

## QSO 510 Final Project Guidelines and Rubric

### Overview

The final project for this course is the creation of a **statistical analysis report**.

Each day, operations management professionals are faced with multiple decisions affecting various aspects of the operation. The ability to use data to drive decisions is an essential skill that is useful in any facet of an operation. The dynamic environment offers daily challenges that require the talents of the operations manager; working in this field is exciting and rewarding.

Throughout the course, you will be engaged in activities that charge you with making decisions regarding inventory management, production capacity, product profitability, equipment effectiveness, and supply chain management. These are just a few of the challenges encountered in the field of operations management.

The final activity in this course will provide you with the opportunity to demonstrate your ability to apply statistical tools and methods to solve a problem in a given scenario that is often encountered by an operations manager. Once you have outlined your analysis strategy and analyzed your data, you will then report your data, strategy, and overall decision that addresses the given problem.

The project is divided into **two milestones**, which will be submitted at various points throughout the course to scaffold learning and ensure quality final submissions. These milestones will be submitted in **Modules Three and Seven**. **The final project is due in Module Nine**.

In this assignment, you will demonstrate your mastery of the following course outcomes:

- Apply data-based strategies in guiding a focused approach for improving operational processes
- Determine the appropriate statistical methods for informing valid data-driven decision making in professional settings
- Select statistical tools for guiding data-driven decision making resulting in sustainable operational processes
- Utilize a structured approach for data-driven decision making for fostering continuous improvement activities
- Propose operational improvement recommendations to internal and external stakeholders based on relevant data

## Prompt

Operations management professionals are often relied upon to make decisions regarding operational processes. Those who utilize a data-driven, structured approach have a clear advantage over those offering decisions based solely on intuition. You will be provided with a scenario often encountered by an operations manager. Your task is to review the “A-Cat Corp.: Forecasting” scenario, the [addendum](#), and the accompanying data in the case scenario and addendum; outline the appropriate analysis strategy; select a suitable statistical tool; and use data analysis to ultimately drive the decision. Once this has been completed, you will be challenged to present your data, data analysis strategy, and overall decision in a concise report, justifying your analysis.

Specifically, the following **critical elements** must be addressed:

- I. **Introduction** to the problem:
  - A. Provide a concise **description of the scenario** that you will be analyzing. The following questions might help you describe the scenario: What is the type of organization identified in the scenario? What is the organization’s history and problem identified in the scenario? Who are the key internal and external stakeholders?
- II. Create an **analysis plan** to guide your analysis and decision making:
  - A. Identify any **quantifiable factors** that may be affecting the performance of operational processes. Provide a concise explanation of how these factors may be affecting the operational processes.
  - B. Develop a **problem statement** that addresses the given problem in the scenario and contains quantifiable measures.
  - C. Propose a **strategy** that addresses the problem of the organization in the given case study and seeks to improve sustainable operational processes. How will adjustments be identified and made?
- III. Identify **statistical tools and methods** to collect data:
  - A. Identify the appropriate **family of statistical tools** that you will use to perform your analysis. What are your statistical assumptions concerning the data that led you to selecting this family of tools? In other words, why did you select this family of tools for statistical analysis?
  - B. Determine the **category of the provided data** in the given case study. Be sure to justify why the data fits into this category type. What is the relationship between the type of data and the tools?
  - C. From the identified family of statistical tools, select the **most appropriate tool(s)** for analyzing the data provided in the given case study.
  - D. **Justify** why you chose this **tool** to analyze the data. Be sure to include how this tool will help predict the use of the data in driving decisions.
  - E. Describe the **quantitative method** that will best inform data-driven decisions. Be sure to include how this method will point out the relationships between the data. How will this method allow for the most reliable data?
- IV. **Analyze data** to determine the appropriate decision for the identified problem:
  - A. Outline the **process** needed to utilize your statistical analysis to reach a decision regarding the given problem.
  - B. Explain how following this process leads to **valid, data-driven decisions**. In other words, why is following your outlined process important?

- C. After analyzing the data sets in the case study, describe the **reliability of the results**. Be sure to include how you know whether the results are reliable.
  - D. Illustrate a **data-driven decision** that addresses the given problem. How does your decision address the given problem? How will it result in operational improvement?
- V. **Recommend operational improvements** to stakeholders:
- A. Summarize your **analysis plan** for both internal and external stakeholders. Be sure to use audience-appropriate jargon when summarizing for both groups of stakeholders.
  - B. Explain how your **decision** addresses the given problem and how you reached that decision. Be sure to use audience-appropriate jargon for both groups of stakeholders.
  - C. Justify why your decision is the **best option** for addressing the given problem to both internal and external stakeholders and how it will result in operational improvement. Be sure to use audience-appropriate jargon when communicating with stakeholders.

