- 1. Operations Engineering & Management
- 2. Operations Research & Analysis

INVENTORY CONTROL OF CURHAT SWEETENED CONDENSED MILK AT ADHUM CAFÉ

A THESIS

Submitted in Partial Fulfillment of the Requirement for the Degree of Bachelor of Engineering in Industrial Engineering



HEE JUILING INDAH BERLIANA 17 14 09532

INTERNATIONAL INDUSTRIAL ENGINEERING PROGRAM

DEPARTMENT OF INDUSTRIAL ENGINEERING

FACULTY OF INDUSTRIAL TECHNOLOGY

UNIVERSITAS ATMA JAYA YOGYAKARTA

YOGYAKARTA

2021

HALAMAN PENGESAHAN

Tugas Akhir Berjudul

INVENTORY CONTROL OF CURHAT SWEETENED CONDENSED MILK AT ADHUM CAFÉ

yang disusun oleh

HEE JUILING INDAH BERLIANA

171409532

dinyatakan telah memenuhi syarat pada tanggal 23 Juli 2021

Keterangan

Dosen Pembimbing 1 : The Jin Ai, D.Eng. Telah menyetujui
Dosen Pembimbing 2 : The Jin Ai, D.Eng. Telah menyetujui

Tim Penguji

Penguji 1 : The Jin Ai, D.Eng. Telah menyetujui
Penguji 2 : Yosef Daryanto, S.T., M.Sc., Ph.D. Telah menyetujui
Penguji 3 : Fransiska Hernina Puspitasari, S.T., M.Sc. Telah menyetujui

Yogyakarta, 23 Juli 2021 Universitas Atma Jaya Yogyakarta Fakultas Teknologi Industri Dekan

ttd

Dr. A. Teguh Siswantoro, M.Sc

DECLARATION OF ORIGINALITY

I certify that the research entitled "Inventory Control Of Curhat Sweetened Condensed Milk at Adhum Café" in this thesis has not already been submitted for any other degree.

I certify that to the best of my knowledge and belief, this thesis which I wrote does not contain the works of parts of the works of other people, except those cited in the quotations and bibliography, as a scientific paper should.

In addition, I certify that I understand and abide the rule stated by the Ministry of Education and Culture The Republic of Indonesia, subject to the provisions of Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 17 Tahun 2010 tentang Pencegahan dan Penanggulangan Plagiat di Perguruan Tinggi.

Signature

Student name Student ID

: Hee Juiling Indah Berliana : 17 14 09532 : June 23rd 2021

Date

ACKNOWLEDGEMENT

Praise and gratitude Author congratulate God Almighty for His blessings and grace so that Author can complete the Final Thesis. The purpose of writing this Final Thesis is as one of the requirements to graduate as a Bachelor of Industrial Engineering at the Faculty of Industrial Technology, Universitas Atma Jaya Yogyakarta.

Author also expresses gratitude to several parties who have helped Author in preparing this thesis proposal:

- God Almighty who is the source of strength in carrying out this task from the beginning to this stage and the one who always give me everything I need in my life. Thanks God.
- 2. Both of my parents, Papa and Mama for giving me daily motivation and daily encouragement to live better for my life and to finish my thesis, and also by providing all of my life needs and expenses
- My best sisters, Hee Lucky Bela Anjaliana, Hee Putri Ratna Mutiara, Airin Shifanya Alhee who always encourage me, loves me, and provides all the happiness I need the most
- 4. Dr. Teguh Siswantoro, M.Sc. as the Dean of Faculty Industrial Technology Universitas Atma Jaya Yogyakarta.
- 5. Ririn Diar Astanti, S.T., M.MT., Dr.Eng. as the Head Department of Industrial Engineering.
- 6. Lenny Halim, S.T., M.Eng. as the Head Study Program of Industrial Engineering.
- 7. The Jin Ai, ST., MT., Dr.Eng. as thesis supervisor
- 8. Yosef Daryanto, S.T., M.Sc., Ph.D. and Fransiska Hernina Puspitasari, S.T., M.Sc. as the thesis examiner.
- 9. Hendri Wijaya, Alm. Ferre Kurniawan, Wendi, Keren Kerviona, Chresensia Novia, Rostika Jiantari, and Putu Ayu Utami Aryanti Putri as my biggest support system, the source of happiness who relentlessly never gets tired to be there for me, always encouraging and accompanying me to work on this final thesis
- 10. NCT (Neo Culture Technology) especially for Na Jaemin ☺, Taeyong ☺, Jung Jaehyun ☺, Mark Lee ☺, Jisung ☺, Nakamoto Yuta ☺, Johnny ☺, Haechan, Chenle, Renjun, Jeno, Lucas as my biggest reason for smiling,

laughing and for always giving me motivation, happiness, and hopes for working in my thesis and hopes for working and being better in my life.

11. Me myself, for doing all this hard work, for having no days off, for never quitting, for always being a giver and trying to give more than I receive, for trying to do more right than wrong. I want to thank me for just being the best version of myself at all times. Thank you me[©]

Finally, Author realizes that there are still many shortcomings in writing this Final Thesis. Author kindly asks for criticism and suggestions that can be constructive to fix these deficiencies. Hopefully, this Final Thesis can be useful to readers.

