



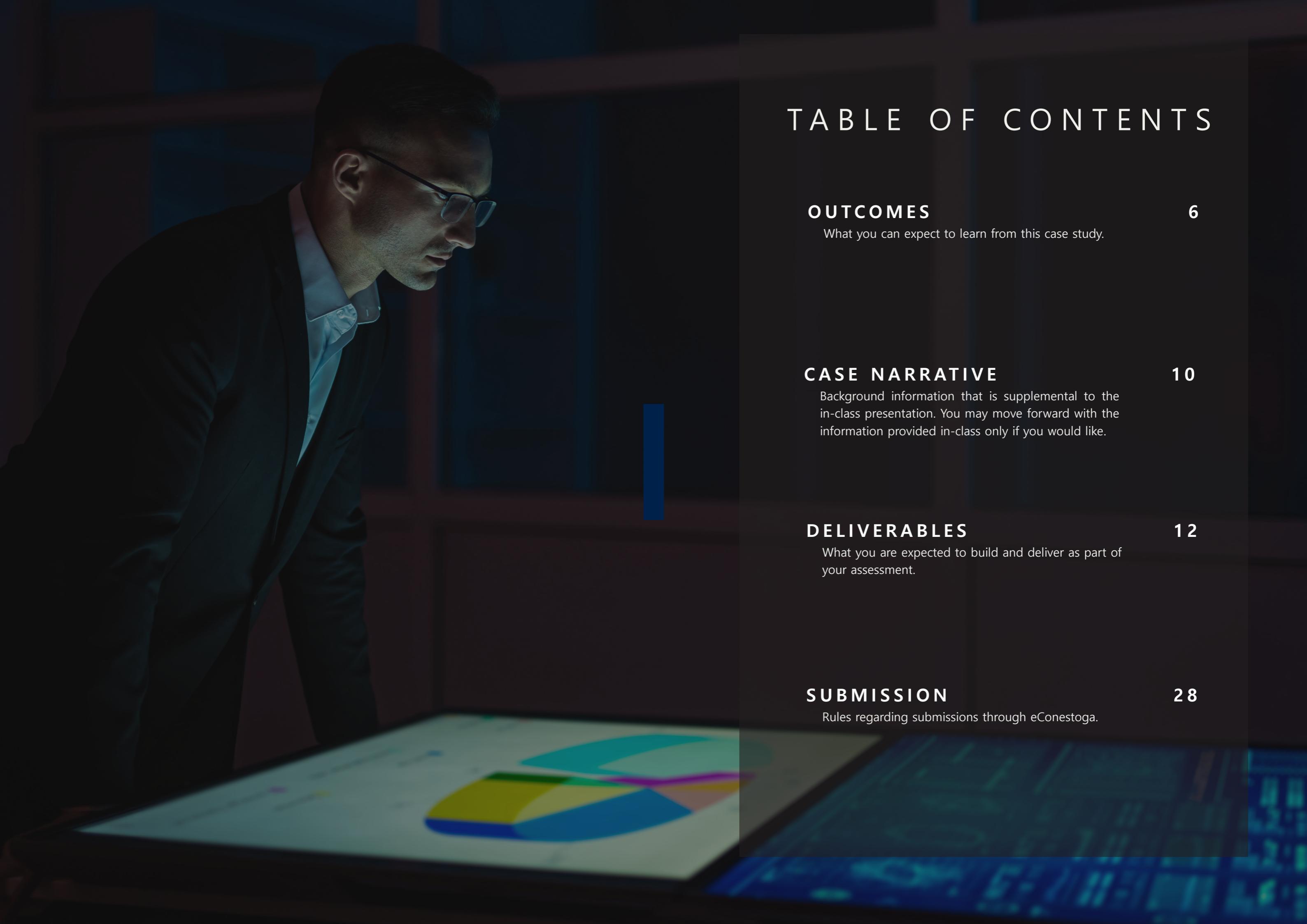
# Case Study #2: Deriving Insight



## P R E F A C E



DELIVERING INSIGHT THROUGH  
DESCRIPTIVE ANALYTICS

A professional man wearing glasses and a suit is shown from the side, looking down intently at a tablet device he is holding. The tablet screen displays a colorful pie chart. The background is dark, suggesting an office or study environment.