## Milestones

### Milestone One: Introduction and Analysis Plan

In **Module Three**, you will submit your **introduction and analysis plan**, which are critical elements I and II. You will submit a 3- to 4-page paper that describes the scenario provided in the case study, identifies quantifiable factors that may affect operational performance, develops a problem statement, and proposes a strategy for resolving a company's problem. This milestone will be graded with the **Module One Rubric**.

### Milestone Two: Statistical Tools and Data Analysis

In **Module Seven**, you will submit your **selection of statistical tools and data analysis**, which are critical elements III and IV. You will submit a 3- to 4-page paper and a spreadsheet that provides justification of the appropriate statistical tools that are needed to analyze the company's data, a hypothesis, the results of your analysis, any inferences from your hypothesis test, and a forecasting model that addresses the company's problem. This milestone will be graded with the **Module Two Rubric**.

### Final Project Submission: Statistical Analysis Report

In **Module Nine**, you will submit your **statistical analysis report and recommendations to management**. It should be a complete, polished artifact containing **all** of the critical elements of the final product. It should reflect the incorporation of feedback gained throughout the course. This submission will be graded with the **Final Project Rubric**.

## Final Project Rubric

**Guidelines for Submission:** Your statistical analysis report must be 10–12 pages in length (plus a cover page and references) and must be written in APA format. Use double spacing, 12-point Times New Roman font, and one-inch margins. Include at least six references cited in APA format.

| Critical Elements                                                 | Exemplary                                                                                                                                                           | Proficient                                                                                                                                 | Needs Improvement                                                                                                                                                                        | Not Evident                                                                                                | Value |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------|
| <b>Introduction: Description of the Scenario</b>                  | Meets “Proficient” criteria and description demonstrates insightful understanding of the situation described in the scenario (100%)                                 | Concisely and accurately describes the scenario (90%)                                                                                      | Describes the scenario but description is not concise or contains inaccuracies (70%)                                                                                                     | Does not describe the scenario (0%)                                                                        | 4.05  |
| <b>Analysis Plan: Quantifiable Factors</b>                        | Meets “Proficient” criteria and demonstrates insight into operational processes and factors that may affect performance (100%)                                      | Identifies quantifiable factors that may be affecting the performance of operational processes and supports claims with explanations (90%) | Identifies quantifiable factors that may be affecting the performance of operational processes but identification is not supported with explanations or is cursory (70%)                 | Does not identify quantifiable factors that may be affecting the performance of operational processes (0%) | 6.13  |
| <b>Analysis Plan: Problem Statement</b>                           | Meets “Proficient” criteria and statement demonstrates insight into the relationship between the quantifiable measures and problem addressed in the scenario (100%) | Develops a problem statement appropriate to the scenario that addresses the given problem and contains quantifiable measures (90%)         | Develops a problem statement appropriate to the scenario that addresses the given problem but statement does not contain quantifiable measures or is cursory or inappropriate (70%)      | Does not develop a problem statement appropriate to the scenario that addresses the given problem (0%)     | 6.13  |
| <b>Analysis Plan: Strategy</b>                                    | Meets “Proficient” criteria and strategy demonstrates insight into how the strategy impacts additional operations (100%)                                            | Proposes a strategy that addresses the problem of the company and seeks to improve sustainable operational processes (90%)                 | Proposes a strategy but strategy either does not address the problem or does not seek to improve operational processes (70%)                                                             | Does not propose a strategy that addresses the problem of the company (0%)                                 | 6.13  |
| <b>Statistical Tools and Methods: Family of Statistical Tools</b> | Meets “Proficient” criteria and identification demonstrates nuanced understanding of statistical tools (100%)                                                       | Identifies the appropriate family of statistical tools used to perform statistical analysis, including statistical assumptions (90%)       | Identifies a statistical family of tools used to perform statistical analysis but either the tools are not the most appropriate to use or discussion lacks statistical assumptions (70%) | Does not determine a family of statistical tools (0%)                                                      | 6.13  |
| <b>Statistical Tools and Methods: Category of Provided Data</b>   | Meets “Proficient” criteria and demonstrates insight into the relationship of the category of data and statistical tools (100%)                                     | Determines the category of the provided data, including justification to support claims (90%)                                              | Determines the category of the provided data but category is either inaccurate or discussion lacks justification to support claims (70%)                                                 | Does not determine a category for the data (0%)                                                            | 6.13  |

