are related to daily operations as well, and who are operations managers responsible for making decisions that directly affect the daily operations of the organization, and also these decisions may include resource management and supervision as well. Operational tasks Operational managers play an important role in translating strategic goals into actionable actions and ensuring that the organization's operational goals are met. They are also responsible for supervising and leading their teams, providing guidance, training, assistance and resolving operational challenges. In general, operational managers are primarily responsible for overseeing the day-to-day operations of an organization, making data-driven decisions based on established processes, and implementing strategies to achieve operational goals. Their role is instrumental in ensuring that the organization runs smoothly and efficiently at an operational level.

* So, the types of decisions are:
* Structured Decisions - Operations manager level
* Unstructured Decisions - Senior manager level
* Semi-structured Decisions - Middle manager level

First, Structured decision-making - the level of the operational manager:

It includes organized decision-making at the level of the operational manager, often routine and repetitive decisions that follow the processes and rules in place or implemented. It may also include support for structured decision-making at this level to tools such as decision support systems (DSS), business intelligence (BI) tools, and data analysis and processing software that provide access to relevant data, automate data analysis, and create reports or dashboards for monitoring. KPIs and data-driven decisions.

Secondly, Unstructured decisions - Senior manager level:

Unstructured decisions at the level of senior managers turn into complex and ambiguous decisions that do not contain well-defined procedures or well-established guidelines.

Also, these decisions may require senior managers to rely on their experience, judgment, and intuition to analyze the situation, consider various factors, and reach a decision.

Unstructured decisions are often made in dynamic and uncertain environments where there may be limited information, multiple perspectives, and high stakes. These decisions usually have long-term implications that shape the overall direction of the company or organization.

Third, semi-structured decision-making - middle-level managers:

It is a mixture between structured decisions and unstructured decisions as semi-structured decisions.

The semi-structured decision-making process in middle-level managers often includes decisions that require coordination between different departments or functions and includes A combination of operational and strategic considerations, these choices must be made in conditions with established procedures or rules, but also require discretion or credibility.

Support for semi-structured decision-making at this level may include tools such as collaborative decision-making platforms, project management tools, and communication and collaboration tools that facilitate information sharing, coordination, and decision-making across different teams or departments. These options support the long-term goals and objectives of the business, such as Choosing a management budget or launching a new product.

Identify the decision of the senior manager in solving the huge number of questions on social media which need quick response, then support how business intelligence enhance his decision.

Answer:

A senior manager who is faced with a large number of questions and inquiries on social media that require quick answers, so there are many possible decisions that can be taken into account, may choose to, but a senior manager may choose to hire additional specialized staff or automated response systems that implement Chatbots or automated response systems that can handle frequently asked questions on social media. And to manage social media in order to deal with the huge and large numbers of questions and inquiries, and this may include appointing specialists in social media and following up on inquiries and questions from social media sites to respond to them in the shortest possible time right on time.

Therefore, business intelligence helps enhance decision-making by implementing a social media management strategy to deal with the large number of questions and inquiries on social media to enhance business intelligence by collecting and analysing data through monitoring and follow-up to respond to questions and inquiries on social media. Social communication Therefore, the company can collect valuable data about customer preferences, interests, concerns, and comments, as well as customer insights, which social media interactions provide insights into customer behaviour, preferences, and needs, through social media inquiries effectively and continuously, and also quick and effective responses can help to Inquiries and questions on social media in maintaining a positive image and reputation for the brand.

By promptly addressing customer questions and concerns, a company can demonstrate its commitment to customer service and responsiveness. Finally, handling a large number of social media questions can be simplified by implementing automated response systems or templates, which will enhance operational effectiveness. This can help the company save time and money and free up team members to work on other important strategic projects.

In general, the use of business intelligence tools by analysing and processing data from social media and automating responses can enhance company responsiveness, increase customer satisfaction, and strengthen customer relationships.

Distinguish and identify in detail the managerial levels in the company and types of decision-making and how information systems and technologies support these different levels.

Answer:

Senior managers level:

Senior managers level: It is the level of senior executives, such as chief executives, managers and other senior officials in determining the general direction and future of the company or organization and its objectives and who make strategic, fateful and long-term decisions that affect the entire organization, such as determining the course of the company or organization and defining it. The mission of the company and formulating the company's strategies, as well as making decisions related to mergers and acquisitions, as well as investments.

High and high-level strategic decisions that determine and shape the future and direction of the company and work are issued and include various types of decision-making in senior management. Therefore, these decisions include a great deal of uncertainty and also require careful analysis and careful study of internal and external factors or elements, including competitive dynamics and market trends. and financial performance. Setting long-term financial goals, introducing new products, and expanding into new markets.

Information systems and technologies play a necessary and important role in supporting and enabling high-level administrative decision-making. DSS and EIS decision support systems are widely used to give senior and high-level executives quick access to basic information for making strategic decisions. These systems also by collecting data and information from various and multiple sources and then presenting, evaluating and coordinating them in an easy-to-understand and apply manner for decision-making. In addition, it gives higher-level managers access to tools for scenario analysis, forecasting and strategic planning, which supports data-driven decision-making.

Instances where decision-makers lack clearly defined procedures or criteria to follow are referred to as unstructured decision-making. To make these decisions, which are frequently characterized by subjectivity, ambiguity, and a lack of structure, it takes judgment, intuition, and experience. Strategic planning, acquisitions, product development, and crisis management are just a few instances of unstructured decision-making in senior management.

Information systems that offer tools and technology to help decision-makers handle and analyze complicated data and information are frequently used as supporting systems for unstructured decision-making in senior management. By presenting options in a meaningful way, organizing data, and offering pertinent information, these systems are made to make decision-making easier. Senior management frequently uses the following sorts of information systems to support unstructured decision-making:

Computer-based systems called decision support systems (DSS) give decision-makers interactive tools and models to aid in the analysis of complicated issues and the evaluation of potential solutions. DSS produce reports, carry out "what-if" assessments, and provide scenario planning support using data and information from internal and external sources. They also encourage decision-makers' collaboration by granting common access to data, analysis, and insights.

Executive Information Systems (EIS): Executive Information Systems are specialized information systems that give senior management streamlined and customized data for making strategic decisions. Senior managers can monitor organizational performance and spot trends and patterns with the aid of EIS, which frequently includes graphical displays, charts, and dashboards that provide real-time data on key performance indicators (KPIs) and critical success factors (CSFs).

Business intelligence (BI) systems are made to gather, examine, and show a lot of data from many sources to aid in decision-making. Data visualization, data mining, and data analytics methods are used by BI systems to provide reports that assist in strategic decision-making.