# TABLE OF CONTENTS

**OUTCOMES**

6

What you can expect to learn from this case study.

**CASE NARRATIVE**

10

Background information that is supplemental to the in-class presentation. You may move forward with the information provided in-class only if you would like.

**DELIVERABLES**

12

What you are expected to build and deliver as part of your assessment.

**SUBMISSION**

28

Rules regarding submissions through eConestoga.



WHAT YOU SHOULD DERIVE AS  
VALUE FROM THIS CASE

# Outcome Overview

Through this activity, the following outcomes from your course outline will be achieved:

- 1.1 Review business issues and requirements, primarily focusing on individual accountability and responsibility.
- 1.2 Import data from rDB tables, databases, different sheets, and workbooks.
- 1.3 Inspect data sets to identify quality concerns.
- 1.6 Develop detailed plans to create knowledge from data to meet requirements.
- 1.7 Execute a plan creating relevant measures of frequency and central tendency, along with summary statistics.
  
- 2.1 Review data set scope, business issues, and requirements.
- 2.6 Create relevant Measures of Frequency, Central Tendency, and Dispersion, along with Summary Statistics.
- 2.7 Create business graphics based on business requirements.
  
- 3.3 Explain key principles of knowledge delivery to decision makers.
  
- 4.2 Create relevant Measures of Position.
  
- 5.1 Create workflows of analytical processes based on business requirements.
- 5.2 Prepare workflow checklists and quality evaluation or completion tests.

ACCOMPLISHMENT

# Case Narrative

Welcome, Analysts! In this engaging assignment, you step into the role of a savvy data analyst for Little Panda Quality Analysis (LPQA), a dynamic quality control firm specializing in the meticulous examination of automotive components. As the entrusted analyst, your mission is to produce a Descriptive Analytic solution tailored for the Operational Manager at LPQA. Your focus is on refining and enhancing internal operational efficiency to elevate the organization's performance.

## Background:

LPQA has carved its niche as a leading parts inspection firm, servicing two major automotive clients. The complexity of their operations stems from handling a diverse catalog of 400 unique components daily, arriving from various manufacturing plants across Canada. Your role is pivotal in addressing the challenges posed by this high-volume, diverse workflow. In Case Study #1, you delved into the intricacies of LPQA's operations, identified challenges, and explored the metrics you would need to identify and collect to create the opportunity for enhancement. Now, armed with insights from Case Study #1, you'll transition to the next phase of your analysis.



## Phase 1: Unveiling the Metric Story

Building on the metrics identified in Case Study #1, your first task is to select a key metric or two that will serve as a benchmark for internal operational efficiency. You'll then employ "The 5-Whys" methodology to unravel the root causes behind this metric, transforming raw data into actionable knowledge.

## Phase 2: Crafting a Visual Journey

With your 5-Whys insights in hand, you'll translate these revelations into a visual narrative. Using a non-functional dashboard mockup, you'll sketch out the progression of visualizations, each corresponding to a "Why" question answered in Phase 1.

Annotations will provide a roadmap, explaining why specific visuals were chosen and how they contribute to the overall understanding.

## Phase 3: Bringing Insights to Life

In the final phase, you'll breathe life into your insights. Using [www.generatedata.com](http://www.generatedata.com), you'll create a synthetic dataset mirroring LPQA's operational reality. With this dataset, you'll construct a functional dashboard using tools like PowerBI. Your objective is to showcase the tangible value of your insights, demonstrating how they can contribute to revenue generation, waste reduction, or enhance crucial KPIs for LPQA.

