UNIT 2

MANAGING RSOURCES FOR BUSINESS ANALYTICS

Business Analytics Personnel/Business Analyst:

A **Business Analyst** is a person who helps businesses to analyze their processes, products, services, and systems to improve current processes and make profitable decisions through insights and data analysis. A Business analyst also helps organizations to document business processes by assessing the business model and its integration with technology.

SKILLS REQUIRED FOR BUSINESS ANALYTICS PERSONNEL:

- ✓ Verbal and written communication
- ✓ Analytical and systems thinking
- ✓ Technology and business knowledge
- ✓ Modelling (process, data and system)
- ✓ Relationship management
- ✓ Negotiation
- ✓ Evaluation and business analysis
- ✓ Planning and management
- ✓ Elicitation and facilitation

Verbal and written communication:

- A business analyst uses communication and interpersonal skills at different phases, for example: when a project is being launched, while collecting requirements, when collaborating with stakeholders, while validating the final solution, and so on.
- Business Analysts use verbal and written communication to convey ideas, facts, and opinions to stakeholders.
- Good communication and interpersonal skills will give confidence to a business analyst while facilitating meetings.

Analytical and systems thinking:

- An outstanding analytical skill will separate out a good business analyst. A good part of BA role includes basics of business analysis, analyzing data, workflow, user or stakeholders' inputs, documents, etc.
- A business analyst must analyze and translate the client's requirements distinctly.
- Critical thinking helps a business analyst in assessing multiple options before arriving at the aspired solution.
- Business analysts focus on gathering and understanding the client's needs. Critical thinking enables them to prioritize business requirements.

Technology and business knowledge:

- BA needs to be updated with the domains and the platforms for which the project will be based.
- BA should possess vital business knowledge so as to effectively communicate with partners and stakeholders.

Modelling (process, data and system):

- Based on the technology used or required will modelling be done on future changes and dynamics.
- BA will extrapolate the future needs based on current requirements. This will require great analytical skills as well as the ability to comprehend situations.

Relationship management:

- Relationships are developed through discussions, effective communications, consistent actions and trust.
- Ability to anticipate, manage and resolve conflicts that might arise among members and others is crucial for a BA who is adept at people skills.

Negotiation:

- Business analysts negotiate at every project phase. At the initial stage of a project, negotiation skills are used to decide what they must include in the project's vision.
- Business analysts then use their negotiation skills to determine which requests turn into requirements and their priority levels.
- As the project progresses, negotiation skills play a significant role in deciding the functional design that fulfils the requirements. Negotiation skills are also used to make technical decisions.
- Business analysts carry out a cost-benefit analysis to assess the costs and benefits expected in a project. When organizations undertake new projects, business analysts make use of cost-benefit analysis to establish if they should embark on those particular projects.

Evaluation and business analysis:

- Important roles of a BA are to take decisions regarding the project and guide it through its various stages.
- BA should be able to understand the viability of his/her decisions regarding the project.

Planning and management:

- BA has to be adept at making quick decisions, creating efficient workflows, and preparing the team for any sudden changes.

Elicitation and facilitation:

- Elicitation is the process of discovering the requirements. In particular, elicitation often refers to engaging with stakeholders to understand their needs and expectations when it comes to the scope and detailed requirements of the project.
- Business analysts aid facilitation between stakeholders to help them make a decision, solve a problem, transfer ideas and information, or arrive at an agreement in relation to the order and the essence of requirements.
- The business analyst may also support facilitation between stakeholders for the purposes of negotiation and conflict resolution.

ROLES OF BUSINESS ANALYTICS PERSONNEL:

- **As a contributor**: identifying business problems, needs and functions, understand stakeholders concerns and requirements to identify improvement opportunities and contribute business input for developing business case for IT system development project.
- **As a facilitator:** co-ordinate in the elicitation and analysis of requirements, collaborating and communicating with stakeholders and to manage their expectations and needs, ensure requirements are complete and unambiguous.
- **As an analyst:**
  - ✓ To assess proposed system and organisational readiness for system implementation & providing support to users and coordinate with IT staff.
  - ✓ To help review and provide inputs to the design of the proposed IT system from business perspective, resolving issues/conflicts among stakeholders.
  - ✓ To help organise training with the aim of ensuring the deployed IT system which is capable of meeting business needs and requirements as well as realising the anticipated benefits.