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| <b>Statistical Tools and Methods: Most Appropriate Tool</b> |                                                                                                                                                                      | Selects the most appropriate statistical tool used to analyze the data (100%)                                                                           | Selects a statistical tool but selection is not the most appropriate given the data (70%)                                                                                                             | Does not select a tool to be used for analysis (0%)                                             | 6.13 |
| <b>Statistical Tools and Methods: Justify Tool</b>          | Meets “Proficient” criteria and justification demonstrates insight into the relationship between statistical tools and the type of data (100%)                       | Justifies why the tool chosen is the most appropriate for analysis of this data (90%)                                                                   | Justifies why the tool chosen is the most appropriate for the analysis but justification is either illogical or cursory (70%)                                                                         | Does not justify why a particular tool was chosen (0%)                                          | 6.13 |
| <b>Statistical Tools and Methods: Quantitative Method</b>   | Meets “Proficient” criteria and description demonstrates insight into the relationship between the quantitative method and data relationships (100%)                 | Describes the quantitative method that will best inform the decision, including how this method will point out the relationships between the data (90%) | Describes the quantitative method but either the method selected will not result in the most reliable data or discussion lacks how the method will point out the relationships between the data (70%) | Does not describe the quantitative method (0%)                                                  | 6.13 |
| <b>Analyze Data: Process</b>                                | Meets “Proficient” criteria and offers great detail for each identified step (100%)                                                                                  | Outlines the process needed to utilize the statistical analysis (90%)                                                                                   | Outlines the process needed to utilize the statistical analysis but steps are either inappropriate or overgeneralized (70%)                                                                           | Does not outline the process needed to utilize the statistical analysis (0%)                    | 6.13 |
| <b>Analyze Data: Valid, Data-Driven Decisions</b>           | Meets “Proficient” criteria and explanation demonstrates a nuanced understanding of how following a process will lead to a valid decision (100%)                     | Explains how following the outlined process leads to a valid data-driven decision (90%)                                                                 | Explains how following the outlined process leads to a valid decision but explanation is inappropriate or cursory (70%)                                                                               | Does not offer an explanation why following the outlined process leads to a valid decision (0%) | 6.13 |
| <b>Analyze Data: Reliability of Results</b>                 | Meets “Proficient” criteria and description demonstrates keen insight into identifying reliable data (100%)                                                          | Describes the reliability of the results based on data sets, including a justification to support claims (90%)                                          | Describes the reliability of the results but description is either cursory or lacks justification to support claims (70%)                                                                             | Does not describe the reliability of the results (0%)                                           | 6.13 |
| <b>Analyze Data: Data-Driven Decision</b>                   | Meets “Proficient” criteria and illustration demonstrates a deep understanding of the interplay between a problem, the operation, and operational improvement (100%) | Illustrates a data-driven decision that addresses the problem and operational improvement (90%)                                                         | Illustrates a data-driven decision that addresses the problem but illustration is either inappropriate or overgeneralized (70%)                                                                       | Does not illustrate a decision that addresses the problem (0%)                                  | 6.13 |
| <b>Recommend Operational Improvements: Analysis Plan</b>    | Meets “Proficient” criteria and summary demonstrates keen insight into appropriately communicating an analysis plan to stakeholders (100%)                           | Summarizes analysis plan for internal and external stakeholders using audience-appropriate jargon (90%)                                                 | Summarizes analysis plan for internal and external stakeholders but summary either inappropriately uses jargon or is cursory (70%)                                                                    | Does not summarize the analysis plan for stakeholders (0%)                                      | 6.13 |

# Southern New Hampshire University

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|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Recommend Operational Improvements: Decision</b>    | Meets “Proficient” criteria and explanation demonstrates keen insight into appropriately communicating a decision and how it was reached to stakeholders (100%)                      | Explains the decision for the problem and how that decision was reached, using audience-appropriate jargon (90%)                                                    | Explains the decision for the problem but explanation either lacks how the decision was reached or uses inappropriate jargon (70%)                                   | Does not explain decision for the problem (0%)                                                                                           | 6.13        |
| <b>Recommend Operational Improvements: Best Option</b> | Meets “Proficient” criteria and justification demonstrates keen insight as to why the decision is valid and why it is the optimal solution, using audience-appropriate jargon (100%) | Justifies why the decision is the best option for addressing the problem and how it will result in operational improvement, using audience-appropriate jargon (90%) | Justifies why the decision is the best option but justification lacks how it will result in operational improvement, is cursory, or uses inappropriate jargon (70%)  | Does not justify to stakeholders that the decision is the best option (0%)                                                               | 6.13        |
| <b>Articulation of Response</b>                        | Submission is free of errors related to citations, grammar, spelling, syntax, and organization and is presented in a professional and easy to read format (100%)                     | Submission has no major errors related to citations, grammar, spelling, syntax, or organization (90%)                                                               | Submission has major errors related to citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas (70%) | Submission has critical errors related to citations, grammar, spelling, syntax, or organization that prevent understanding of ideas (0%) | 4           |
| <b>Earned Total</b>                                    |                                                                                                                                                                                      |                                                                                                                                                                     |                                                                                                                                                                      |                                                                                                                                          | <b>100%</b> |