Capstone Project – Entry Certificate in Business Analysis (ECBA)

Create a plan to include:

1. Assessing complexity, size, and risk factors associated with the sales data.
2. Create a monitoring charter for this data.
3. Identify stakeholders and create a plan to gain their understanding, agreement and collaboration.
4. Create a communications plan for your stakeholders.

Assessing the complexity, size and risk factors associated with the sales data can be identified as the following:

Complexity:

By identifying the key components of the sales data which can give you key information on the products, customers, region of sales, and many more, the key components like the database (ECBA_SQLCapstone_ITBA_Project), tables: Calendar, Region, Sales, Products, and then the columns; So, for the Calendar the columns would include Calendar ID, Order ID, Day, Day Name, Month, Month Name, Year, Week Number, Quarter, Order Date. For the Region the columns would be Region ID, Unique City, Unique State, and City&State. For the Products the columns would be Product ID, Product, Unit Price, Product Segment, Profit Margin, and for the Sales table the column includes Order ID, Product, Product ID, Product Segment, Quantity Ordered, Unit Price, Sales Amount, Profit Margin, COGS, Calendar ID, Order Date, Order Time, Region ID, Street Address.

Assessing the complexity of the Sales Data should include, how many tables are in the data set, in this case there are 4 tables which are separated into different entities due to the different structures and organization which require multiple joins and therefore analysis and transformation will be carried out on different table which have multiple foreign key relationships. For example, the sales table and product table are joined by product ID (foreign key) where the product table gives further insight into the products, product unit price, product segment and profit. The sales table is also joined to the region, calendar tables where the foreign keys are region ID and calendar ID. This would increase the complexity of the database. Due to the relationships via the foreign keys the columns in each table and the multiple tables would be analysed, data transformation carried out on the data can give a more comprehensive analysis. Analysis of the data can be carried out on

Size:

To assess the size of the database, the following queries can be used in SQL to find information on the database:

The following query returns the number of rows.

- SELECT COUNT(*) AS row_count
  FROM [dbo].[Sales]

Which returns Number of rows: 201770

The following query returns the file names and file sizes of the database.

- SELECT
  name AS FileName,
  size * 8 / 1024 AS FileSize_MB
  FROM sys.database_files

Which returns the file names and file sizes, it also includes the log files that are associated with the database.

> File Name: ECBA_SQLCapstone_ITBA_Project, FileSize_MB: 72
> File Name: ECBA_SQLCapstone_ITBA_Project_log, FileSize_MB: 136

The following query returns information on database_name, database_size, unallocated space, reserved, data, index_size, and unused.

- EXEC sp_spaceused;

Which returns database name: ECBA_SQLCapstone_ITBA_Project, Database Size:208.00 MB, Unallocated space: 40.11 MB, Reserved Space: 32656 KB, Data: 29632 KB, Index Size: 1424 KB, Unused: 1600 KB.

With the queries above the size of the database and information on the sales data.

Risk Factors:

The risk factors which can be assessed with the sales data can include the following:

1. Identify potential risk factors that could impact sales data:

These may include data quality issues (data accuracy – ensuring data has no blanks, or zero values, typos, system failures (software malfunctions), or process inefficiencies, data security, privacy concerns, regulatory compliance, data access and data sharing.

2. Categorize risk factors:

By organising the risk factors into categories this can help to organize and address the risk factors systematically. By categorising the risk factors this also helps to make better informed decisions on how risk factors can be ranked from critical/high to low/no risk.

3. Analyse the impact via an appropriate method of risk analysis/Mitigation strategies:

For example, you could carry out a Failure Mode and Effects Analysis (FMEA), where the impact of the risk factors can be measured on their severity, the impact and the probability of occurrence.