KEY RESPONSIBILITIES OF A BUSINESS ANALYTICS PERSONNEL:

a) Initiation phase
b) Planning phase **c)**
Executing phase
d) Monitoring and controlling phase
e) Closing phase

Initiation Phases

Defines a new project or a new phase of an existing project by obtaining authorization to start the project or phase. The business analyst may be involved in the following:

- **Identify needs** – Capture the business need and distinguish whether the need is a problem to solve or an opportunity to seize.
- **Define goals and objectives -** Help the customer define goals and SMART objectives to allow the project success to be measured. Document in the form of business requirements.
- **Identify stakeholders** – Generally initiated by the sponsor and project manager (PM), however, the BA can refine the list or add stakeholders when appropriate.
- **Assess feasibility** – Coordinate feasibility studies via a proof of concept to determine if the goals and objectives defined are possible prior to the allocation of resources.

Planning Phases

Establishes the project, scope, refines the objectives, and defines the course of action required to reach those objectives. The business analyst would perform the following:

- **Determining project approach** – Collaborate with the project team to determine the project approach based on the potential risks, timelines, constraints, information known, and stability of the business requirements
- **Business analysis plan** – Create a business analysis approach based on the project approach. The plan will include an outline for various BA activities including stakeholder engagement and communication, requirements management, information management. This should be an input to the overall project plan.

- **Assess Current State** – Determine the current situation via observation, document analysis or any other method that will provide context on existing processes and systems. The BA may document this in the form of a textual current state description or present as a process model.
- **Root Cause Analysis -** If the business need has been identified as a problem, perform root cause analysis in order to ensure the team is trying to solve the true source of the issue. This can be executed with a Fishbone Diagram or the Five Whys method.
- **Define Future State** – Guide the customer to describe a definition of success, make decisions about the solution space, verify constraints, solidify business objectives, and determine the potential value. This may be documented in the form of a future state description or process model.
- **Assess Risk** – Discuss the unknowns and work with the project manager and sponsor to determine the risk tolerance and risk management approach.
- **Perform gap analysis -** Identify the difference between the current state and future state capabilities. This may be documented in the form of a process model illustrating what will change or the various transition states. This may also be represented as a change strategy.
- **Prepare for elicitation** – Based on the change strategy, the BA will prepare to conduct various elicitation activities in an effort to get adequate details on the requirements.
- **Provide estimates** – Once the BA activities are planned out, the BA may provide estimates to the PM on the work effort as an input to the project plan.

Executing Phase:

The processes and activities performed to complete the work defined in the project management plan in order to satisfy the project requirements.

Monitoring and Controlling Phase:

Processes required to track, review, and regulate the progress and performance of the project; identify areas in which changes to the plan are required, and initiate the related changes.

- **Control Scope** – The BA plays a part in managing scope related to the *solution* by ensuring requirements are adequately traced and assessing requirements changes.

Closing Phase

Performed to formally complete or close a project or contract.

- **Performance Measures** – If customers don't have performance metrics related to the project readily available, the business analyst may be involved in collecting and evaluating performance measures to help determine the value and success of the project.
- **Lessons learned** – Partake in lessons learned (retrospective) activities.

TYPES OF BUSINESS ANALYTICS PERSONNEL:

- Pure business analysts
- IT business analysts
- Data business analyst
- Functional business analyst
- Business system analyst
- Business requirements analyst
- Reporting business analyst
- Business intelligence analyst

Pure Business Analysts:

- ✓ BAs that make up this category have a background in **business or economics**.
- ✓ Unrelated to the IT industry, or have a very loose connection with it.
- ✓ Experts can both gain a bird's eye view of your business and delve into the nuances of any of its specific constituent areas and business processes.
- ✓ They know how to analyse your competitors, create a more optimal enterprise business model, optimize your sales channels, and reduce your employee turnover.

However, while being important contributors to the overall transformation of your business, Pure Business Analysts cannot be tasked with the performance of the entirety of this transformation: their skills fall short when it comes to IT.

IT Business Analysts:

- ✓ To understand business requirements from multiple stakeholders and prioritize them.
- ✓ Interpret business requirements and simplify them for easy analysis of top management to make strategic business decisions.
- ✓ Create solutions based on the requirements identified, create change management proposals, and work towards achieving the organization's long-term goals.
- ✓ Review specifications for required change management, while efficiently organizing business needs.
- ✓ Work in close collaboration with the Technical Architect and Development team to ensure the team understands the requirements.
- ✓ Facilitating the right design sessions with the project implementation team.
- ✓ Delivering the correct elements of system design, business rules, and other relevant deliverables.
- ✓ Pull information from multiple sources from within the organization while analysing and reporting the relevant data trends for informed decision making.
- ✓ Breaking down the technical and architectural requirements so that the entire team understands the infrastructure and technical requirements.

