

**OPTIMIZING RETAIL SUPPLY CHAINS: A
COMPREHENSIVE ANALYSIS OF SALES
FORECASTING AND FILL RATE CORRELATION FOR
ENHANCED INVENTORY MANAGEMENT**

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Thesis/Dissertation submitted in partial fulfillment of the requirements for the
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ABSTRACT

Purpose - In the context of Sri Lanka's retail industry, this study aims to provide accurate and reliable constructions of sales forecasting, fill rate, inventory, and a measurement tool. It also looks at the examination of the link between sales forecasting and fill rate for improved inventory management.

Methodology – Five years' worth of data, gathered directly from the business intelligence platform of Sri Lankan retail establishments, were needed for a thorough analysis. The data ranges from 2019 to 2023. Retail locations that were all supplied by the same distribution center provided the data that was gathered. Every month, information was gathered from every retail location. Among the product subcategories, there are 1923 SKUs; the sanitary goods subcategory has the fewest products (71 SKUs) and the hair care subcategory has the most products (411 SKUs). The number of products sold, the fill rate, and the monthly sales performance for all personal care products carried out by the retail outlet make up the outlet level data that is gathered.

Findings - The data implies that bigger inventories are linked to better selling outcomes because there is a significant positive correlation between inventory and sales success. However, the correlation between inventory and product variety, as well as sales performance and product variety, is weak and not statistically significant.

Limitations - The focus on a single product category using nine subcategories'

Keywords – Fill Rate, Product variety, Sales forecasting, Inventory, Retail operations

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TABLE OF CONTENTS

Declaration, copyright statement and the statement of the supervisor	ii
Abstract	iii
Acknowledgement	iv
Table of Contents	v
List of figures	viii
List of tables	xi
List of Appendices	xii
1 Introduction.....	1
1.1 Background of the study	1
1.2 Significance of the Research.....	3
1.3 Research Outline	3
2 Literature Review	4
2.1 Retail Supply Chain	4
2.2 Product Variety	5
2.3 Fill Rate.....	6
2.4 Inventory Management	7
2.5 Sales forecasting methods.....	7
2.6 Product Variety, Fill Rate, Inventory, and Sales	8
2.7 Product Variety, Demand Variability and Sales forecasting	10
2.8 Machine learning and deep learning in retail forecasting.....	11
2.9 Research Gap	12
2.9.1 Optimizing retail supply chains	12
2.9.2 Sales Forecasting	14
2.9.3 Fill rate in inventory management	15
2.10 Research Objectives	16

2.11	Research Questions	17
3	Methodology	18
3.1	The population and sample selection	18
3.2	Method of data collection	20
3.3	Methods of data analysis.....	20
4	Analysis	24
4.1	Sales forecasting techniques (ARIMA, ETS, GBR, XGBoost , SVR and LSTM 24	
4.2	Correlate forecasted sales values and fill rate.....	45
4.2.1	Test of normality – forecasted sales and fill rate.	45
4.2.2	Correlation analysis	55
4.3	Comprehensive understanding of the impact of product variety on inventory management and sales performance.	66
4.3.1	Test of normality – product variety, inventory management and sales performance	66
4.3.2	Correlation analysis	67
5	Discussion.....	71
5.1	Product variety and inventory	71
5.2	Product variety and sales performance	71
5.3	Inventory and sales performance.	72
6	Conclusion and Recommendations.....	73
6.1	Conclusion	73
6.2	Recommendations.....	75
6.3	Future research.....	75
	References.....	76
	Appendix.....	80

Appendix - A	Scripts	81
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LIST OF FIGURES