Risk Factor	Failure Mode	Effects	Severity (1-5)	Probability of Occurrence (1-5)	Impact (1-5)	Risk Score	Risk Level	Mitigation Examples
Data Quality Issues	Data accuracy	Missing Values	3	4	3	36	Medium	Implement data validation rules and checks to ensure accurate data input.
								Provide training and guidelines to users on best practices for data entry.
								Conduct regular data quality audits to identify and correct inaccuracies.
								Use data analytics techniques to detect anomalies and outliers in the data
		Misinterpretation of sales trends or patterns	3	4	4	48	Medium	Provide clear and concise documentation on how to interpret sales trends and patterns.
								Implement data visualization tools to present sales data in a more understandable format.
								Communication and collaboration between data analysts and domain experts to gain insights and validate interpretations.
		Errors	4	3	5	60	High	Implement data governance practices to ensure data accuracy and consistency.
								Conduct periodic reviews and assessments of decision-making outcomes to identify and address any inaccuracies or areas for improvement.
	Process inefficiencies	Delays in updating or accessing sales data	2	4	2	16	Low	Streamline data collection and entry processes to minimize delays.
								Implement automated data integration and synchronization mechanisms to ensure timely updates.
								Regularly monitor and analyse data processing times to identify and resolve any bottlenecks or inefficiencies.
		Human errors - misspellings in column names	3	3	3	27	Medium	Provide training and awareness programs to employees on data quality and error prevention.
								Implement user-friendly data entry interfaces with validation checks and error prompts.
								Encourage a culture of attention to detail and accuracy in data-related activities.
								Conduct regular quality control checks and reviews to identify and rectify any human errors.
		Inconsistent or delayed reporting	2	2	2	8	Low	Establish clear reporting protocols and timelines.
								Automate report generation and distribution processes to ensure consistency and timeliness.
								Regularly review and update reporting templates and formats to meet changing needs.
								Implement feedback mechanisms to capture and address any inconsistencies or delays in reporting.
System Failures	Software malfunctions	Data loss or corruption	5	2	4	40	Medium	Implement regular data backups and disaster recovery procedures.
								Deploy reliable and up-to-date antivirus and anti-malware software.
								Keep software and systems updated with the latest patches and security fixes.
								Conduct regular system performance and integrity checks.
								Have contingency plans and procedures to restore data and resume operations in case of a system malfunction or data loss.
		System downtime (e.g. Software updates)	4	2	5	40	Medium	Implement redundant systems and backup servers for high availability.
								Perform routine maintenance and updates during scheduled downtime periods.
								Develop and follow incident response plans to minimize downtime and restore services promptly.
								Regularly monitor system performance and proactively address any potential issues.
								Establish communication channels to inform stakeholders about system downtime and expected resolution times.
		Inability to access or retrieve sales information	3	3	3	27	Medium	Implement access controls and user authentication mechanisms to ensure authorized access to sales data.
								Develop redundant data storage and backup systems to prevent data unavailability.
								Regularly test and validate data retrieval processes to ensure their effectiveness.
								Provide training and resources to employees on data access and retrieval procedures.
								Establish clear escalation procedures and support channels to promptly address access issues.
Data Security and Privacy	Data security	Loss or theft of sensitive data	5	4	5	100	Critical	Implement robust data encryption techniques to protect sensitive data.
								Establish strict access controls and authentication mechanisms.
								Regularly conduct security audits and penetration tests to identify vulnerabilities.
								Train employees on data security best practices and awareness.
								Implement data loss prevention (DLP) solutions to monitor and prevent unauthorized data leakage.
		Compromised customer information	5	3	4	60	High	Employ multi-factor authentication for customer data access.
								Regularly update and patch customer-facing systems to address security vulnerabilities.
								Encrypt customer data during transmission and storage.