Data Business Analyst:

- ✓ Analyse data and use visual modelling
- ✓ Critical thinking skills to extract and present key business information to decision makers.
- ✓ Provide inputs for investment and financial management decisions
- ✓ Common names used for these jobs: sales analyst, operation analyst, reporting analyst, marketing analyst.
- ✓ Expected to be able to run SQL, or structured query language.

Functional Business Analyst:

- ✓ Specialises in a specific technology, line of business, domain or industry.
- ✓ Owing to their expertise in a particular field are fully aware of the attributes, characteristics and functions of their field.

Business System Analyst:

- ✓ Possess proficiency in both the domains, business and technology.
- ✓ Business systems analysts use both business and technology tools to examine a company's operating system, procedures, and design improvements.
- ✓ They aim to help a company operate more efficiently and effectively through the design and implementation of information technology systems.
- ✓ They consult with leaders and managers to understand the usage of emerging technologies that can benefit the company.
- ✓ They write instruction manuals and analyse costs and benefits related to the technology. They have specialization in the system the company uses.

Business Requirements Analyst:

- ✓ Understand and **help the project manager** create the project's business case by making sure all the high-level requirements are listed in the project scope
- ✓ **Conduct a cost-benefit analysis** to justify the feasibility of the proposed solution. In this analysis, a comparison is made between the money that is being spent on the project and the benefits obtained from it. Obviously, it must be studied whether the project will be profitable before committing any time and resources for it.
- ✓ **Identify the involved stakeholders** by either getting the stakeholders list from the initial stakeholders or conducting a study to analyse who all will be involved/affected by the project. Sometimes, a combination of both these techniques may also be used.
- ✓ **Gather requirements** from the key stakeholders by using requirement elicitation techniques like brainstorming, requirement workshops, focus groups, and others.

Reporting Business Analyst:

- ✓ Design business analysis and data recording systems for use throughout the department
- ✓ Maintain databases and perform updates as necessary to ensure accuracy
- ✓ Regularly examine data reports to locate and resolve mistakes throughout
- ✓ Accurately analyse and collect data for various types of business reports
- ✓ Create business reports that provide insight into key data points
- ✓ Communicate the results of data analysis in written and verbal form to managers
- ✓ Support various departments, including marketing and sales, in reaching their goals through analysis
- ✓ Monitor data to identify changes in financial and business trend

Business Intelligence Analyst:

A business intelligence analyst, also known as a BI analyst, uses data and other information to help organizations make sound business decisions. A business intelligence analyst's role can be broadly broken down into three parts:

- **Breaking down key business data:** A business intelligence analyst might gather, clean, and analyse data like revenue, sales, market information, or customer engagement metrics of a business. BI analysts can also be asked to program tools and data models to help visualize or monitor data.
- **Interpreting the data:** Finding patterns or seeing areas in the data that signal a potential for improvement in business practices is a key part of a BI analyst's job. For example, a BI analyst might analyse market trends to understand how a company might need to adapt its product.

- **Sharing findings:** Sharing findings can include anything from visualizing data in graphs and charts, to putting reports together and presenting in front of other teams or clients. Business intelligence analysts will also make recommendations to improve or grow the business based on their findings.

TOOLS USED BY BUSINESS ANALYST:

1. **MICROSOFT OFFICE SUITE**

The following applications of Microsoft office suite come under the best business analysis tools list –

- MS PowerPoint
- MS Excel
- MS Word
- MS Visio

MS PowerPoint

This software is used to prepare and deliver formal presentations. A business analyst often faces the situations where he needs to communicate ideas, justify or deliver project updates to stakeholders. This communication becomes more effective in the form of a presentation through PowerPoint.

MS Excel

Data analysis is also a part of the business analysis, and it can be of different forms like:

- Pivot tables
- Examining the trends in data
- Sort and filter data
- Creating charts or graphs

All the tasks mentioned above can be well performed using Microsoft Excel which is a spreadsheet-like tool. Along with it, Excel provides several built-in mathematical and financial functions which can aid data analysis.

