

**‘A MULTIFACETED ANALYSIS OF SUPPLY CHAIN RISK: MODELLING
VOLATILITY AND INVENTORY COMPLEXITY IN GR BROTHERS’.**



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**Topic of Research: ‘A MULTIFACETED ANALYSIS OF SUPPLY CHAIN RISK:
MODELLING VOLATILITY AND INVENTORY COMPLEXITY IN GR BROTHERS’.**

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TO WHOM IT MAY CONCERN

This is to confirm that Mr. Mohammed Moosa Imtiaz, Muzamil Ahmed, Muhammad Asad Ullah Khan, student of Bahria University, E-8 campus, They have been granted permission to visit GR Brothers warehouse for the purpose of conduction research for their Final Year Project titled "From warehouse to customer" solving supply chain issues at warehouse.

During their visit, the students are authorized to observe warehouse operations, interact with staff, collect relevant data related to inventory management, procurement, forecasting, logistics, and other operational processes. They are expected to maintain Professionalism and confidentiality while handling sensitive information and will ensure that their activities do not disrupt regular warehouse operations.

We appreciate the initiative taken by the students and are willing to provide all necessary assistance to support their academic research.

Sincerely,


For G.R. Brothers,



GR BROTHERS

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In addition, we would like to extend our sincere thanks to Ma'am Javeria Aftab, our Supervisor, for her continued support, valuable feedback, and dedicated supervision during the completion of the project. It was her expertise and encouragement that had a significant impact on developing our research.

We would also like to express our gratitude to Mr. Chaudhry Amir Javed, Operations Manager at GR Brothers, for his cooperation, insights, and willingness to provide assistance to us during the study. In addition, we are appreciative of the entire team at GR Brothers for their openness and cooperation which facilitated data collection and analysis.

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ABSTRACT

Supply Chain effectiveness and competitiveness are primarily determined by Inventory and Warehouse management, especially in the lubricant distribution segment; where volatility exists in demand, and numerous products exist within the same category. This project will address the operational and inventory management challenges that G.R. Brothers, one of the largest lubricant distributors in Pakistan with national coverage, has encountered. Although G.R. Brothers has a large market share and reputable international associations; they continue to use traditional manual inventory tracking methods, make decisions based on historical experiences and limit their digital integration of inventory controls. These approaches cause problems like excessive inventory, loss of product due to theft, lack of accuracy in forecasting demand for products and excess unused warehouse space. The research gap identified in this study is that there are no data driven systems or standardized operational frameworks used in their supply chain operations; therefore they cannot be responsive to customer needs or meet customer expectations. Secondary data collection, Interviews with Staff, and On-Site Observations using a Qualitative Research Methodology were used to identify key inefficiencies in Stock Management, Demand Planning and Warehouse Layout. Based upon the results from these studies, the project presents solutions to improve inventory management at G.R. Brothers such as the implementation of a WMS (Warehouse Management System, use of Data Analytics for Demand Forecasting, Optimization of Warehouse Space and Training of Workforce. Solutions recommended by the project intend to increase Supply Chain Visibility, reduce Operational Losses, and Improve Customer Service Performance.

EXECUTIVE SUMMARY

This report presents a comprehensive evaluation of the supply chain operations of G.R. Brothers, one of Pakistan's largest lubricant distributors. Despite having decades of market experience, a strong distribution network, and established partnerships with international brands, the company continues to rely heavily on manual and semidigital processes. These outdated practices create significant inefficiencies in inventory control, customer service, demand forecasting, and technological integration.

The study was conducted using on-site observations at warehouses, storage tanks, and depots, along with employee interviews and analysis of internal operational documents. The findings revealed several key problems: large discrepancies in inventory due to manual tank dipping, delayed and inaccurate deliveries caused by weak communication systems, high demand variance resulting from basic forecasting methods, and excessive time wasted on repetitive data entry due to fragmented technology.

To address these issues, the report proposes a set of practical and cost-effective solutions. These include installing automatic tank gauges, adopting enterprise-wide inventory management software, implementing centralized communication and GPS enabled delivery tracking, and using advanced demand forecasting tools that consider seasonal trends and real-time data. Additionally, the adoption of an integrated ERP system is recommended to eliminate duplication of work and improve real-time visibility across operations.

The implementation of these solutions is expected to significantly reduce operational losses, prevent stockouts and emergency purchases, improve customer satisfaction, increase forecasting accuracy, and streamline warehouse and dispatch activities. Overall, the study concludes that digital transformation, automation, and datadriven decision-making are essential for G.R. Brothers to enhance supply chain performance, remain competitive in a rapidly evolving market, and support future plans such as setting up a local manufacturing facility.