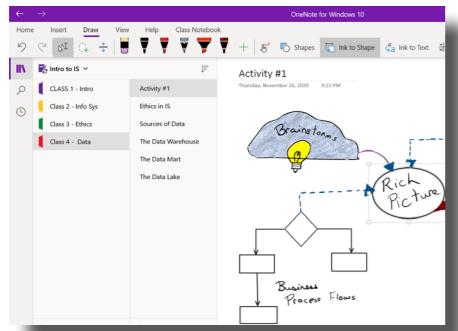
## Submission and Evaluation:

Your submission will comprise a comprehensive report, including your 5-Whys analysis documentation, the non-functional annotated dashboard mockup, and the synthetic dataset with functional dashboard. Evaluation will focus on the alignment of your insights with LPQA's operational challenges, the effectiveness of your data-driven story, and the clarity in demonstrating the practical value of your analytic solution.

Remember that you are not just crafting analytics; you are shaping the future operational landscape of LPQA. Your insights have the power to drive meaningful change, enhance efficiency, and contribute to the continued success of this vital quality control firm.

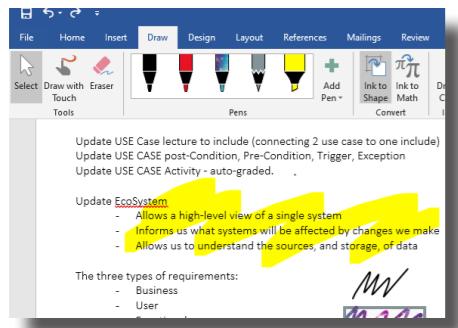


# Deliverable Summary



## PART 1: ROOT CAUSE ANALYSIS

Continuing from your work in Case Study #1, you will seek to draw insights from the metrics that you have selected to create a 5-why document with clear explanation as to how you will visualize each of the 'whys' as a metric.



## PART 2: BUSINESS IMPACT ANALYSIS

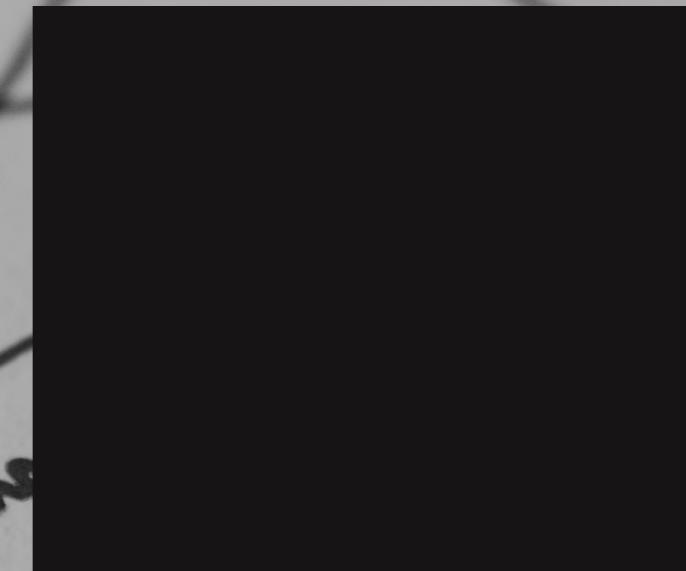
Submit an annotated dashboard document (image of a dashboard with notes around it) which will clearly demonstrate how your selected metric will impact the organization.



## PART 3: DATA AND ANALYTICS

Submit the excel document through which you indexed all of your data along with a functional dashboard that will operate off of this dataset.

# PRIMARY



# DELIVERABLES

# Part 1: ROOT CAUSE ANALYSIS

In this phase of the assignment, learners will demonstrate their analytical skills by leveraging the metrics identified in Case Study #1 to delve deeper into the root causes of a specific issue or performance indicator. The goal is to transform a single data point into meaningful knowledge using a structured approach known as "The 5-Whys." This technique involves asking the question "Why?" successively, peeling away layers to uncover the underlying causes of a problem and ultimately leading to insights for effective decision-making.

## Metric Selection:

Students are tasked with selecting one or, at most, two metrics from their Case Study

#1. These metrics serve as the focal point for the application of The 5-Whys technique. The chosen metric should either establish a baseline for internal operational efficiency or act as a key performance indicator crucial for organizational improvement.