								Train employees on handling customer information securely and sensitively.
								Establish incident response plans to promptly address and mitigate any customer data breaches or compromises.
		Regulatory penalties	5	2	5	50	Medium	Stay updated with relevant regulations and compliance requirements.
								Implement data governance practices to ensure compliance with applicable laws.
								Conduct regular internal audits to identify and address any compliance gaps.
								Establish documentation and record-keeping processes to demonstrate regulatory adherence.
								Collaborate with legal and compliance teams to stay informed and address any potential risks or issues.
	Privacy concerns	Violation of privacy regulations	5	2	5	50	Medium	Develop and enforce privacy policies and procedures that align with applicable regulations.
								Obtain explicit consent for data collection and processing activities.
								Implement anonymization or pseudonymization techniques where appropriate.
								Conduct regular privacy impact assessments (PIAs) to identify and address privacy risks.
								Train employees on privacy regulations and best practices for handling personal data.
		Legal Implications and Lawsuits	5	2	5	50	Medium	Collaborate with legal counsel to ensure compliance with applicable laws and regulations.
								Establish strong contracts and agreements with data processors and vendors.
								Regularly review and update privacy and data protection policies to align with legal requirements.
								Implement effective data access controls and audit trails to monitor data usage and detect any unauthorized activities.
								Establish incident response plans to address potential legal implications and lawsuits promptly and effectively.
Data Access and Sharing	Data access	Unauthorized use or manipulation of data	5	1	5	25	Low	Implement role-based access controls and user authentication mechanisms.
								Monitor and log data access activities for suspicious behaviour.
								Conduct regular access reviews and remove unnecessary privileges.
								Provide training and awareness programs to employees on data access policies and restrictions.
								Establish incident response plans to promptly address unauthorized data access or manipulation.
		Data leaks or data loss	4	3	5	60	High	Implement data loss prevention (DLP) solutions to monitor and prevent data leaks.
								Encrypt sensitive data during transmission and storage.
								Regularly backup data and test the restoration process.
								Conduct regular security awareness training to educate employees on data protection.
								Establish clear data handling policies and procedures to prevent accidental data loss.
		Potential misuse of sales information	4	2	5	40	Medium	Establish clear data usage policies and guidelines
								Implement access controls and monitor data usage to detect potential misuse.
								Conduct regular data usage audits to identify and prevent unauthorized activities.
								Train employees on ethical data usage and the consequences of misuse.
								Establish a confidential reporting mechanism for reporting potential data misuse.
	Data sharing	Unintended disclosure of confidential data	4	3	4	48	Medium	Implement data access controls and user permissions for data sharing.
								Encrypt sensitive data when sharing with external parties.
								Provide training and guidelines to employees on data-sharing best practices.
								Regularly review and update data-sharing agreements and contracts with external parties.
								Conduct audits and assessments of data-sharing processes to ensure compliance with confidentiality requirements.
		Loss of control over data usage	3	1	3	9	Low	Establish clear data usage policies and guidelines.
								Implement access controls and user permissions to regulate data usage.
								Regularly monitor and review data usage patterns for any unauthorized activities.
								Provide training and resources to employees on data governance and data usage compliance.
								Establish data stewardship roles to ensure proper control and oversight of data usage.
		Violation of contractual obligations or agreements	4	1	4	16	Low	Establish robust contract management processes to ensure compliance with obligations.
								Regularly review and update contractual terms to address changing requirements.
								Establish clear communication channels with stakeholders to address contractual concerns and prevent violations.
								Provide training and awareness programs to employees on contractual obligations and agreements.
								Implement mechanisms for tracking and monitoring compliance with contractual obligations.