Systems known as knowledge management systems (KMS) are used by organizations to collect, organize, and share knowledge in order to enhance decision-making. KMS provides access to knowledge such as best practices, lessons learned, and expert viewpoints to assist senior managers in their decision-making.

In order to help senior managers, handle unstructured decision-making circumstances, these supporting systems are crucial because they give them access to timely information, analytical tools, and collaborative capabilities. These technologies improve the overall efficacy and efficiency of senior management decision-making by enabling senior managers to get insights, assess possibilities, and make well-informed judgments.

Also, senior managers are responsible for making strategic decisions or choices, which certainly affect the direction and overall success of the organization or company. Therefore, there are types of choices and decisions that senior managers may take:

- Senior managers are responsible for defining the long-term goals and objectives of the organization or the company and making decisions related to and related to strategic planning, and this may fall into the creation of a new product, mergers and acquisitions, market expansion, and finally general business growth strategies within this category.

- Senior managers decide and take the structure of the organization or the company and its design, as well as including the continents that are related to the administrative hierarchy, as well as management tasks and the general organizational structure, in order to increase organizational efficiency, and that they may decide to create, cancel or merge departments or teams to improve effectiveness as well as organizational efficiency.

- Senior managers make choices and decisions regarding stakeholder management, including decisions regarding how to interact with various stakeholders including customers, vendors, shareholders, and the community. They choose methods to maintain goodwill and positivity with stakeholders, to be interested in their issues, and to address their concerns.

In short, Senior managers level are executives who enjoy and occupy senior and high-level leadership positions in institutions and companies. Managers often have access to a set of resources and tools to support their decision-making process, which may include data analyzes and taking expert opinions. Also, as we mentioned, senior managers may work and cooperate. Managers with stakeholders to collect information and data and to reach correct decisions.

Middle managers level:

Middle managers, who are seated and positioned between the top executives and front-line workers, represent an important level of management in companies. They are responsible for overseeing the work of managers and lower-level employees as well as implementing suggested policies, strategies, and protocols for senior management. Middle managers often oversee a specific department, unit, or functional area within a company and are critical in decision-making.

Semi-structured decision-making is the kind of decision-making frequently connected to middle managers. Semi-structured decisions are those that involve a mix of structured (routine) and unstructured (non-routine) elements. As the decision-maker must evaluate data and use their experience to come up with a solution, these decisions frequently involve some level of analysis, judgment, and creativity. Semi-structured judgments are frequently made in circumstances that involve some degree of complexity, ambiguity, and uncertainty.

Organizations or companies can put the following tactics or strategies into practice to support the decision-making mechanism associated with middle managers:

Information management: Businesses should make sure middle managers have timely access to pertinent information to help them make decisions. Access to databases, reports, analytics tools, and other sources of data that are necessary for decision-making may be provided as part of this. Middle managers who need assistance gathering, analyzing, and interpreting data for decision-making might benefit from effective information management systems.

Organizations may give middle managers the decision-support tools they need to help them analyze data, weigh their alternatives, and reach well-informed judgments. Software for financial analysis, project management, data visualization, and other pertinent technologies that help speed up decision-making and offer insights are some examples of these tools.

Training and Development: To improve the decision-making abilities of middle managers, organizations should fund training and development initiatives. The information and abilities needed to examine data, weigh options, and make wise judgments in semi-structured situations can be given to middle managers through these programs. Middle managers may benefit from receiving training in analytical thinking, problem-solving, data analysis, and decision-making methods.

Collaboration and cross-functional communication among middle managers across several departments or units should be encouraged by organizations. Sharing information, concepts, and viewpoints is made easier as a result, which may improve decision-making. Middle managers may find it easier to access different points of view, obtain information from many sources, and make better decisions when there is cross-functional collaboration.

Operational managers level:

The level of operational managers, which is the middle level of management in an organization or company, where it sits between the higher level or strategic management as well as the lower level or front-line management. Operations managers are also responsible for monitoring and supervising the daily operational operations of the organization or company and ensuring that operational procedures and processes are followed efficiently. Effectiveness in order to achieve the goals of the company or organization, including managing resources, supervising employees, enforcing rules and regulations, and making decisions.

Operational managers are often responsible for overseeing and managing specific departments or functional areas within a company, such as supply chain management, marketing, human resources, production, and finance. They are responsible for achieving operational goals, tracking performance, examining operational data, and making choices that will increase operational effectiveness and efficiency. Executives are often responsible for overseeing specific departments or functional areas within a company, such as supply chain management, marketing, human resources, production, and finance. They are responsible for achieving operational goals, tracking performance, examining operational data, and making choices that will increase operational effectiveness and efficiency.

Organized decision making:

It is a type of decision making that involves routine, repetitive, and well-defined decisions that can be made using established rules, procedures, guidelines, or methods. These decisions or conclusions are based on predetermined criteria, and the decision-making process is very formal and predictable. Operational managers make organizational decisions often to address routine operational issues, such as managing inventory levels, scheduling production, allocating resources, or managing budgets.

Support Systems:

* Information systems can play an important and major component in supporting and assisting operational managers in making informed, structured decisions. There are several types of information systems that can be used to support and assist operational decision making, including:
* Management Information Systems: MIS provides operational managers with accurate, timely, and up-to-date information about the operations, procedures, and operational activities of an organization or company. MIS collects, processes, and analyses data from various sources, such as internal databases, operating systems, and external sources, to create reports, dashboards, and other tools that can help operating managers monitor performance, identify problems, and make informed decisions.
* Decision Support Systems / DSS: Decision support systems are specialized information systems designed to support and assist decision-making processes. DSS provides operational managers with tools and techniques for analysing data, modelling scenarios and evaluating alternatives to support decision making. Also, DSS can include various data sources, information, analytical models, and visualization tools to assist operational managers in making structured decisions related to operations.
* Enterprise Resource Planning systems: ERP systems are integrated software applications that automate and manage an organization's operational processes, such as finance, human resources, procurement, and supply chain management. ERP systems provide operational managers with real-time visibility into operational activities, automate routine tasks, and provide standardized processes for orderly decision-making related to operational processes.

Question: Negotiate how implementing business intelligence tools within business processes in general and within marketing sector in specific is very beneficial especially in decision-making.

Answer:

So when we want to define business intelligence tools, which refer to software applications that allow companies and organizations to collect, analyze and visualize large amounts of information and data from various sources and resources, including from internal sources and external resources, so business intelligence tools help companies and institutions to achieve and acquire Valuable vision for its business operations, in its ability and ability to make and make correct and informed continents that drive growth and increase profitability, and also help in achieving customer requirements, visions, interests, preferences and trends.