Figure 2.9.1 : Research Gap	16
Figure 3.3.1: Comparison of potential forecasting methods 1	22
Figure 4.2.1: Sales - Product A	24
Figure 4.2.2: Sales - Product B	25
Figure 4.2.3: Sales - Product C	25
Figure 4.2.4: Sales - Product D	25
Figure 4.2.5: Sales - Product E	26
Figure 4.2.6: Sales - Product F	26
Figure 4.2.7: Sales - Product G	26
Figure 4.2.8: Sales - Product H	27
Figure 4.2.9: Sales - Product I	27
Figure 4.2.10: Sales - Product J	27
Figure 4.2.11: Sales - Product K	28
Figure 4.2.12: Sales - Product L	28
Figure 4.2.13: Sales - Product M	28
Figure 4.2.14 : Forecast Methodologies Flowchart	32
Figure 4.2.15: Product A	38
Figure 4.2.16: Product B	38
Figure 4.2.17: Product C	39
Figure 4.2.18: Product D	40
Figure 4.2.19: Product E	40
Figure 4.2.20: Product F	41
Figure 4.2.21: Product G	41
Figure 4.2.22: Product H	42
Figure 4.2.23: Product I	43
Figure 4.2.24: Product J	43
Figure 4.2.25: Product K	44
Figure 4.2.26: Product L	44
Figure 4.2.27: Product M	45
Figure 4.3.1: Product A QQ Plots	47

Figure 4.3.2: Product A Histograms	47
Figure 4.3.3: Product B Histograms	47
Figure 4.3.4: Product B QQ Plots	48
Figure 4.3.5: Product C Histograms	48
Figure 4.3.6: Product C QQ Plots	48
Figure 4.3.7: Product D Histograms	49
Figure 4.3.8: Product D QQ Plots	49
Figure 4.3.9: Product E Histograms.....	49
Figure 4.3.10: Product E QQ Plots	50
Figure 4.3.11: Product F Histograms	50
Figure 4.3.12: Product F QQ Plots.....	50
Figure 4.3.13: Product G Histograms	51
Figure 4.3.14: Product G QQ Plots	51
Figure 4.3.15: Product H Histograms	51
Figure 4.3.16: Product H QQ Plots	52
Figure 4.3.17: Product I Histograms.....	52
Figure 4.3.18: Product I QQ Plots	52
Figure 4.3.19: Product J Histograms.....	53
Figure 4.3.20: Product J QQ Plots	53
Figure 4.3.21: Product K Histograms	53
Figure 4.3.22: Product K QQ Plots	54
Figure 4.3.23: Product L Histograms.....	54
Figure 4.3.24: Product L QQ Plots	54
Figure 4.3.25: Product M Histograms.....	55
Figure 4.3.26: Product M QQ Plots	55
Figure 4.3.27: Correlation Analysis - Product B	56
Figure 4.3.28: Correlation Analysis - Product A	56
Figure 4.3.29: Correlation Analysis - Product D	58
Figure 4.3.30: Correlation Analysis - Product C	57
Figure 4.3.31: Correlation Analysis - Product E.....	59
Figure 4.3.32: Correlation Analysis - Product F	60
Figure 4.3.33: Correlation Analysis - Product G	60

Figure 4.3.34: Correlation Analysis - Product H	61
Figure 4.3.35: Correlation Analysis - Product I.....	62
Figure 4.3.36: Correlation Analysis - Product J.....	62
Figure 4.3.37: Correlation Analysis - Product K	63
Figure 4.3.38: Correlation Analysis - Product L.....	64
Figure 4.3.39: Correlation Analysis - Product M.....	64
Figure 4.4.1: PP Plot	67
Figure 4.4.2: Product Variety vs Inventory Correlation Analysis	68
Figure 4.4.3: Product Variety vs Sales Performance Correlation Analysis	69
Figure 4.4.4: Inventory vs Sales Performance Correlation Analysis	70

LIST OF TABLES

Table 4.1.1: Performance statistics for forecasts	29
Table 4.1.2: Performance statistics for forecasts	32
Table 4.1.3: RMSE error values.....	34
Table 4.1.4: Per month RMSE error	36
Table 4.1.5:Error calculation	37
Table 4.2.1: Test of Normality – Forecasted Sales and Fill Rate	46
Table 4.2.2: Correlation analysis	65
Table 4.3.1: Test of Normality – Product Variety, Inventory Management and Sales Performance	66
Table 4.3.2: Correlation Analysis	67

LIST OF APPENDICES

Appendix - A	Scripts	81
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