## The 5-Whys Process:

Students will then employ The 5-Whys technique to systematically explore the root causes behind the selected metric. Starting with the question "Why?" and iterating the process five times or until a satisfactory depth is reached, learners will uncover layers of causation. For each "Why?" question, students must provide detailed explanations, demonstrating a logical progression from the

initial data point to the underlying issues.

## Documenting the Progression:

The entire process must be thoroughly documented in writing, showcasing the progression of how a single metric evolves from a piece of information to meaningful knowledge. This documentation should highlight each "Why?" question and the corresponding answers, illustrating how the analysis peels away layers of complexity and illuminates the core issues affecting the chosen metric.

## Insight Generation:

The final stage of this phase is to elucidate the insights gained through The 5-Whys analysis. Students should articulate how the root-cause-analysis has transformed the identification of a problem into a solution or valuable insight. This insight should be directly applicable to enhancing the internal operational efficiency of the client organization, aligning with the overarching goal of the assignment.

By engaging in this process, learners not only deepen their understanding of the chosen metric but also develop critical skills in problem-solving and root-cause analysis. The emphasis on

documenting the progression ensures clarity in communication, enabling students to effectively convey their analytical journey from a single data point to actionable insights that can drive positive change within the organization.



\*Note: This page is not an element of this assignment, but instead a guidance document mapping individual components of the assessment to their aligned unit outcomes from the course outline.

## OUTCOME MAPPING

1.1 Review business issues and requirements, primarily focusing on individual accountability and responsibility:

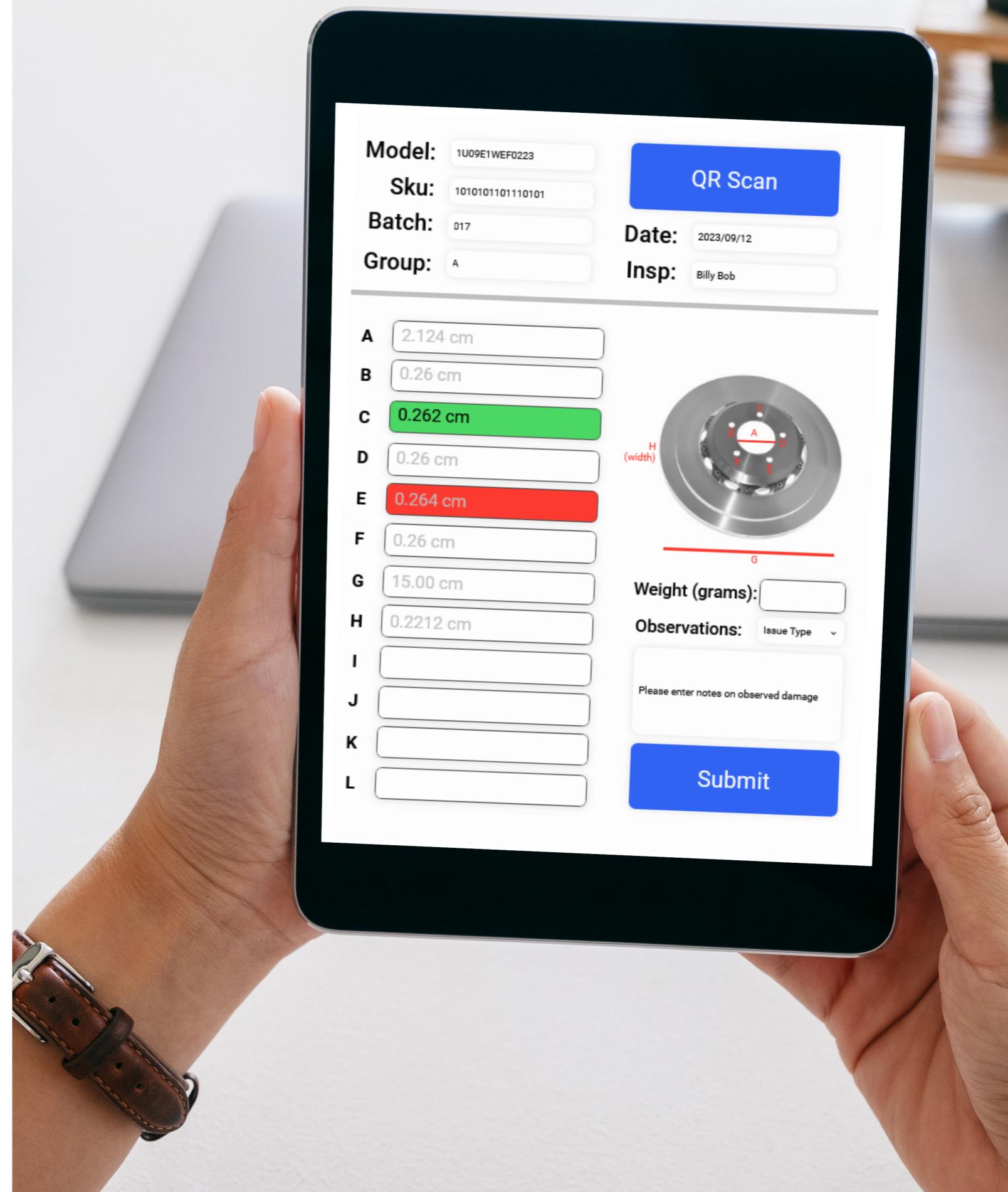
In order to create a compelling data-driven story, learners must first meticulously review the business issues and requirements, emphasizing the individual accountability and responsibility associated with each aspect. This involves a thorough examination of the factors contributing to the identified problem, understanding who within the organization is responsible, and delineating the roles of each stakeholder in addressing the issue.