Therefore, business intelligence tools have made a significant change in the way they deal with companies and institutions, in the process of making and making decisions, by giving them and providing them with valuable and useful knowledge and insight so that they can issue and make decisions that depend on information and data.

1. Also, there are ways to use business intelligence tools in companies or institutions in order to implement them and their conduct in business operations, as well as in the marketing sector in particular:

* 1.1 Business intelligence tools in data integration, through the reliability, effectiveness and efficiency of business intelligence tools on the quality and completeness of data to the fullest extent, through which they analyze it. Therefore, it is important and necessary to integrate data and information from different resources and sources, including customer databases and social media and also analyzes from websites and internal systems in a single database or data warehouse.
* 1.2 Business intelligence tools in data analysis, and after merging the data, companies or institutions can use business intelligence tools to analyze it and gain insight about the movement of its operations. For example, marketers can analyze customer behavior patterns and preferences by identifying the most effective marketing channels.
* 1.3 Business intelligence tools in visualizing data and information, which enable business intelligence tools for companies or institutions to visualize data in the form of graphs, charts and dashboards, which facilitates understanding and transfer of insights to stakeholders, which supports and helps marketers to make recommendations It is based on data and information for management, which supports making correct and informed decisions and improving marketing campaigns.

2. Therefore, business intelligence tools had a huge impact on business processes, by helping them improve their work in several ways:

* 2.1 Improvement in decision-making, through business intelligence tools, through which they enable them to collect a lot of amounts of data and information from different resources and sources and analyze them, based on providing very accurate information and data and also at the right time for that. These tools help and enable them to improve and make decisions in a correct and informed manner that relies and is based on facts and information rather than emphasizing guesswork and intuition.
* 2.2 Increasing the level of efficiency, through which business intelligence tools can automate more and more tasks and complete them in the shortest possible time, such as collecting information and data as well as analyzing them. This undoubtedly reduces time and effort to form insights and for employees in the company to focus on other tasks, by saving them more time.
* 2.3 Better customer experience: through business intelligence tools that help improve companies and organizations in understanding their customers better and faster by providing insights about their behaviors, preferences, interests and needs, and therefore allow them to be able to design their products and perform their services and to develop special strategies that help to Marketing and to be effective and efficient in order for them to respond to the specific requirements of their customers. This information and data can be used to create customized experiences that meet the interests, needs, and expectations of customers, and their preferences.
* 2.4 Improved performance: through business intelligence tools that enable it to identify paths and fields in which the company or organization’s performance is weak, by providing insights on how to better improve performance, which helps these companies or organizations to improve their operations in a better, effective and efficient way and reduce of costs and an increase in productivity and profits.

3. As we mentioned, business intelligence tools have a significant impact on trade and marketing, which helps and supports companies and institutions in order to gain insights and preferences about customer behavior and also to support and improve marketing strategies and increase sales productivity. Therefore, there are ways in which business intelligence tools helped in trade and marketing:

* 3.1 Enhanced and supported marketing strategies, which business intelligence tools help companies and organizations improve their marketing strategies by providing insights about which campaigns are more effective and efficient and which channels lead to the greatest participation and conversions. Therefore, this data and information can be used to modify methods Marketing methods, as well as investing resources and resources more strategically.
* 3.2 Looking at improved customer insights, through business intelligence tools that help companies and institutions collect, analyze and interpret data and information that are related to customer behavior, preferences, and purchasing habits, and that data and information can certainly be used to create supported and improved promotional and marketing campaigns that are more targeted and experiences Dedicated clients
* 3.3 Consider improving inventory management through the use of business intelligence tools that help and contribute to improving and defining levels and stages of inventory and reducing waste, by analyzing and tracking data and information and forecasting demand. Also, this data and information can be used to determine and control inventory in real time and ensure that the products that Common to customers and others to always be in stock.

4. Business intelligence tools have many improvements and advantages that help in decision-making and decision-making processes. Here are some of the main and important advantages:

* 4.1 Enhanced data and information analysis, through business intelligence tools that enable and enable makers and decision makers to analyze and infer large amounts of data and information from many resources and sources quickly, accurately and efficiently, and because by using business intelligence tools, companies and institutions can identify patterns, trends and outliers In data, through which it is difficult to discover using predictive analysis, and this leads to improvement in accuracy and reliability effectively and efficiently in data-based decision-making.
* 4.2 Improve cooperation, in which business intelligence tools can use historical or old data in order to predict future trends, paths and results, through which decision-makers and makers can use these ideas and methods in order to make strategic decisions and also anticipate potential problems and risks and prepare for any future problem.
* 4.3 Better visualizations, by using business intelligence tools that convert groups and amounts of data and information that are complex and take a lot of time into easy-to-understand visualizations that shorten a lot of time in decision-making, such as graphs, charts and dashboards, making this easier for decision-makers and makers In absorbing, summarizing and understanding data and information, identifying trends and patterns, as well as the relationships between different data and information groups.
* 4.4 Better risk management, through which business intelligence tools help companies and institutions to assess and manage risks more effectively, by analyzing data and information that are related to potential risks and identifying ways to mitigate and prevent them, and also by using predictive analyzes and scenario planning and problems that may be Possible, decision makers can anticipate potential risks and take the best proactive measures to prevent their occurrence.

In the end, in a brief form, the integration of business intelligence tools in business operations, marketing and trade operations provides and supports many advantages and improvements, through the use of business intelligence tools, and also for institutions and companies to benefit and gain important insights and value in their operations, in determining paths and areas for improvement and making correct and insightful decisions, based on On the information and data that achieve goals in its business and operations and through which these advantages and benefits lead to the allocation of the best sources and resources, more efficient and effective marketing strategies, and finally a better and developed business performance.

Question two: Manage online search to show two succeeded trading companies that implemented business intelligence tools and how it improved their work.

Answer:

1. Microsoft has worked and used business intelligence tools effectively in order to run and advance its operations effectively, which undoubtedly improves the decision-making and decision-making process and achieves successes. Therefore, there are major methods that Microsoft has done and used for business intelligence tools:

* 1.1 Infrastructure for business intelligence, and Microsoft has established a strong, effective and highly efficient internal infrastructure for business intelligence, which collects and integrates information and data, as well as analyzes it from various resources and sources of income of the company or organization, so Microsoft has implemented data warehouses in order to store data and information in large quantities of structured and unstructured data.
* 1.2 Power BI development: Microsoft has worked and developed Power BI, which is a powerful, effective, and highly efficient tool that performs and works for data visualization and professional information, and that Power BI allows users to connect and communicate with various information and data sources and resources that create effective and interactive reports and dashboards that also share insights with Others, therefore, Microsoft widely uses Power BI within the company or organization in order to monitor key performance indicators, as well as track sales data and information, the movements of its operations, and gain insights about customer behaviors and preferences.
* 1.3 Making and making decisions that are based on data, so Microsoft has promoted a culture that relies on data and information in which decisions are based on insights derived from business intelligence tools, and by providing employees with access to data and information as well as self-service analytics tools, Microsoft is also working on Empower teams throughout the company or organization to make informed decisions that align with business objectives.