MS Word

Microsoft Word serves the purpose of requirement specification document. Organizations can create their specific template for documenting the requirements. It is a utility application which allows user preferred fonts, theme, objects, shapes, smart arts, charts and even option for embedding Visio diagrams.

MS Visio

MS Visio is a modelling tool that business analysts use to effectively capture and present stakeholders ideas in the form of business functions and user interactions. The main utilities of Visio are –

- UML diagrams creation such as use case, sequence diagrams, and activity.
- To prepare process flow charts
- To create data models
- To generate architecture diagrams

Planning to become a certified business analyst? Here are the top Business Analysis Certifications, find which one is best for you.

2. GOOGLE DOCS

Sharing project documents come under the collaboration, and nowadays Google docs prove itself a very useful tool for sharing documents online with project members and stakeholders. Google docs support all types of files like .pdf, .txt,.docx, etc.

3. RATIONAL REQUISITE PRO

It is one of the best business analysis tools for Requirements management. This tool provides a robust solution for business requirement management for large projects. Requirements management tools like Rational Requisite pro offers the functionality of word processing.

Besides that, it can query and sort data using a dynamic database. Hence, it makes tracing requirements easy along with their changes and priority. Rational Requisite pro also has features like conducting impact analysis and managing an audit trail of changes.

4. BALSAMIQ

Many projects demand wireframing applications to showcase mock-ups of a proposed system. Typically, a wireframing focuses on

- Content
- User interaction

Balsamiq is among top business analysis tools for creating wireframes. The tool uses brainstorming sessions and provides immediate feedback from stakeholders. Balsamiq Mockups helps business to work faster and smarter. Moreover, it allows projects to host online. In addition to that, it works as a collaboration tool between team and clients.

Features:

- Presents mock-ups using PDF along with embedded links
- Creates reusable component libraries and templates
- Provides fast and intuitive user interface
- Allows to build wireframes
- Links allow the user to access prototypes for demos and usability testing
- Extensive library for ready-to-use controls
- Provides enough users interface controls and icons

5. SWOT

SWOT analysis is popularly used for strategic analysis and to evaluate a business.

Features:

- The tool is free to use and a most secured tool.
- It allows the business analyst to load and save analysis to local XML files
- One can export and view .png files

6. PENCIL

Prototyping helps to get confirmation from the customer on the requirements. Hence, it is an important part of requirement gathering phase. Moreover, making a quick prototype helps the customer to understand the look and feel, and a prototyping tool helps a lot in doing so.
Pencil is such a prototyping tool which comes as a standalone tool which can be downloaded and used locally.

With a simple interface, it allows a user to drag and drop elements to create a screen. Looking for some guidance on choosing Business Analysis Certifications? Check out ultimate guide to Business Analysis Certifications here.

7. TRELLO

Trello is a collaboration tool for business analysis which helps to collaborate and communicate between teams and share information securely. Along with that, it allows admin to analyze the business data.

Features:

- Provides secure collaboration with a team
- Allows to view team activity across boards
- Allows to include members from Google Apps account
- Associate and organize boards with Collections
- Assigns admins for privacy settings management
- Helps to deactivate old members along with saving their work history
- Exports data within a single click

8. SMART DRAW

Business analysts often use Smart Draw as a business analytics tool to simplify their project management work.

Features:

- It helps to automate activities like- Add, move or delete shapes
- You can integrate it with tools like Microsoft Office, Google Drive, Dropbox, and OneDrive. Smart Draw Cloud plugins can increase functionality.
- It helps to maintain security as you can install it behind a firewall
- It supports 100 languages for creating diagrams

9. WRIKE

It is a real-time Work Management tool for business analysis purpose. It helps to decrease the overall project analysis cost by storing information centrally.

Features:

- Provides core Building Blocks of Work
- You can request Forms and Automation
- It allows live editing and file management
- Provides a visual timeline for viewing the project schedule
- Provides workload view for balancing resources with performance tracking
- Project Reporting
- Time tracking for planning and budget management

10. VERSION ONE LIFECYCLE

This is one of the best business analysis tools concerning its unique feature of integration capability with enterprise applications and open-source software development tools.

