



UNDERGRADUATE THESIS

**OPTIMIZATION SYSTEM FOR PRODUCT
DISTRIBUTION PRIORITIZATION USING SAW
METHOD AND HOLT-WINTERS EXPONENTIAL
SMOOTHING FORECASTING (CASE STUDY :
CV. CITRA NALAR TEKNOLOGI)**

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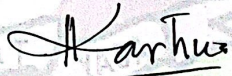
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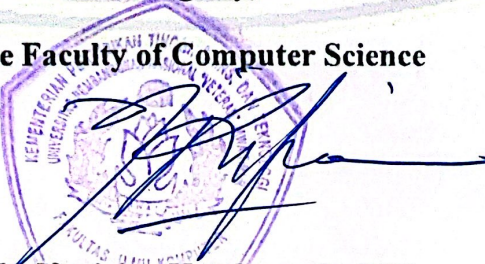

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ABSTRACT

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ABSTRACT

Distribution of goods is a crucial process in the supply chain that requires fast, accurate, and data-driven decision making. CV. Citra Nalar Teknologi still manually prioritizes distribution without considering demand predictions, potentially leading to inefficiencies. This study aims to design and build a web-based distribution priority optimization system by integrating the Holt-Winters Exponential Smoothing (HWES) method for demand forecasting and the Simple Additive Weighting (SAW) method for distribution priority determination. The HWES method is used to predict demand based on historical data that has seasonal patterns and trends, while the SAW method is used to rank distribution priorities based on forecasting criteria, distance, customer priority, and stock availability. The system was developed using the Laravel framework and MySQL database. The results show that the HWES method is able to produce predictions with a very good level of accuracy, indicated by an average Mean Absolute Percentage Error (MAPE) of less than 10%. The SAW method successfully provides objective and structured distribution priority recommendations. Furthermore, the usability test using the System Usability Scale (SUS) yielded a score of 78, which is considered good/acceptable. Therefore, the developed system is capable of improving the effectiveness and efficiency of data-driven distribution decision-making.

Keywords : Decision Support System, Holt-Winters Exponential Smoothing, Simple Additive Weighting, Forecasting, Goods Distribution.

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The author realizes that this thesis is not without limitations and shortcomings. Therefore, constructive criticism and suggestions are highly appreciated. It is hoped that this thesis will be beneficial to readers in general and to the author in particular.

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TABLE OF CONTENTS

APPROVAL SHEET	v
APPROVAL SHEET	vii
STATEMENT OF ORIGINALITY	ix
ACKNOWLEDGEMENTS	xiii
TABLE OF CONTENTS	xv
LIST OF FIGURES	xix
LIST OF TABLES	xxv
LIST OF ATTACHMENTS	xxix
CHAPTER I INTRODUCTION	1
1.1. Background of the Study	1
1.2. Problem Formulation	3
1.3. Scope and Limitations	4
1.4. Research Objectives	4
1.5. Significance of the Study	4
CHAPTER II LITERATURE REVIEW	7
2.1. Previous Research.....	7
2.2. Theoretical Foundation.....	11
2.2.1. PHP (Hypertext Preprocessor).....	12
2.2.2. Framework Laravel	12
2.2.3. MySQL (My Structured Query Language)	12
2.2.4. Distribution and Optimization	12
2.2.5. Decision Support System (DSS)	13
2.2.6. Multi-Criteria Decision-Making (MCDM) Concept	13
2.2.7. Forecasting.....	13
2.2.8. Holt-Winters Exponential Smoothing (HWES) Method.....	14
2.2.9. Seasonality in Time Series Data.....	16
2.2.10. Smoothing Parameters in the Holt-Winters Method	17
2.2.11. Forecast Accuracy Measurement (Error)	18