In summary, by adopting, exploiting and benefiting from business intelligence tools and integrating data- and information-based practices into its operations, which Microsoft has achieved great success through these tools that enabled them to make informed, correct and effective decisions that improve business processes that customize customer experiences and drive innovation And ideas in its products and services, so Microsoft played an effective role in using business intelligence tools that worked on the success of the company, which took a pivotal role in its growth and status as a leading technology company today.

2. Also, business intelligence tools have improved Microsoft in the way it manages its business and operations. Among the main ways that business intelligence tools have improved for Microsoft in the way it works:

* 2.1 Improving cooperation, through business intelligence tools that facilitated and contributed to cooperation within Microsoft, by providing a basic and central system for sharing data and information, analyzing and interpreting them more efficiently and effectively, which undoubtedly helps in making correct and insightful decisions that drive increased productivity and growth and organizational efficiency.
* 2.2 Improving the efficiency and productivity of the company, through the use of business intelligence tools in order to facilitate and simplify data analyzes and reporting processes in Microsoft, which these tools work to automate the tasks and processes of data integration and visualization, which undoubtedly saves a lot of time and effort from employees, which allow these Efficiency and effective productivity by employees by focusing more on deducing and extracting ideas from data and making correct and informed decisions.
* 2.3 The best capabilities that achieve advanced analytics, through business intelligence tools provided by Microsoft, such as Azure Machine Learning and SQL Server Analysis Services, which have advanced analytical capabilities for the company, which enables Microsoft to gain broader, more accurate and deeper insights, as well as future forecasts and perform tasks Complex analyzes and improving operations effectively and efficiently, which helped improve business results.
* 2.4 It improved customer understanding and customization, and this helped Microsoft business intelligence tools to gain a deeper and more accurate understanding of its customers, through an accurate and detailed analysis of customer data to understand their requirements and preferences, such as purchase history, behavior patterns, and preferences, which Microsoft can customize its products, services, marketing and promotional campaigns for out in order to meet individual customer needs and for this customization that enhances customer experience and strengthens customer loyalty.

3. Business intelligence tools used by Microsoft in its operations:

* 3.1 Power BI: which is a leading business intelligence tool that visualizes data and information from Microsoft, which allows users to communicate and connect to various information and data sources and resources, create reports and interactive dashboards, and also share insights with others, which allows and provides Power BI in exploring data and information and monitoring in real time and cooperation within companies and institutions.
* 3.2 SSAS, SQL Server Analysis Services (SSAS), which is a component of the Microsoft SQL Server platform that provides analytics for business intelligence as well as data and information extraction. Companies can create models and patterns of multiple shapes and dimensions, as well as conduct complex data analyzes and create insights through OLAP techniques and data mining and mining.
* 3.3 Machine Learning in Azure Machine Learning is a cloud-based service that provides a complete and comprehensive environment for building, deploying, and managing machine learning models and patterns, which provides a set of tools and frameworks to train, test, and deploy predictive models, enabling the company to harness the power of machine learning.
* 3.4 Excel, and that while Excel is the core basis in the application and implementation of spreadsheets and therefore Microsoft has integrated business intelligence capabilities in Excel through which users can take advantage of the features of visual data analysis in Excel such as PivotTables, Power Query, and Power Pivot to conduct analysis data and create insights.

4. The Facebook company, which is a well-known social media company that has benefited from business intelligence tools, by strengthening its operations and achieving successes. Therefore, how did Facebook use business intelligence tools and its success:

* 4.1 Analyzing user behaviors and preferences, Facebook collects large and massive amounts of data and information about user behavior, preferences, and interactions. And Facebook uses business intelligence tools to analyze this data and also gain insights about user demographics, interests, preferences, and engagement patterns. Which helps these insights Facebook to improve its algorithm and also customize user experiences and also improve targeting and attract ads from other companies, which leads to an increase and enhance user satisfaction as well as advertising revenue.
* 4.2 Improving the performance and display of ads, through which business intelligence tools enable Facebook to analyze the performance of its advertising campaigns in real time, and they can track metrics, such as views and click-through rates, to impressions, conversion rates, and return on investment, and also by using data and information visualization tools and reporting Facebook can identify trends and track ad placements and provide advertisers with valuable insights into their advertising campaigns.
* 4.3 A / B testing and experimentation, which Facebook conducts from extensive A / B tests and surveys, which are experimental to evaluate new features and also changes to the user interface and algorithms that perform and help business intelligence tools in analyzing and evaluating the results of tests and questionnaires, as well as measuring user responses and identifying the most differences Effectiveness, which is based on this repeated and continuous approach of Facebook in making and making decisions that depend on data and information, through which it continuously improves its products.
* 4.4 Fraud detection and security, which through business intelligence tools that play an important role in detecting, alerting and preventing fraud and violations and ensuring the quality of security in the Facebook platform. These tools work in monitoring and analyzing abnormal patterns and user behaviors in order to identify suspicious behaviors and fake accounts as well as potential security threats. Doubt helps Facebook to effectively maintain the confidentiality, data and environment of the platform and to be safe and reliable for its users

In summary, Facebook's use of business intelligence tools has played an important and active role in understanding user behavior, which contributes to improving advertising campaigns that drive product development, ensure system security, and generate income from user data, through which these tools enable Facebook to make and take decisions that It relies and is based on data and information that enhance user experiences and achieve business success in the competitive social media industry.