Features:

- It is primarily aligned with agile software development

- Flexible to scale up with ease project workspaces, portfolios, across teams and locations
- Inline editing and immediate update of the attributes by users is possible
- This enables advanced analysis to take a fact-based decision
- It provides a special feature like Agile Data Mart designing
- Automate decision-making during the software lifecycle

BUSINESS ANALYTICS DATA:

a) **Primary sources of data**
b) **Secondary sources of data**

Primary Sources of Data:

Primary data is a type of data that is collected by researchers directly from main sources through interviews, surveys, experiments, etc. Primary data are usually collected from the source—where the data originally originates from and are regarded as the best kind of data in research.

The sources of primary data are usually chosen and tailored specifically to meet the demands or requirements of particular research. Also, before choosing a data collection source, things like the aim of the research and target population need to be identified.

For example, when doing a market survey, the goal of the survey and the sample population need to be identified first. This is what will determine what data collection source will be most suitable—an offline survey will be more suitable for a population living in remote areas without an internet connection compared to online surveys.

Key Elements:

✓ Primary data means first-hand information collected by an investigator.
✓ It is collected for the first time.
✓ It is original and more reliable.
✓ For example, the population census conducted by the government of India after every ten years is primary data.

Primary Data Collection Methods

Primary data or raw data is a type of information that is obtained directly from the first-hand source through experiments, surveys or observations. The primary data collection method is further classified into two types. They are

- Quantitative Data Collection Methods
- Qualitative Data Collection Methods

Quantitative Data Collection Methods

It is based on mathematical calculations using various formats like close-ended questions, correlation and regression methods, mean, median or mode measures. This method is cheaper than qualitative data collection methods and it can be applied in a short duration of time.

Qualitative Data Collection Methods

It does not involve any mathematical calculations. This method is closely associated with elements that are not quantifiable. This qualitative data collection method includes interviews, questionnaires, observations, case studies, etc. There are several methods to collect this type of data. They are:

- ❖ Observation method
- ❖ Interview method
- ❖ Questionnaire method
- ❖ Schedules

Observation Method

Observation method is used when the study relates to behavioural science. This method is planned systematically. It is subject to many controls and checks. The different types of observations are:

- Structured and unstructured observation
- Controlled and uncontrolled observation
- Participant, non-participant and disguised observation

Interview Method

The method of collecting data in terms of verbal responses. It is achieved in two ways, such as:

- ❖ Personal interview
- ❖ Telephone interview

- **Personal Interview** – In this method, a person known as an interviewer is required to ask questions face to face to the other person. The personal interview can be structured or unstructured, direct investigation, focused conversation, etc.

- **Telephonic Interview** – In this method, an interviewer obtains information by contacting people on the telephone to ask the questions or views, verbally.

Questionnaire Method

In this method, the set of questions are mailed to the respondent. They should read, reply and subsequently return the questionnaire. The questions are printed in the definite order on the form. A good survey should have the following features:

- Short and simple
- Should follow a logical sequence
- Provide adequate space for answers
- Avoid technical terms
- Should have good physical appearance such as colour, quality of the paper to attract the attention of the respondent

Schedules:

- ✓ This method is similar to the questionnaire method with a slight difference. The enumerations are specially appointed for the purpose of filling the schedules.
- ✓ It explains the aims and objects of the investigation and may remove misunderstandings, if any have come up.
- ✓ Enumerators should be trained to perform their job with hard work and patience.

Other methods for collection of data includes:

- ✓ Warranty cards
- ✓ Auditing
- ✓ Mechanical devices
- ✓ Simulation
- ✓ Observation
- ✓ Projective methods

Significance of Primary data:

- ✓ Reliability
- ✓ Variety of techniques
- ✓ Wide coverage including special cases
- ✓ Complete control over process
- ✓ Cost effective collection
- ✓ Sole ownership of information

Limitations of Primary Data:

- ✓ Costly affair
- ✓ Time consuming
- ✓ Infeasible
- ✓ Huge quantity of data
- ✓ Unwillingness to answer

Secondary Sources of Data:

Secondary data is the data that has already been collected through primary sources and made readily available for researchers to use for their own research. It is a type of data that has already been collected in the past.

A researcher may have collected the data for a particular project, then made it available to be used by another researcher. The data may also have been collected for general use with no specific research purpose like in the case of the national census.

Data classified as secondary for particular research may be said to be primary for another research. This is the case when data is being reused, making it primary data for the first research and secondary data for the second research it is being used for.

Secondary Data Collection Methods

Secondary data is data collected by someone other than the actual user. It means that the information is already available, and someone analyses it.

Sources of secondary data include books, personal sources, journals, newspapers, websites, government records etc. Secondary data are known to be readily available compared to that of primary data.