1.6 Develop detailed plans to create knowledge from data to meet requirements:

A key component of the process involves the development of detailed plans outlining how learners will transform raw data into actionable knowledge. This step includes defining the analytical methodologies, tools, and techniques to be employed in order to meet the specified business requirements.

5.1 Create workflows of analytical processes based on business requirements:

To enhance the functionality of the dashboard, learners will design workflows of analytical processes. These workflows serve as a structured guide, outlining the sequence of analytical steps that led to the generation of specific visualizations, offering transparency in the decision-making process.



# Part 2: BUSINESS IMPACT ANALYSIS

In this phase of the assignment, students will translate the insights gained from their 5-Whys analysis (Part #1) into a visual journey by creating a mockup of a non-functional dashboard. This involves sketching out a metric for each "Why" they answered in Part #1. The goal is to visually guide the client, in this scenario the Operations Manager, through the progression from the baseline metric to meaningful insights. Each visualization should be accompanied by annotations explaining the rationale behind the choice of visuals and the specific purpose or need it fulfills for the target audience.

## Benchmark Metric Visual:

The initial visualization should serve as the benchmark metric identified in Part #1. This could be a bar chart, line graph, or any suitable visual representation of the chosen metric. The annotation should explain why this metric was selected as the starting point and its significance in measuring internal operational efficiency.

## Visualization for the First "Why":

As the audience progresses through the first "Why," the dashboard should introduce a new visual element that represents the insights gained from the root-cause-analysis. This could be a pie chart, heatmap, or any relevant visualization. Annotations should elucidate why this visual was chosen, how it complements the benchmark metric, and the specific understanding it provides.



## Visualization for the Second "Why":

Subsequent visuals should build on the insights uncovered in the second "Why" of the 5-Whys analysis. Students should sketch out a visual that enhances the audience's understanding of the evolving narrative. Annotations should justify the selection of this visual, its role in the progression, and the additional insights it contributes.

## Visualization for the Third "Why":

The third visual in the mockup should continue the journey, presenting insights from the third "Why." The chosen visualization should harmonize with the preceding visuals and provide a comprehensive view of the evolving narrative. Annotations should articulate the purpose of this visual and how it adds value to the overall analysis.

## Visualization for the Fourth "Why":

A further layer of insights should be introduced through the fourth visual, building on the previous three "Whys." Students should select a visualization that enhances the narrative, and annotations should explain the rationale behind this choice and the specific insights it contributes to the overall story.