5. Business intelligence tools have many advantages that enable the enhancement and improvement of the operations of the Facebook company, and therefore some of the tools that improve and enhance the company's workflow and procedures:

* 5.1 Improving the efficiency and productivity of the company, through the use of business intelligence tools in order to facilitate and simplify the processes of analyzing data and information and preparing and completing reports on Facebook, which these tools automate the tasks and processes of data integration and visualization, which undoubtedly saves a lot of time and effort from employees, which This enables effective efficiency and productivity of employees by focusing more on inferring and extracting insights from data and making correct and informed decisions.
* 5.2 Data-based decision-making and decision-making, through which business intelligence tools enable companies and institutions to make sound and insightful decisions based on accurate and sensitive data and information in real-time. And also, by collecting and analyzing data from different and diverse sources and resources, Organizations and companies can gain valuable and excellent insights into their operations, movements, behavior, customer interest preferences, market trends, and more. This data- and information-driven approach to decision making reduces guesswork and intuition and improves the accuracy, effectiveness and efficiency of strategic and operational decisions.
* 5.3 Enhance and improve collaboration and exchange of knowledge and information, which business intelligence tools facilitate collaboration and exchange of knowledge and information between teams and groups. These tools enable users to share reports, dashboards, and insights, and also enhance transparency and align teams around a shared understanding of data. Through enhancing and improving the features of collaboration, a culture of data-based decision-making, which enables employees from different departments and divisions to work together, share ideas, exchange solutions, and contribute to achieving and strengthening organizational goals.

In general, business intelligence tools work and improve the way the company works, by enabling improvement in the efficiency and productivity of the company, and data-based decision-making and decision-making. Enhancing and improving cooperation and exchanging knowledge and information. These tools are based and working to enable companies to benefit from data and information effectively, gain and create a competitive advantage, and achieve the goals and requirements of their business in a more efficient and effective manner.

6. It is certain that Facebook operates and uses a set of tools and business intelligence techniques in order to analyze and process large and huge amounts of data and information and make decisions that rely on data. On the other hand, there are some of the business intelligence tools commonly used in the industry that are likely to be part of the Facebook suite of technologies:

* 6.1 Apache Hadoop: Facebook Inc. has been a prominent user and contributor to the Apache Hadoop ecosystem Hadoop is a common and open-source work to store information and large and huge data, which allows Facebook to store, analyze and process large and huge amounts of structured and unstructured data and information with high efficiency and effectiveness, which provides the main basis for various applications and techniques of business intelligence and analytics.
* 6.2 Presto: Created and developed Facebook Presto, which is an open-source distributed SQL query engine that is designed for high performance and effectiveness analytics. Through which Presto allows data and information analysts on Facebook to run custom queries across large and very large data sets, and also to collect data from different and varied sources and resources for the purposes of analysis and preparation of reports.

Question three: Research the legal issues in using BI tools to support the analysis of social media data.

Answer:

1. Business intelligence tools play and play a large and important role in the tasks of collecting, monitoring, analyzing and interpreting data and information in order to make correct and insightful decisions. On business intelligence tools, but also applies to social media platforms that analyze user data and interpret it. Therefore, there are many legal issues and principles that are related to business intelligence tools, and how these tools support these social media while respecting and preserving the privacy of users:

* 1.1 Data and information protection laws and regulations, in order to protect information and personal data, which many countries have issued in issuing laws and legislation to protect personal data and information, for example, the European Union’s GDPR imposes and defines strict and conclusive rules for the collection, processing and storage of data and personal information, which is from During which these laws may require companies and institutions to seek informed consent from users before collecting their data and information and to ensure that the data is properly and securely processed by using it only for legitimate and legal purposes.
* 1.2 Privacy policies and rules and terms of service, which usually contain business intelligence tools and social media platforms on privacy policies and terms of service that describe how to collect, store and use user data and information. Therefore, these policies and rules inform and provide users with the types and categories of data and information through which it is collected, the purpose of collecting it, and any third parties with whom the data may be shared. Users are often required to accept and agree to these policies before using the platform, tool or product, and also focus frameworks Legally, it is very important and important to obtain the user’s consent, before collecting and analyzing data and information. Users of social networking sites are often required to agree to these important terms of service and privacy policies that describe how their data is collected, used and evaluated for the purpose of companies and institutions, how to understand the behavior of their users in knowing their interests and preferences. Users will be informed of the data analysis procedures and will have the option to choose their level of participation thanks to this consent.
* 1.3 Data and information security and safety measures, by protecting users of data and information from access by unauthorized parties or violations and interferences is a very general and necessary issue, which must require legal requirements in many times and in which companies and institutions apply strong security principles and procedures in a correct manner And effective in its work, in order to protect the data and information of users, which includes encryption, in addition to the controls and principles of access, auditing and security tracking on a regular and frequent basis, as well as developing emergency and accident response plans in order to mitigate potential risks, and organizations must also put in place the necessary security measures to protect data from unauthorized access, breaches, or accidental loss. If there is a data breach, the affected people should be notified further away.

2. So, when the matter and the subject is related and related to the privacy of users and customers, it must be taken into account that there are limits and controls that must be taken into account and must not be exceeded by social media platforms and companies that use business intelligence tools. Therefore, these restrictions and controls have been put in place to protect the privacy rights of individuals and users, and to prevent third party use Authorized or unethical of their data and information, the following are the basic limits and restrictions:

* 2.1 Correct and informed consent, through companies and institutions that must obtain informed consent from users by collecting and analyzing their personal data and information, which means clarifying the purpose, scope, and potential consequences of collecting and analyzing data and information, which users should have the right to freely in choosing to provide consent they must be able to withdraw their consent at any time.
* 2.2 Reducing data and information to a minimum, through which companies and institutions must only collect the minimum and necessary amount of personal data necessary for the intended purpose and keep it, which is certainly not allowed to collect data and information that is unnecessary or excessive because it violates the rights and privacy of individuals and users.
* 2.3 Third party participation, by sharing data and user information with other companies and third parties, through which institutions and companies must ensure in a guaranteed way that there are agreements and contracts to protect data and appropriate information and preventive guarantees, which must be limited to sharing data for the purposes of the authorized and that it is done in accordance with applicable data and information protection laws and regulations.

Question four: In sake of expanding the customer’s base of the company; appraise how business intelligence tools can be employed to collect and analyses customers’ data within the boundaries of the General Data Protection Regulation in the European Union.