Books

Books are one of the most traditional ways of collecting data. Today, there are books available for all topics you can think of. When carrying out research, all you have to do is look for a book on the topic being researched, then select from the available repository of books in that area. Books, when carefully chosen are an authentic source of authentic data and can be useful in preparing a literature review.

Published Sources

There are a variety of published sources available for different research topics. The authenticity of the data generated from these sources depends majorly on the writer and publishing company.

Published sources may be printed or electronic as the case may be. They may be paid or free depending on the writer and publishing company's decision.

Unpublished Personal Sources

This may not be readily available and easily accessible compared to the published sources. They only become accessible if the researcher shares with another researcher who is not allowed to share it with a third party.

For example, the product management team of an organization may need data on customer feedback to assess what customers think about their product and improvement suggestions. They will need to collect the data from the customer service department, which primarily collected the data to improve customer service.

Journal

Journals are gradually becoming more important than books these days when data collection is concerned. This is because journals are updated regularly with new publications on a periodic basis, therefore giving to date information.

Also, journals are usually more specific when it comes to research. For example, we can have a journal on, "Secondary data collection for quantitative data" while a book will simply be titled, "Secondary data collection".

Newspapers

In most cases, the information passed through a newspaper is usually very reliable. Hence, making it one of the most authentic sources of collecting secondary data.

The kind of data commonly shared in newspapers is usually more political, economic, and educational than scientific. Therefore, newspapers may not be the best source for scientific data collection.

Websites

The information shared on websites is mostly not regulated and as such may not be trusted compared to other sources. However, there are some regulated websites that only share authentic data and can be trusted by researchers.

Most of these websites are usually government websites or private organizations that are paid, data collectors.

Diaries

They are personal records and as such rarely used for data collection by researchers. Also, diaries are usually personal, except for these days when people now share public diaries containing specific events in their life.

A common example of this is Anne Frank's diary which contained an accurate record of the Nazi wars.

Government Records

Government records are a very important and authentic source of secondary data. They contain information useful in marketing, management, humanities, and social science research.

Some of these records include; census data, health records, education institute records, etc. They are usually collected to aid proper planning, allocation of funds, and prioritizing of projects.

Other sources of secondary data collection include:

- ✓ Sales analysis
- ✓ Invoice analysis
- ✓ Financial data
- ✓ Transportation data
- ✓ Storage data
- ✓ Libraries
- ✓ Literature
- ✓ Periodicals
- ✓ References and bibliography
- ✓ Census and registration data
- ✓ Trade associations
- ✓ Commercial research institutions
- ✓ International organisation

BUSINESS ANALYTICS TECHNOLOGY:

TYPES:

- **a)** Computer hardware
- **b)** Computer software
- **c)** Networking and telecommunications technology
- **d)** Data management technology
    - Database Management System (DBMS)
    - Data warehouses
    - Data mining
    - Text mining
    - Web mining
    - Microsoft excel spreadsheet
    - SAS analytics
    - IBM's SPSS software

Computer Hardware:

- ✓ Physical equipment used for input, processing, output activities in an information system
- ✓ Hardware can include computers of various sizes, various input, output and storage devices; and telecommunication devices that link computers, including mobile handheld devices.

Computer Software:

- ✓ Pre-programmed instructions that control and coordinate the hardware components in the information system.
- ✓ Include system wide software like ERP & smaller apps for mobile devices

Networking And Telecommunications Technology:

- ✓ Physical devices and software link the various pieces of hardware and transfer data from one physical location to another.
- ✓ They include the computers and communications equipment connected in networks for sharing voice, data, images, sound and video
- ✓ Also include intranet, internets and extranets.

Data Management Technology:

- Database Management System (DBMS)
- Data warehouses
- Data mining
- Text mining
- Web mining
- Microsoft excel spreadsheet
- SAS analytics
- IBM's SPSS software

Database Management System (DBMS):

A database management system (or DBMS) is essentially nothing more than a computerized data-keeping system. Users of the system are given facilities to perform several kinds of operations on such a system for either manipulation of the data in the database or the management of the database structure itself. Database Management Systems (DBMSs) are categorized according to their data structures or types.

Data Warehouses:

A data warehouse is a central repository of information that can be analysed to make more informed decisions. Data flows into a data warehouse from transactional systems, relational databases, and other sources, typically on a regular cadence. Business analysts, data engineers, data scientists, and decision makers access the data through business intelligence (BI) tools, SQL clients, and other analytics applications.