## Visualization for the Fifth "Why":

The final visual in the mockup should encapsulate the insights derived from the fifth "Why." This visualization should tie together the entire journey, offering a holistic understanding of the root causes and solutions identified. Annotations should highlight the significance of this visual in delivering the intended insights.

## Annotation and Rationale:

For each visual, students are required to provide annotations explaining the reasoning behind their choices. This includes justifications for the selected visuals, how they complement the narrative, and the specific needs or purposes they fulfill for the target audience. The annotations should serve as a guide for understanding the thought process behind each element of the dashboard mockup.

By completing this part of the assignment, students not only demonstrate their proficiency in translating data insights into visual representations but also showcase their ability to communicate the narrative effectively. The emphasis on annotations ensures that students articulate the strategic decisions made in the dashboard design, enhancing their ability to convey the value of their analysis to stakeholders.

\*Note: This page is not an element of this assignment, but instead a guidance document mapping individual components of the assessment to their aligned unit outcomes from the course outline.

# OUTCOME MAPPING

## 1.7 Execute a plan creating relevant measures of frequency and central tendency, along with summary statistics:

Executing the devised plan involves the creation of relevant measures of frequency, central tendency, and summary statistics. This step is pivotal in extracting meaningful patterns and trends from the data, setting the stage for the subsequent visualizations in the data-driven story.

## 2.1 Review data set scope, business issues, and requirements:

Before embarking on the dashboard design process, students must comprehensively review the scope of the dataset, understanding the intricacies of the business issues, and aligning their design with specific requirements. This step ensures that the dashboard is tailored to address the identified challenges.

## 2.6 Create relevant Measures of Frequency, Central Tendency, and Dispersion, along with Summary Statistics:

The creation of relevant measures, including frequency, central tendency, dispersion, and summary statistics, serves as the foundation for the dashboard design. These measures act as key indicators that guide the selection and placement of visualizations to effectively convey insights.

## 3.3 Explain key principles of knowledge delivery to decision-makers:

In this phase, learners will delve into the key principles of knowledge delivery. This involves articulating how the developed dashboard interfaces effectively convey insights to decision-makers, ensuring that the information is presented in a manner conducive to informed decision-making.





ASD

## Part 3: DATA & ANALYTICS

In the final phase of this assignment, students will bring their insights to life by generating fake data and constructing a functional dashboard that demonstrates the value derived for the client organization. This involves utilizing [www.generatedata.com](http://www.generatedata.com) to create a realistic dataset aligned with the insights gained from the 5-Whys analysis. The dashboard should showcase how these insights can contribute to revenue generation, waste reduction, or the enhancement of key performance indicators (KPIs) for the client organization.

### Dataset Generation:

Students are required to use [www.generatedata.com](http://www.generatedata.com) to create a synthetic dataset that mirrors the characteristics of the client organization's operational environment. The dataset should encompass variables relevant to the selected metric and the identified root causes. It is essential that the generated data accurately represents the

scenarios discussed in the 5-Whys analysis to ensure the validity of the insights derived.

### Dashboard Construction:

Using a dashboarding tool of their choice (with PowerBI encouraged), students will construct a functional dashboard that visualizes the insights gained from the 5-Whys analysis applied to the synthetic dataset. Each visualization should be strategically placed to guide the audience through the narrative, showcasing the evolution from the baseline metric to meaningful insights.

### Demonstrating Value:

The primary objective of this phase is for students to demonstrate the practical value of their insights for the client organization. Each visualization on the dashboard should be accompanied by annotations that articulate how the displayed information can contribute to revenue generation, waste reduction, or the enhancement of KPIs. Students should explicitly connect the insights derived from the 5-Whys analysis to tangible benefits for the organization.

### Dataset Submission:

Alongside the functional dashboard, students must submit the synthetic dataset created using [www.generatedata.com](http://www.generatedata.com). This ensures transparency in the data generation process and allows for the replication of their analysis by others. The dataset should be well-documented, indicating the variables, data types, and any specific considerations made during the generation.