2.2.12.	Simple Additive Weighting (SAW).....	19
2.2.13.	Activity Diagram	20
2.2.14.	Use Case Diagram	21
2.2.15.	Haversine	22
2.2.16.	Aggregation of Criterion Values in Multi-Product Orders	23
2.2.17.	System Usability Scale (SUS)	24
CHAPTER III RESEARCH METHODOLOGY		25
3.1.	Research Method	25
3.2.1.	Problem Identification.....	26
3.2.2.	Requirements Analysis	26
3.2.3.	System Design	26
3.2.4.	System Implementation.....	26
3.2.5.	System Testing.....	26
3.4.	Advanced System Design	27
3.4.1.	Determination of Distribution Priority Criteria Based on Interviews 27	
3.4.2.	System Flow	29
3.4.3.	Use Case Diagram	30
3.4.4.	Activity Diagram	45
3.4.5.	Class Diagram.....	53
3.4.6.	Sequence Diagram	55
3.4.7.	Design Database	62
3.4.8.	Design Wireframe.....	64
3.4.9.	Calculation of Holt-Winters Exponential Smoothing, SAW, and Haversine	72
3.4.10.	Testing Plan	98
CHAPTER IV RESULTS AND DISCUSSION		103
4.1.	System Implementation.....	103
4.1.1.	Admin Website Page Interface	103
4.1.2.	Integrasi <i>OpenStreetMap</i> Dengan Leaflet.js.....	112
4.2.	System Workflow	113
4.2.1.	Workflow of the Distribution Priority Decision Support System	114

4.2.2.	Utilization of Holt-Winters Exponential Smoothing for Forecasting	118
4.2.3.	Ranking of Goods Distribution Priority using SAW	119
4.3.	System Testing Results	121
4.3.1.	Goods Demand Forecasting Accuracy Test	121
4.3.2.	System Optimization Test for Distribution Priority Ranking.....	148
4.4.	Test Scenario Results and Evaluation	150
4.4.1.	Forecasting Results of Goods Demand	151
4.4.2.	Results of Goods Distribution Priority Determination	171
4.4.3.	System Test Results.....	176
CHAPTER V CONCLUSION AND RECOMMENDATION.....		183
5.1.	Conclusion	183
5.2.	Recommendation	183
REFERENCES		185
ATTACHMENT		189

LIST OF FIGURES

Figure 3. 1 Flow Diagram	25
Figure 3. 2 System Flow.....	29
Figure 3. 3 Use Case Diagram.....	31
Figure 3. 4 Activity Diagram Login.....	45
Figure 3. 5 Activity Diagram Manage Customer	46
Figure 3. 6 Activity Diagram Manage Item	47
Figure 3. 7 Activity Diagram Manage Orders.....	48
Figure 3. 8 Activity Diagram Manage Sales History	49
Figure 3. 9 Activity Diagram Forecast	50
Figure 3. 10 Activity Diagram Export Forecast CSV	50
Figure 3. 11 Activity Diagram Distribution Map.....	51
Figure 3. 12 Activity Diagram Priority (DSS)	52
Figure 3. 13 Class Diagram	53
Figure 3. 14 Sequence Diagram Login.....	55
Figure 3. 15 Sequence Diagram Customer.....	56
Figure 3. 16 Sequence Diagram Item	57
Figure 3. 17 Sequence Diagram Order	58
Figure 3. 18 Sequence Diagram Sales History (Order History Synchronization) .	59
Figure 3. 19 Sequence Diagram Forecasting (Holt-Winters Exponential Smoothing)	59
Figure 3. 20 Sequence Diagram Export Forecast CSV	60
Figure 3. 21 Sequence Diagram Map/Distribution Spread Map	61
Figure 3. 22 Sequence Diagram Calculate Priority (SAW)	61
Figure 3. 23 Database ERD.....	62
Figure 3. 24 Wireframe Login.....	64
Figure 3. 25 Wireframe Dashboard	65
Figure 3. 26 Wireframe Item Data.....	66
Figure 3. 27 Wireframe Add Item Data.....	66
Figure 3. 28 Wireframe Customer.....	67
Figure 3. 29 Wireframe Add Customer	68

Figure 3. 30 Wireframe Orders.....	68
Figure 3. 31 Wireframe Create New Order.....	69
Figure 3. 32 Wireframe Sales History	70
Figure 3. 33 Wireframe Forecast	70
Figure 3. 34 Wireframe DSS (Priority).....	71
Figure 3. 35 Wireframe Distribution Map.....	72
Figure 4. 1 Login Page.....	103
Figure 4. 2 Dashboard Page	104
Figure 4. 3 Item Data Page	104
Figure 4. 4 Add Item Form Page	105
Figure 4. 5 Customer Data Page	106
Figure 4. 6 Add Customer Form Page	107
Figure 4. 7 Order Data Page	107
Figure 4. 8 Add Order Form Page	108
Figure 4. 9 Sales History Page.....	109
Figure 4. 10 Forecast Page.....	109
Figure 4. 11 Distribution Priority Ranking Page (DSS)	110
Figure 4. 12 Distribution Map Page.....	111
Figure 4. 13 OpenStreetMap Integration in DSS Website.....	112
Figure 4. 14 Product Data Input Page.....	115
Figure 4. 15 Customer Data Input Page.....	115
Figure 4. 16 Order Data Input Page.....	116
Figure 4. 17 Forecasting Function Page	117
Figure 4. 18 SAW Ranking Function	118
Figure 4. 19 Initialization of Holt-Winters Exponential Smoothing Parameters	119
Figure 4. 20 MAPE Accuracy.....	119
Figure 4. 21 Ranking	120
Figure 4. 22 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-8182 with Parameter Testing Scenario 1.....	124
Figure 4. 23 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-8182 with Parameter Testing Scenario 2.....	125