Data Warehousing **integrates data and information collected from various sources into one comprehensive database**. For example, a data warehouse might combine customer information from an organization's point-of-sale systems, its mailing lists, website, and comment cards.

Data Mining:

Data mining is the process of sorting through large data sets to identify patterns and relationships that can help solve business problems through data analysis. Data mining techniques and tools enable enterprises to predict future trends and make more-informed business decisions.

Text Mining:

Text mining, also known as text data mining, is the process of transforming unstructured text into a structured format to identify meaningful patterns and new insights. By applying advanced analytical techniques, such as Naïve Bayes, Support Vector Machines (SVM), and other deep learning algorithms, companies are able to explore and discover hidden relationships within their unstructured data.

Text is a one of the most common data types within databases. Depending on the database, this data can be organized as:

- Structured data
- Unstructured data
- Semi-structured data

Structured data: This data is standardized into a tabular format with numerous rows and columns, making it easier to store and process for analysis and machine learning algorithms. Structured data can include inputs such as names, addresses, and phone numbers.

Unstructured data: This data does not have a predefined data format. It can include text from sources, like social media or product reviews, or rich media formats like, video and audio files.

Semi-structured data: As the name suggests, this data is a blend between structured and unstructured data formats. While it has some organization, it doesn't have enough structure to meet the requirements of a relational database. Examples of semi-structured data include XML, JSON and HTML files.

Web Mining:

Web mining is the application of data mining techniques to discover patterns from the World Wide Web. It uses automated methods to extract both structured and unstructured data from web pages, server logs and link structures.

There are three main sub-categories of web mining. Web content mining extracts information from within a page. Web structure mining discovers the structure of the hyperlinks between documents, categorizing sets of web pages and measuring the similarity and relationship between different sites. Web usage mining finds patterns of usage of web pages.

Microsoft Excel Spreadsheet:

MS Excel is a spreadsheet program where one can record data in the form of tables. It is easy to analyse data in an Excel spreadsheet.

SAS Analytics:

SAS is a Business Intelligence tool that facilitates analyses, reporting, data mining, and predictive modelling with the help of powerful visualizations and interactive dashboards. The success of a business depends on how well business executives and managers have understood the crux of the business.

It can be well argued that Business Intelligence (BI) and analysis should not be kept confined to the analytical abilities of the Business Analysts alone. Rather, these should be known to corporate executives and managers as well, who actually run the business.

IBM's SPSS Software:

SPSS is short for Statistical Package for the Social Sciences, and it's used by various kinds of researchers for complex statistical data analysis. The SPSS software package was created for the management and statistical analysis of social science data. It was originally launched in 1968 by SPSS Inc., and was later acquired by IBM in 2009.

SPSS is used by market researchers, health researchers, survey companies, government entities, education researchers, marketing organizations, data miners, and many more for processing and analysing survey data.

Skills of a Business Analyst:

First and foremost, business analysis professionals should have the technical skills necessary for accurate and impactful analysis.

- ✓ Statistical analysis software (e.g., R, SAS, SPSS, or STATA)
- ✓ SQL databases and database querying languages
- ✓ Programming skills such as Python and R
- ✓ Survey/query software
- ✓ Business intelligence and reporting software
- ✓ Data mining
- ✓ Data visualization
- ✓ Database design

Technical Business Analyst Responsibilities:

- ✓ Performing system analyses on software programs, applications, and web services.
- ✓ Determining system efficiency and functionality by liaising with internal departments and end-users.
- ✓ Reporting to Management and obtaining approval for system development projects.
- ✓ Efficiently integrating new systems, programs, and applications with business operations and services.
- ✓ Analysing and improving the performance of web-based customer portals and support services.
- ✓ Ensuring end-user proficiency with new systems, programs, and applications across departments.
- ✓ Monitoring product licenses and ensuring compliance with IT industry regulations.
- ✓ Ensuring that computer hardware remains compatible with system enhancements and updates.
- ✓ Promoting system efficiency and security by integrating performance metrics and encryption.
- ✓ Implementing new advancements in the field of system and enterprise architecture.

ORGANISATION STRUCTURES ALIGNING BUSINESS ANALYTICS:

According to Isson and Harriot, to successfully implement Business Analytics (BA) within organisations, the BA in whatever organisation form it takes must be fully integrated throughout a firm.

Hierarchal relationships programme, project and team planning