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Title: Optimization of Cost of Production and Supply Chain of Essential Items During a Pandemic

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Department: Industrial and Manufacturing Engineering

Abstract: The purpose of this paper is to help implement some concepts studied during the Master of Science in Engineering Management program in context of a specific company and its supply chain. The idea to provide solutions to minimize costs, improve supply chain and implement efficient forecasting techniques. It will serve as a termination masters project and will go in conjunction of the final project presentation to provide insights on the below topics:

• Understanding of the disruption of the production and supply chain due to an unforeseen extreme situation.
• Analysis of the various costs involved in servicing the demand and how it impacts profitability
• Building a Cost Minimization Matrix that will suggest optimal production plans.
• When to Produce and How much to Produce.
• Showcasing cost saving opportunities by adapting policies of continuous evaluation.
• Providing Suggestions and Recommendations on Improving KPI’s.

For this Project we will be looking into the analysis of Niagara Bottling’s most common SKU’s that have demand all year round. They also have seasonality and trends attached with their demand patterns. We will look at the Direct Cost of Manufacturing and Shipping of these SKU’s. The major factor of this project will be to analyze these costs and demand patterns changes in an extreme unforeseen situation of the pandemic of 2020 that disrupted supply chains all around the world and has a continuing effect on the overall business of manufacturing. This will help us derive a model that will suggest production plans by continuously monitoring forecast and unusual demand fluctuations so that we can better prepare to meet service levels and increase profitability.

Keywords: managerial statistics, managerial accounting, supply chain management, production systems

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