Figure 4. 24 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-8182 with Parameter Testing Scenario 3	126
Figure 4. 25 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-6379 with Parameter Testing Scenario 1	127
Figure 4. 26 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-6379 with Parameter Testing Scenario 2	128
Figure 4. 27 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-6379 with Parameter Testing Scenario 3	129
Figure 4. 28 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-5102 with Parameter Testing Scenario 1	130
Figure 4. 29 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-5102 with Parameter Testing Scenario 2	131
Figure 4. 30 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-5102 with Parameter Testing Scenario 3	132
Figure 4. 31 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-4112 with Parameter Testing Scenario 1	133
Figure 4. 32 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-4112 with Parameter Testing Scenario 2	134
Figure 4. 33 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-4112 with Parameter Testing Scenario 3	135
Figure 4. 34 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-8580 with Parameter Testing Scenario 1	136
Figure 4. 35 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-8580 with Parameter Testing Scenario 2	137
Figure 4. 36 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-8580 with Parameter Testing Scenario 3	138
Figure 4. 37 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-2102 with Parameter Testing Scenario 1	139
Figure 4. 38 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-2102 with Parameter Testing Scenario 2	140
Figure 4. 39 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-2102 with Parameter Testing Scenario 3	141

Figure 4. 40 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-7693 with Parameter Testing Scenario 1.....	142
Figure 4. 41 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-7693 with Parameter Testing Scenario 2.....	143
Figure 4. 42 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-7693 with Parameter Testing Scenario 3.....	144
Figure 4. 43 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-1553 with Parameter Testing Scenario 1.....	145
Figure 4. 44 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-1553 with Parameter Testing Scenario 2.....	146
Figure 4. 45 Forecasting Test of Holt-Winters Exponential Smoothing for BRG- BAR-1553 with Parameter Testing Scenario 3.....	147
Figure 4. 46 SAW Ranking Test.....	150
Figure 4. 47 Best Smoothing Parameter Scenario Test Results for BRG-BAR-8182	151
Figure 4. 48 Detailed Forecasting Results BRG-BAR-8182.....	152
Figure 4. 49 BRG-BAR-8182 Forecasting Accuracy Results	153
Figure 4. 50 Best Smoothing Parameter Scenario Test Results for BRG-BAR-6379	154
Figure 4. 51 Detailed Forecasting Results BRG-BAR-6379.....	154
Figure 4. 52 BRG-BAR-6379 Forecasting Accuracy Results	156
Figure 4. 53 Best Smoothing Parameter Scenario Test Results for BRG-BAR-5102	156
Figure 4. 54 Detailed Forecasting Results BRG-BAR-5102.....	157
Figure 4. 55 BRG-BAR-5102 Forecasting Accuracy Results	158
Figure 4. 56 Best Smoothing Parameter Scenario Test Results for BRG-BAR-4112	159
Gambar 4. 57 Hasil <i>Detail Forecasting</i> BRG-BAR-4112.....	159
Figure 4. 58 BRG-BAR-4112 Forecasting Accuracy Results	161
Figure 4. 59 Best Smoothing Parameter Scenario Test Results for BRG-BAR-8580	161
Figure 4. 60 Detailed Forecasting Results BRG-BAR-8580.....	162

Figure 4. 61 BRG-BAR-8580 Forecasting Accuracy Results..... 163

Figure 4. 62 Best Smoothing Parameter Scenario Test Results for BRG-BAR-2102
..... 164

Figure 4. 63 Detailed Forecasting Results BRG-BAR-2102..... 164

Figure 4. 64 BRG-BAR-2102 Forecasting Accuracy Results..... 166

Figure 4. 65 Best Smoothing Parameter Scenario Test Results for BRG-BAR-7693
..... 166