4. Risk monitoring/Documentation:

Establish a system for ongoing risk monitoring. Regularly review and update the risk assessment to ensure it remains up to date. Continuously monitor the sales data for any emerging risks and take necessary actions to mitigate them promptly.
Document the entire risk assessment process, including the identified risks, their analysis, mitigation strategies, and monitoring procedures. This documentation ensures transparency, provides a reference for future analysis, and supports compliance requirements.

Monitoring Charter:

Purpose & Objectives	Purpose:
	Monitor sales performance for all product segments (Laptops, Accessories, Other and Phones).
	Detect anomalies in sales patterns, and support decision-making processes related to product offerings and sales strategies.
	Objective:
	To provide timely and accurate insights for effective sales performance monitoring.
	To provide automated insights to give real-time updates on sales performance.
KPI's & Metrics	Examples of KPIs for the sales data:
	Average Revenue Per Month and Monthly Revenue
	Key Demographic for Customer Sales by Region
	Most Sales on Average By City&State
	Best & Worst Selling Period
	Best Selling Product
	Profit Margin By Segments
	Total Sales Year To Date by Year and Month
	Forecast for Total Revenue for Next Two Months
Frequency & Timing	Sales performance reports can be generated monthly.
	While real-time dashboards can be available for daily or weekly monitoring.
Roles & Responsibilities	Data Analyst:
	Analyses data.
	Generates insights.
	Conducts data validation.
	Prepares reports and visualizations.
	Collaborates with stakeholders.
	Supports decision-making processes.
	Maintains data quality.
	Utilizes analytical tools and techniques.
	Stays updated on data analysis trends.
	Assists in process improvement initiatives.
	Data Analyst Manager:
	Oversees and manages data analysis tasks.
	Supervises and guides data analysts.
	Sets priorities and assigns tasks.
	Reviews and validates findings.
	Collaborates with stakeholders.
	Presents insights to management.
	Ensures data quality and integrity.
	Monitors analyst performance.
	Stays updated on industry trends.
	Identifies process improvement opportunities.
Guidelines & Procedures	Establish guidelines and procedures:
	Define data collection, storage, analysis, and reporting methods.
	Specify data collection from Sales tables, storage in a data warehouse or database, and analysis techniques.
Reporting	Reporting format and structure:
	Decide on the report format (dashboards, presentations, written reports).
	Establish the report structure with sections, key findings, and recommendations.
	Reporting frequency:
	Define the frequency of report generation and sharing (monthly, quarterly, ad-hoc).
	Consider business requirements and data availability.
	Distribution and access:
	Determine report recipients and distribution methods.
	Specify access controls and permissions for data confidentiality and security.
Quality Assurance	Data validation:
	Implement processes to ensure data accuracy and reliability.
	Conduct regular checks to identify and resolve data quality issues.
	Data integrity:
	Establish measures for maintaining data integrity.
	Ensure correct data capture, consistency, and completeness.
	Error detection and correction:
	Define procedures for identifying and addressing data errors or anomalies.
	Establish protocols for investigating and resolving data discrepancies.
Communication	Stakeholder communication:
	Choose communication channels (meetings, email, platform).
	Share insights, reports, and updates with stakeholders.
	Insights dissemination:
	Communicate key insights and findings effectively.
	Summarize complex data analysis into actionable insights and recommendations.
	Feedback and collaboration:
	Encourage stakeholder feedback.
	Foster collaboration and shared perspectives in data monitoring.

Identification of Stakeholders & Data Needs:

Type	Seniority	Data Needs
Director Level (CEO, CFO, CMO, COO)	Board level	Summary, insights, and high-level dashboards. Understand their specific information requirements and tailor the data accordingly. Emphasize the strategic impact of the data and how it aligns with the organization's goals.
Marketing Teams and Managers	Departmental Management	Monthly/Quarterly and Yearly data & insights for product categories, sales performance, revenue, P&L and volumes. Conduct meetings or presentations on to share data and insights related to product categories, sales performance, revenue, P&L, and volumes. Engage in discussions to understand their needs, address any concerns, and align strategies
Finance Managers	Departmental Management	Regular communication to share monthly, quarterly, and yearly data and insights regarding product categories and overall operational revenue performance. Collaborate with finance managers to understand their analysis requirements
Sales Team and managers	Operational Sales	Regular meetings or updates to provide data and insights on product categories and sales performance by area. Foster open communication channels to address their specific needs, challenges, and opportunities. Collaborate on sales strategies and tactics to drive revenue growth.
Trading and Commercial managers & teams	Departmental Management	Communication to share daily, weekly, monthly, quarterly, and yearly data and insights on product categories and sales performance by channel. Seek their input and feedback to understand market trends, customer demands, and channel-specific strategies.
Procurement/Buying Team	Departmental management	Coordinate updates to provide data and insights on product categories and performance by channel type. Collaborate closely to align procurement strategies with sales and revenue goals. Seek their expertise to optimize sourcing and purchasing decisions.
Retail Managers	Operational management	Work closely with retail managers to address operational challenges, optimize store performance, and ensure alignment with overall business objectives. Require weekly, monthly and quarterly reports.
Channel Managers	Performance Owners	Weekly/Monthly/Quarterly and Yearly data & insights for product categories and sales performance. Regular communication to share channel specific insights or forecasting support.
Physical Store Teams	Operations	Meetings or updates to insights on product categories and sales performance. Engage with physical store teams to understand their challenges, address operational issues, and identify opportunities for improvement.

Stakeholder Approach for Engagement:

Task	Action	Outcome	Tools/Communication
Conduct initial stakeholder interviews	Carry out open interviews to gather current/historical information, data needs, understand problems and challenges and how the team rely on data to drive business performance	To understand the stakeholder or stakeholder group current usage of sales data and problems, along with future analytics and insights needs Initial sales reports	1-1 meetings, sharing documents and group sessions with relevant SME's Documentation Brief
Share initial data dashboards with senior management for feedback	Run through initial reporting with small senior stakeholder group	Initial sales reports in dashboards	PDF/Email/Presentations with an extract example of the reports
		Ready to share sales report dashboards	Data reporting dashboard tool
		Business wide polish on reports for readiness to be shared to all seniority levels	N/A
Run departmental demonstration meetings	Organised multiple demo and workshops to communicate and share sales reporting tool	Each department had a full walk-through of sales reporting and dashboards	Online meetings
Prioritize reporting updates for pipeline based on business impact and need	Organised the key and primary needs of the reporting requests to ensure business influence and impact	Documented prioritised list of report updates	N/A
Distil insights reports and dashboards	Sharing access of the reports to the business for BAU usage and operational needs	Engagement and views of sales reports with feedback from more than 10 stakeholders	Reports/Documents
Rollout reporting tool to business with access credentials	Share sales reporting to all stakeholders	Set date of sales reporting shared	Microsoft teams meetings and PDF PowerPoint reports
Create feedback survey/suggestion box via online tool and email	Request feedback via tool to all business stakeholders of the reporting and	Feedback on sales reporting, gathered into Microsoft forms	Microsoft forms
Follow up monthly with each stakeholder group	Ste up monthly meetings with key stakeholder group leads	Meet with key stakeholders and engage each week	Microsoft Team meetings
Reporting Updates - Communicated	Notify reporting users via email updates	For updated reports notify all	Email

Communication Plan to Stakeholders:

Timeline	Message	Stakeholders	Communication
30 days	Initial Reporting KPI Dashboard being generated	Directors	Formal project communications via email or presentation at meetings
30 days	Initiation of data needs and gatherings inputs	Senior management teams	Virtual or in person meetings
30 to 60 days	Sharing of initial Sales dashboard KPI reports	All business stakeholders	Demonstration meetings and workshops for each team
30 to 60 days	Business engagement with new reports	All business stakeholders	By email and notified by reporting dashboard
Monthly	Reporting updates each month	All business stakeholders	By email and notified by reporting dashboard
Ad-hoc	Notify report users of improvements	All business stakeholders	By email and notified by reporting dashboard
Each Month	Monthly frequency of sales data	All business stakeholders	By email
Quarterly & Yearly	Forecasting and revenue insights by report interval	Directors and senior management teams	Report format and meetings