Answer:

1. For an international electronics company (IEC) expanding customer base, which entails compliance with and compliance with the General Data Protection Regulation (GDPR) in the European Union, business intelligence tools can play an important role in how we collect and analyze consumer data and information that must comply with GDPR controls. General Data Protection (GDPR) compliance. From within the EU requires scrutiny of data and information collection and analysis practices very carefully, so here's how to use business intelligence tools within the confines of the GDPR:

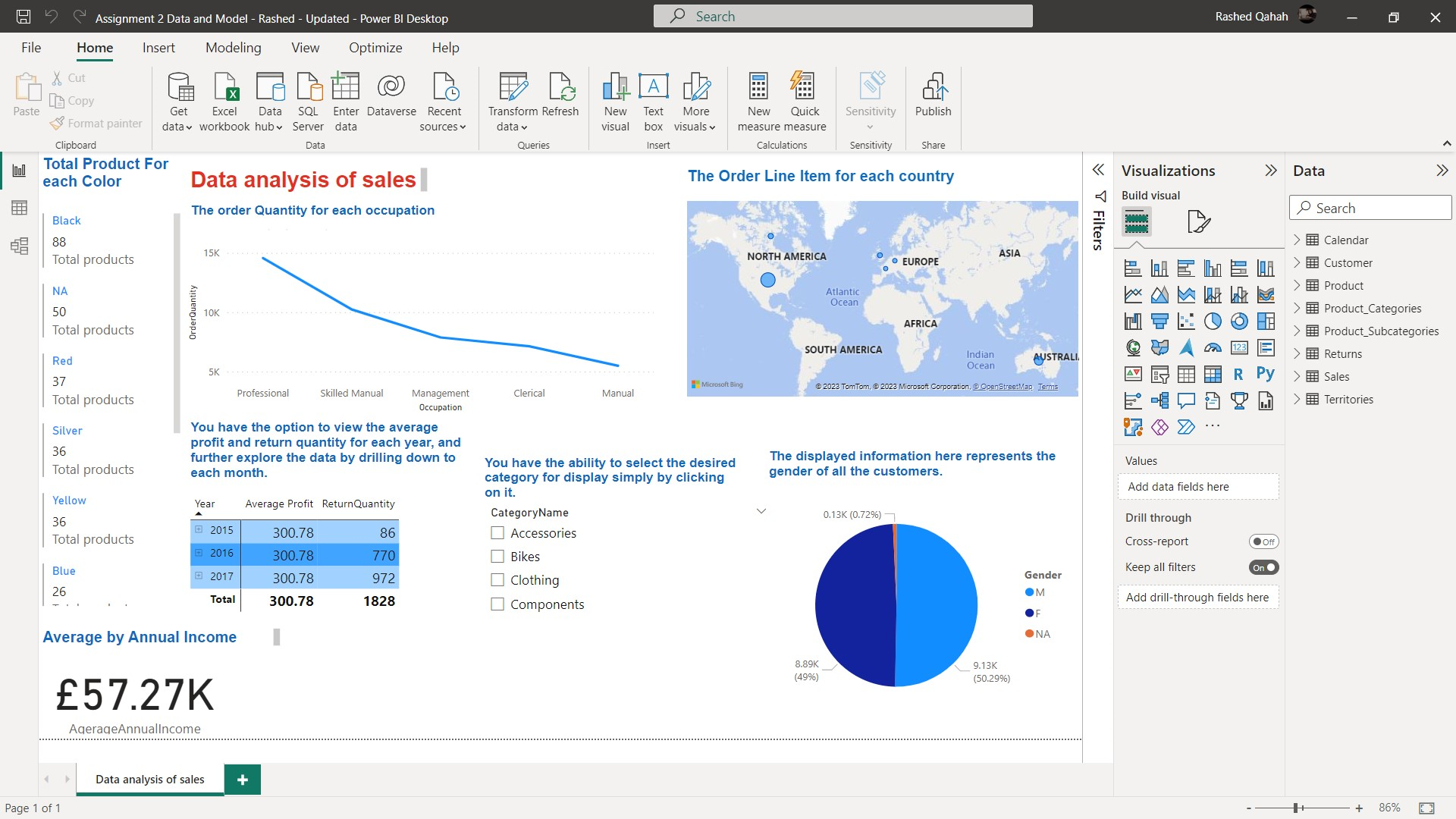
* 1.1 Collecting data and information, which must require the integration of business intelligence tools with various data sources and information, including CRM customer relationship management systems. And analyzes and interpretation of websites and social media platforms as well as other customer contact points, and when collecting data and customer information it is important and necessary to ensure that acceptance and express consent are obtained, and the transparency of the data collection process, which must follow and comply with the principles and controls of the General Data Protection Law (GDPR). This is such as reducing data and information, limiting purposes, and also to ensure that necessary and important data is collected and used only.
* 1.2 The General Data Protection Regulation (GDPR) provides and grants individuals many rights in relation to their personal data and information, including through the ability to access, modify and delete such information and data. This is done through an Individual Rights Management (IRM) process. Business intelligence tools must enable companies to respond to and accept these rights effectively and efficiently. This may include building mechanisms within the business intelligence system to handle data and information subject requests and provide timely responses.
* 1.3 Securing the storage of data and information, which through business intelligence tools that must establish and provide effective and strong security measures and controls in order to protect sensitive data and information for customers, which is done through the implementation of encryption as well as access controls and security storage protocols in order to prevent unauthorized access or violations and data breaches or Accidental loss and disablement of data.
* 1.4 Care and Attention to Vendor Duties By selecting business intelligence tools or partnering with third-party vendors, the IEC shall conduct due diligence that is comprehensive to ensure that these tools or vendors control and comply with the requirements of the General Data Protection Regulation (GDPR). This should include reviewing data processing agreements, security measures and controls, and compliance with privacy principles.
* 1.5 Training and development of employees, through IEC providing advanced and comprehensive training for employees who deal with customer data and information and who use business intelligence tools, which must educate and educate employees about the controls and principles of the General Data Protection Regulation, with the best strategies and practices for data and information protection as well as use Proper and correct business intelligence tools to ensure compliance and responsible data handling.
* 1.6 Reducing or minimizing data, through business intelligence tools that help and enable the collection and analysis of only necessary and required customer data and information in order to achieve specific business goals and also through the practice of minimizing data, which IEC ensures that it collects and keeps only basic information and data and required, thus reducing the risks related to the processing of redundant data.

**Part2: Written Evaluation and BI Information**

* Assess in details how your dashboard meets **Non-Functional requirements:**

1- Name two modifications you did to make your Dashboard more user-friendly and has a functional interface and put screen shot as evidence.

Answer:



When I create my own dashboard, I use some tools in order to make the dashboard more user-friendly, more effective, and more efficient for the user. Therefore, there are some tools that I used in the dashboard:

First, the visuals: Visualizations are graphical representations of the data you used. Which can include bar or line charts, pie charts, maps, and more. Which makes the data that I used more understandable, more efficient and effective, which enables users or the user to see patterns, trends and insights more easily than the raw data.

Secondly, text boxes: I used text boxes in the dashboard to provide explanatory text, titles, or annotations within the dashboard, and to clarify each chart or chart. Which helped me understandably and clearly guide the user's understanding of the presented data, provide context, and generally make the dashboard easier to understand.

In the dashboard that you have made, you will notice that each tool has a special work or a specific function, in providing information about it, which certainly helps to facilitate understanding and be more effective and efficient for the user.