Figure 4. 66 Detailed Forecasting Results BRG-BAR-7693..... 167

Figure 4. 67 BRG-BAR-7693 Forecasting Accuracy Results..... 168

Figure 4. 68 Best Smoothing Parameter Scenario Test Results for BRG-BAR-1553
..... 169

Figure 4. 69 Detailed Forecasting Results BRG-BAR-1553..... 169

Figure 4. 70 BRG-BAR-1553 Forecasting Accuracy Results..... 171

Figure 4. 71 Distribution Priority Ranking Results for Goods 4-5 January 2026173

Figure 4. 72 Distribution Priority Ranking Results for Goods 6-7 January 2026175

LIST OF TABLES

Tabel 2. 1 Activity Diagram Symbols	21
Tabel 2. 2 Use Case Diagram Symbols	22
Table 3. 1 Sistem Interview for System Requirements Analysis	28
Table 3. 2 Criteria Based on Interview Results	28
Table 3. 3 Use Case Login Admin	32
Table 3. 4 Customer Management Use Case.....	33
Table 3. 5 Item Management Use Case.....	34
Table 3. 6 Order Management Use Case.....	36
Table 3. 7 Sales History Management Use Case.....	37
Table 3. 8 Generate Forecast (Holt-Winters Exponential Smoothing) Use Case ..	39
Table 3. 9 Export Forecast CSV Use Case.....	40
Table 3. 10 Use Case View Customer Distribution Map	42
Table 3. 11 Use Case Calculate Priority (SAW)	43
Table 3. 12 Training and Testing Data Split	72
Table 3. 13 Sales Data (Sample Data).....	73
Table 3. 14 Parameter Testing Scenarios	74
Table 3. 15 Parameter Description	75
Table 3. 16 Detailed Calculation	76
Table 3. 17 Seasonal Index Initialization	77
Table 3. 18 Summary of Updates for Periods 1–12 (Training)	79
Table 3. 19 Testing Results for Periods 13–24.....	88
Table 3. 20 Forecasting January 2026 – December 2026.....	90
Table 3. 21 APE Calculation per Period	91
Table 3. 22 Criteria Weights	92
Table 3. 23 Alternative Values (Manual Calculation Sample).....	95
Table 3. 24 Normalization Results	97
Table 3. 25 Final Ranking	97
Table 3. 26 System Usability Scale (SUS) Testing Plan.....	98
Table 3. 27 System Usability Scale (SUS) Score Results Plan.....	99

Table 3. 28 System Testing Plan	100
Table 3. 29 Research Process Timeline	101
Table 4. 1 Detailed Results of the Best Smoothing Parameter Scenario Test for BRG-BAR-8182.....	151
Table 4. 2 Detailed Forecasting Results BRG-BAR-8182	152
Table 4. 3 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-6379.....	154
Table 4. 4 Detailed Forecasting Results BRG-BAR-6379	155
Table 4. 5 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-5102.....	156
Table 4. 6 Detailed Forecasting Results BRG-BAR-5102	157
Table 4. 7 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-4112.....	159
Table 4. 8 Detailed Forecasting Results BRG-BAR-4112	160
Table 4. 9 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-8580.....	161
Table 4. 10 Detailed Forecasting Results BRG-BAR-8580	162
Table 4. 11 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-2102.....	164
Table 4. 12 Detailed Forecasting Results BRG-BAR-2102	165
Table 4. 13 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-7693.....	166
Table 4. 14 Detailed Forecasting Results BRG-BAR-7693	167
Table 4. 15 Detailed Test Results of the Best Smoothing Parameter Scenario for BRG-BAR-1553.....	169
Table 4. 16 Detailed Forecasting Results BRG-BAR-1553	170
Table 4. 17 Customer Order Data January 4-5, 2026	171
Table 4. 18 Customer Order Data January 6-7, 2026	173
Table 4. 19 System Usability Scale (SUS) Test Results.....	176
Table 4. 20 System Usability Scale (SUS) Test Score Results.....	176
Table 4. 21 Website System Test Optimization of Goods Distribution Priority.	177

Table 4. 22 Research Timeline 181

LIST OF ATTACHMENTS

Attachment 1. Cooperation Report Letter	189
Attachment 2. MOA/MOU Letter	191
Attachment 3. IA Letter.....	195