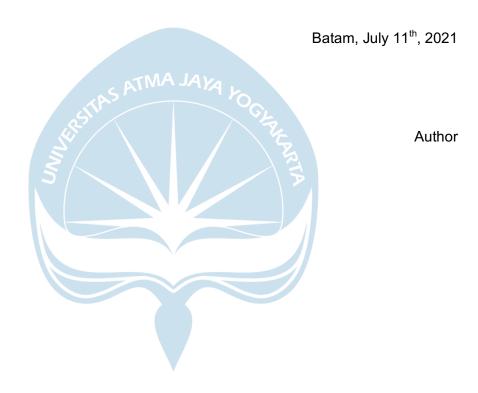


TABLE OF CONTENT

CHAPTER	TITTLE	PAGE
	Title Page	i
	Identification Page	ii
	Declaration of Originality	iii
	Acknowledgement	iv
	Table of Content	vi
	List of Tables	viii
	List of Figures	ix
	List of Appendix	хi
	Abstract	xii
	Introduction 1.1. Background	
1	Introduction	1
	1.1. Background	1
	1.2. Research Problem	3
	1.3. Research Objectives	3
	1.4. Research Limitation	3
2	Literature Review and Basic Theory	4
	2.1. Literature Review	4
	2.2. Basic Theory	8
	2.3. Order Quantity with Shortages	12
3	Research Methodology	18
	3.1. Preliminary Research	18
	3.2. Determining Inventory Policy	22
	3.3. Proposing Excel Spreadsheet to Control Inventory	23
4	Result and Discussion	25
	4.1. Problem Analysis	25
	4.2. Input Analysis	28
	4.3. Mathematical Model	32
	4.4. Model Verification	47
	4.5. Variable Cost	52

5	Proposed Solution	53
	5.1. Analysis on Proposed Solution	53
	5.2. Proposed Solution on Excel Form	53
6	Conclusion and Suggestion	62
	6.1. Conclusion	62
	6.2. Suggestion	62
	REFERENCE	63
	APPENDIX	65
	SATINA JAKA JOGARANTA	

LIST OF TABLES

TABLE	PAGE
Table 2.1. Previous Research	6
Table 4.1. Required Condensed Milk for Each Drink	30
Table 4.2. Curhat Sweetened Condensed Milk Requirements	40
Table 4.3. 1 st Iteration Calculation	49
Table 4.4. 2 nd Iteration Calculation	50
Table 4.5. 3 rd Iteration Calculation	51
Table 5.1. Proposed Solution	55

LIST OF FIGURES

FIGURE	PAGE
Figure 2.1. Illustration of Inventory Control	9
Figure 2.2. Reorder Point Graphic	16
Figure 3.1. Flowchart of Methodology on Preliminary Research	19
Figure 3.2. Flowchart of Methodology on Data Processing	21
Figure 3.3. Flowchart of Methodology on Data Calculation	
and Research Objective 1	22
Figure 3.4. Flowchart of Methodology on Research Objective 2	24
Figure 4.1. Rich Picture of Adhum Cafe	26
Figure 4.2. Influence Diagram of Adhum Cafe	27
Figure 4.3. Café Menu	29
Figure 4.4. Mini Experiment (Before)	31
Figure 4.5. Mini Experiment (Result)	32
Figure 4.6. Honda Vario 150 eSP	33
Figure 4.7. Honda Vario 150 eSP Fuel Mileage	33
Figure 4.8. Distance from Adhum Café to Vendor	34
Figure 4.9. Fuel Price in Batam	34
Figure 4.10. Samsung RT46K6231 Two Door Refrigerator	35
Figure 4.11. Electric Fee in Batam	35
Figure 4.12. Adhum Cafe	37
Figure 4.13. Samsung RT46K6231 Two Door Refrigerator Size	37
Figure 4.14. Arena Result (Input Analyzer Feature)	47
Figure 5.1. Beginning Inventory Formula on Microsoft Excel	56
Figure 5.2. Demand Formula on Microsoft Excel	57
Figure 5.3. Ending Inventory Formula on Microsoft Excel	58

Figure 5.4. Status Formula on Microsoft Excel	59
Figure 5.5. Target Inventory Formula on Microsoft Excel	60
Figure 5.6. Beginning Inventory on the Upcoming Day	61
Formula on Microsoft Excel	



LIST OF APPENDIX

FIGURE	PAGE
Figure 1. Interrelationship Diagram	65
Figure 2. Raw Data of Daily Demand Week 1 and 2	66
Figure 3. Raw Data of Daily Demand Week 3 and 4	67
Figure 4. Raw Data of Daily Demand Week 5 and 6	68
Figure 5. Raw Data of Daily Demand Week 7 and 8	69
Figure 6. Raw Data of Daily Demand Week 9 and 10	70
Figure 7. Raw Data of Daily Demand Week 11 and 12	71
Figure 8. Raw Data of Daily Demand Week 13	72

ABSTRACT

Café is a business industry that runs in food and beverages sector, which is now starting to be loved by today's young people. Adhum Cafe is one of the business industries in the food and beverages sector located in Batam City. Adhum Café has a problem with the inventory control in Curhat sweetened condensed milk. The Cafe experienced an out-of-stock of this raw material which resulted in lost sales and complaints from customers. This is caused by the absence of inventory control in ordering sweetened condensed milk. Therefore, the need for the best solution to solve this problem is by using several methods such as the Economic Order Quantity (EOQ) and Reorder Point (ROP) methods to provide alternative solutions to reduce the potential losses caused by this problem.

Based on the calculation results, it is found that Adhum Cafe needs to order seventy four cans of Curhat sweetened condensed milk once the inventory has reached the number of two unit of cans. The reorder day will be made on any day once the stock has reached the Reorder Point amount, considering to prevent the possibilities if shortage that might happen in any days. The decision to reorder on every once the stock has reached the Reorder Point amount is because it will reduce the possibility of out of stock sweetened condensed milk when the cafe is experiencing the best upselling day.

Keywords: café, inventory control, inventory with shortages, EOQ, ROP, continuous review method