In the dashboard I also added a card that shows the average annual income of all customers in the Customers table: the card in this context is a visual element in a dashboard that shows one important metric. Here, the card will display the average Annual Income column for all customers in the Customers table. Which provides a high-level view of a customer's financial situation, which can be useful in understanding the purchasing power of an average customer for example.

Also, when I created a dashboard, in which I put visuals, and I chose, based on the requirements, a Multi-row Card, which shows this chart or chart, to display the total number of products in each color of the product table, which made it easier for us to understand and know the total number of products in each color in the product table, in a short and quick way.

In the dashboard that you created, you will also notice in the visuals that there is a Matrix, which shows this Matrix the average profit and the amount of return for each year, through which you also know or decide that you move on to the name of the month by clicking on the year for the average amount of return from each product and then It will show you the months, which through this Matrix make it easier for the user to know and understand the average profit and the amount of return for each year and each month. Also, the user should be able to drill down to the name of the month: the matrix is a tabular visualization which displays the data in a grid format. This special matrix will show the average profit and the amount of returns for each year. By adding a bottom navigation feature, the user can click on a specific year to view these metrics broken down by month. This allows for more detailed temporal analysis.

In the dashboard I also added a pie chart showing the number of male and female customers. The pie chart is a circular statistical graphic divided into slices to show the numerical ratio. In this case, the ratio of male and female customers will be shown. This is useful for understanding customer demographics.

In dashboard, there is also a line chart that displays the order quantity for each occupation in the Customers table. A line chart is a graphical representation that connects data points with a line. This will display the amount of orders placed, categorized by customers' occupation. And the line chart helps visualize trends and patterns along a dimension, in this case, function. It will provide an insight about the professions that generate the most demand making it easier for the user on how to track the operations.

In dashboard, a map displays the order item for each country, in a geographic visualization that would plot the quantity of items ordered for each country. It provides a spatial perspective of the reach and popularity of your business in different countries. This helps the user to understand which areas contribute most to a work.

And in dashboard a slicer is attached to the name of the element class, which pass through this slicer is a filter that allows me to slice the data, i.e. display only certain parts of it. By connecting a slicer to Category Name, you can filter the visuals on the dashboard to display only data for certain product categories. This feature improves the interaction and flexibility of the dashboard. Users can view certain categories of data, making the dashboard more interactive and personalized.

In short, the benefit of these processes and the functional interface of Power BI as a whole is the ability to create a powerful, interactive, customized dashboard that is efficient in providing actionable insights into the data. Which enables the user to understand complex data sets and make decisions based on this data.

2- Deliver critical assessment for the dashboard you designed to show how it meets business and user requirements and how BI effects on decision making like expanding sales area to increase profit.

Answer:

When evaluating a dashboard, which I designed or created, and analyzing how well it meets the requirements of business users in terms of providing meaningful and actionable insights that inform business decisions. Let me discuss each feature with respect to these requirements:

**First, the profit column in the product table**, this feature is essential for any business analysis. Knowing the profit from each product sold is essential for financial analysis, product line decisions, pricing strategies, etc. Therefore, this feature meets critical business requirements by offering real-time computable profit metrics.

**Secondly, the annual average income card**, through which this card displays a high-level view of the financial ability of customers, which helps me or the user or companies to adapt their strategies to the purchasing power of their customer base. This satisfies the need to understand customer demographics and financial capabilities, which helps with marketing and sales strategies.

**Third, a multi-row card for product colors,** and this performance allows the user to understand customer preferences in terms of product color. Understanding customer preferences is critical to driving sales and marketing strategies, which makes this feature valuable in meeting these business requirements.

**Fourth, profit and return matrix**, by providing details of profits and return amounts for each year and enabling navigation to the month level, this feature satisfies the need for time trend analysis. It helps business users understand seasonal differences, identify patterns, and plan accordingly.

**Fifth, customer gender pie chart**. This simple yet effective diagram provides insight into customer demographics, and helps users or businesses design their marketing and sales approaches to better target different gender groups.

**Sixth, a line chart of demand quantity by occupation,** which, by showing aggregated demand quantity by occupation, enables companies or users to understand which occupational groups are their primary customers. This is essential for targeted marketing campaigns and for driving product development strategies.

**Seventh, the order line element map**, which provides a geographic representation of sales a visual understanding of market penetration and popularity in different regions. This satisfies the business requirements for analyzing geographic sales and planning regional marketing strategies.

**Eighth, the category name Slicer,** interactive features such as the Slicer greatly improve the user experience by enabling users to customize the display according to their needs. This improves usability and customization, thus meeting user requirements for flexibility and interactivity in the dashboard.

In conclusion, the dashboard provides a comprehensive set of tools that align well with common business and user requirements. Its strength lies in its ability to provide diverse insights - financial, demographic, temporal and geographic - all within an easy-to-use, interactive interface. These insights help in making various business decisions, which makes it a valuable tool in the business intelligence toolkit.

Business intelligence (BI) has a significant impact on decision-making, providing data-driven insights that companies can use to strategize and improve their operations. A dashboard that I created or designed can influence many key business decisions:

**First, expand the sales area,** which a map visualization showing the order line item for each country can reveal the most popular places for a company's products. If certain countries or regions contribute significantly to sales, the company may consider expanding marketing and sales efforts in these regions to capitalize on existing popularity. Conversely, areas with low sales can represent untapped markets, prompting companies to expand and innovate their strategies to reach potential customers in these areas.

**Second, Product Pricing and Cost Management,** for which the Profit column in the Product table can provide insights into which products are most profitable. If some items consistently bring in high profits, it may be worth investing more in their production, marketing and sales. Conversely, items with low or negative profit may require cost-cutting strategies, price adjustments, or even discontinuation.

**Third, targeting marketing and sales efforts.** A pie chart showing the number of male and female customers and a line chart showing the amount of demand for each profession can guide targeted marketing and sales strategies. If certain demographics or occupations are more prevalent among customers, the company may consider dedicating marketing campaigns to specifically appeal to these groups.

**Fifth, seasonal sales strategy,** the matrix showing the average amount of profit and return for each year, with the transition to the month, can provide information on seasonal sales strategies. For example, if there is a spike in revenue or a drop in profit during certain months, the company can check why this is happening and adjust strategies accordingly.

**Sixth, Customer Segmentation,** which a card showing the average annual income of all customers, along with gender and occupation data, allows a company to segment its customer base. By understanding the purchasing habits of different segments, a company can develop customized marketing strategies, improve customer service, and ultimately increase sales.

**Seventh, inventory management,** the multi-row card showing the total number of products in each color can guide inventory management. If some colors are more popular, the company may choose to produce more of them to meet demand.