\*Note: This page is not an element of this assignment, but instead a guidance document mapping individual components of the assessment to their aligned unit outcomes from the course outline.

## Evaluation Consideration:

**Alignment with 5-Whys Insights:** The dataset and dashboard must align with the insights gained from the 5-Whys analysis conducted in Part #1.

## Functional Dashboard Design:

The dashboard should be logically structured, visually appealing, and effectively guide the audience through the narrative.

## Value Demonstration:

Annotations should clearly articulate how the insights derived from the dashboard can contribute to revenue generation, waste reduction, or the enhancement of KPIs for the client organization.

## Dataset Documentation:

The submitted dataset should be well-documented, providing clarity on variables, data types, and any specific considerations made during generation.

By completing this final phase, students not only showcase their technical proficiency in dashboard creation but also demonstrate the practical application of their insights in a simulated organizational context. The use of synthetic data enhances the realism of their demonstration, ensuring that the insights are not only meaningful but also translatable to real-world scenarios.

# OUTCOME MAPPING

### 1.2 Import data from rDB tables, databases, different sheets, and workbooks:

To lay the foundation for their data-driven story, learners will need to adeptly import relevant data from diverse sources. This includes extracting information from relational database (rDB) tables, databases, different sheets, and workbooks. Efficient data importation ensures a comprehensive dataset for analysis and storytelling.

### 1.3 Inspect data sets to identify quality concerns:

Prior to crafting the narrative, it is imperative for learners to scrutinize the imported datasets. This step involves a meticulous inspection to identify any quality concerns within the data, such as inaccuracies, missing values, or anomalies. Ensuring data integrity is critical to deriving meaningful insights.

### 2.7 Create business graphics based on business requirements:

Informed by the reviewed data set and associated business requirements, students will strategically create business graphics. These visuals are tailored to convey specific insights, providing decision-makers with a clear understanding of the underlying data patterns.

### 4.2 Create relevant Measures of Position:

The incorporation of relevant measures of position further enriches the dashboard's functionality. Learners will strategically integrate these measures to provide a nuanced understanding of data distribution and outliers, contributing to a comprehensive analysis.

### 5.2 Prepare workflow checklists and quality evaluation or completion tests:

Finally, learners will prepare workflow checklists and quality evaluation or completion tests. These documents act as validation tools, ensuring that the analytical processes and visualizations align with predefined criteria, fostering accuracy and reliability in the dashboard development.

This comprehensive approach to each topic ensures that learners not only grasp theoretical concepts but also develop practical skills in translating data into actionable insights through the creation of meaningful dashboards. The integration of tools like PowerBI provides a hands-on experience, preparing them for real-world scenarios in the field of data analytics.

# Evaluation

---

Your evaluation will be held to the following rules and constraints. These rules are firm and are irrefutable.

- Failure to submit this completed deliverable will result in a grade of zero (0) on this deliverable. See Conestoga College policy for additional information.
  - There will be no opportunity provided to make up for this missed deliverable or raise your grade
- It is the student's responsibility to ensure that their work has been submitted through eConestoga, on-time, to the correct course and in the correct folder
  - If you submit your work to the incorrect folder then you may not receive any grade for your work. This will be completely up to the discretion of your Instructor
  - If you, the student, submit your file to the wrong folder or course on eConestoga then you must resubmit to the correct folder before the deliverable deadline has been reached

## GRADING RUBRIC

---

For further grading details you will need to refer to the rubric associated with this deliverable. Rubrics can be found within the Rubrics submodule of the Evaluations module in your eConestoga course. If a rubric is not available you are to inform your faculty member of this oversight. Only deliverables that are ungraded, or that make use of a marking scheme, will not have a specific rubric associated to them. Evaluations that make use of marking schemes will be restricted to tasks or activities that are evaluated in a binary manner; correct or incorrect, with no room for interpretation or subjectivity.

It is the responsibility of each student to review the content within the rubric and deliver their submission adhering to the requirements inside said document. If you are unsure of the content, meaning or rationale of any component of the rubric then you are to consult with your faculty member, in-class, before the submission deadline.

Submission Deadline(s)