**Eighth Product development the category name snippet** allows users to filter data by product category. This can show which categories are most popular and most profitable, which helps product development in the future.

In conclusion, your business intelligence dashboard can provide important insights for decision-making across different business areas. By leveraging these data-driven insights, companies can make informed and strategic decisions to drive profitability and growth.

3- Appraise the concept of Business Intelligence and Power BI features, then identify with example two data analytic tools of it and how these tools can be useful in a business context.

Answer:

Business Intelligence (BI) and Power BI are core areas, so let me break down these concepts:

**Business Intelligence (BI):**

Which includes business intelligence (BI) strategies, methods, and techniques used by organizations or companies to analyze business intelligence data. It offers historical, current, and predictive views of business operations, covering various functions ranging from reporting, online analytical processing and analytics, data mining, process mining, complex event processing, business performance management, benchmarks, and descriptive analytics. Business intelligence techniques can handle large amounts of structured and unstructured data to help identify, develop, and create new strategic business opportunities. It involves collecting, integrating, analyzing and presenting business information. Business intelligence encompasses a variety of tools, applications, and methodologies that enable organizations to collect data from internal systems and external sources, prepare it for analysis, develop and run queries against data, and create reports, dashboards, and data visualizations to produce analytical results. Available to corporate decision makers and operators.

The goal of using business intelligence is to support better business decision-making. Essentially, business intelligence systems are data-driven decision support systems (DSS), and they are used to provide historical, current, and predictive views of business operations.

Basic business intelligence techniques:

First, data mining: Data mining is the process of discovering patterns in large data sets. Which includes methods at the intersection of machine learning, statistics, and database systems. It is especially valuable in large companies that deal with huge amounts of data where manual analysis is either impossible or extremely time consuming. For example, retail companies can use data mining to identify purchasing patterns and target specific groups of consumers more effectively.

Second, reporting: This involves organizing data into informational summaries to monitor the performance of different business areas. These structured data summaries provide insights into various operational aspects. They can clarify positive and negative trends, allowing companies to respond accordingly.

Third, Performance Metrics and Benchmarking: This involves the process of comparing a company's performance against historical or industry benchmarks to gauge its relative performance. This includes comparing the organization's performance against historical data or industry standards. Benchmarking can highlight areas of strength and weakness and prompt companies to improve underperforming sectors. For example, if a company's customer service rating is below the industry average, this indicates a need for improvement in that area.

Fourth, descriptive analysis: It uses data aggregation and data mining to provide insight into the past and answer the question: “What happened?” . It can explain changes in sales figures, customer behavior, and market trends, helping companies understand the reasons behind their current situation.

Fifth: Statistical analysis: It includes collecting, analyzing, interpreting, presenting and developing data models. Companies can make predictions about future performance and trends. For example, they can predict peak sales during specific periods and prepare their inventory and staff accordingly.

Sixth, Visual Analysis: This is a way to discover, identify, and share data-driven insights across different business units. Graphs, charts, and graphs can illustrate complex data sets and help stakeholders understand the implications of the data.

**Power BI:**

Power BI is a suite of software services, applications, and connectors that work together to transform unrelated data sources into connected, visually immersive, and interactive insights. It is a powerful suite of business analytics tools that provide insights throughout your organization. It provides interactive visualizations with self-service business intelligence capabilities, where end users can create reports and dashboards themselves, without having to rely on IT staff or database administrators.

Main Power BI features:

First, dashboard customization: Power BI provides an interactive, customizable dashboard that provides a unified view of business data. Dashboards are collections of visualizations, reports, and other data that are combined into a single piece of visualization.

Second, navigation filters: Power BI includes navigation filters that allow users to focus on specific details without having to leave the home page.

Third, Quick Insights: With the Quick Insights feature, users can create subsets of data and automatically apply analytics to that information.

Fourth, data query: Power BI uses a natural language interface and uses graphic designer tools to allow non-technical users to extract professional information from data and generate reports.

Fifth, content packages: Power BI includes a feature called content packages, which are collections of related documents or data grouped together. These packages include dashboards, reports, Excel workbooks, datasets, and data streams.

Sixth, integration capabilities: Power BI can integrate with various data sources from Excel spreadsheets and on-premises SQL Server databases to cloud services such as Azure SQL Database, SharePoint, Access, and many third-party sources.

Seventh, DAX & Power Query: Data Analysis Expressions (DAX) is a formula expression language used in Power BI to create custom calculations for tables or charts. Power Query is used to find, access, and transform public and/or internal data sources.

Eighth, data integration: Power BI can connect to many types of data sources, from Excel spreadsheets to on-premises SQL Server to cloud services like Azure SQL Database and Google Analytics.

By integrating business intelligence principles and Power BI capabilities, companies can turn raw data into actionable insights. This enhances data-driven decision-making, improves operational efficiency, enhances customer satisfaction, and provides a competitive advantage.

Data analytics is an important part of business intelligence, as it turns raw data into meaningful insights that can aid decision making. In the context of a Power BI dashboard, you designed or created, let's discuss two main data analysis tools:

Data visualization tools: Power BI is known for its powerful and dynamic data visualization tools. As part of our dashboard, we have used multiple visualization tools such as bar charts, pie charts, line graphs, and geomaps. Each of these tools plays a unique role in representing different types of data:

Bar Chart: Bar charts have been used to show comparison between different categories. For example, we used a bar chart to compare the total number of products in each color. In a business context, this tool is essential to understand which products are the most popular and which may need to be restocked frequently.

Pie Chart: We used a pie chart to display the ratio of male to female customers. Understanding the demographics of your customers is essential for companies to direct their marketing efforts effectively.

Line graph: Line graphs have been used to show trends over time. For example, the quantity of demand by different occupations over time has been represented using a line graph. This can be very useful for companies to understand their market segments and plan marketing and sales strategies accordingly.

Geo Maps: Geo maps display order line items by country. This can be very useful for companies to understand their market penetration in different regions, and to determine where they might want to expand or reduce their presence.

DAX (Data Analysis Expressions): A DAX is a set of functions, operators, and constants that can be used in a formula or expression to calculate and return one or more values. In our dashboard, DAX expressions have been used extensively to generate calculated fields and measures. For example, we used DAX to calculate the average annual income of customers, which is a key metric for companies to understand the purchasing power of their customers. This can help companies set prices for their products or services.

In short, the data visualization tools and DAX tools used in the Power BI dashboard not only make data easy to understand and interact with, but also provide companies with actionable insights that can guide their decision-making processes. These tools are essential in today's data-driven business world, as they allow companies to extract value from their data, and use that information to improve their performance and profitability.

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