

# **IMPLEMENTATION OF 5S LEAN MANUFACTURING METHOD IN SETIAWAN MEBEL**

**A THESIS**

**Submitted in Partial Fulfilment of the Requirements for the Bachelor  
Degree of Engineering in Industrial Engineering**



**ANGGER WIBISONO GUNAWAN**

**15 14 08257**

**INTERNATIONAL INDUSTRIAL ENGINEERING PROGRAM**

**DEPARTMENT OF INDUSTRIAL ENGINEERING**

**FACULTY OF INDUSTRIAL TECHNOLOGY**

**UNIVERSITAS ATMA JAYA YOGYAKARTA**

**YOGYAKARTA**

**2022**

## HALAMAN PENGESAHAN

Tugas Akhir Berjudul

IMPLEMENTATION OF 5S LEAN MANUFACTURING METHOD IN SETIAWAN MEBEL

yang disusun oleh

Angger Wibisono Gunawan

151408257

dinyatakan telah memenuhi syarat pada tanggal 27 Juli 2022

		Keterangan
Dosen Pembimbing 1	: Lenny Halim, S.T., M.Eng.	Telah Menyetujui
Tim Penguji		
Penguji 1	: Lenny Halim, S.T., M.Eng.	Telah Menyetujui
Penguji 2	: Hadisantono, ST., MT., Ph.D.	Telah Menyetujui
Penguji 3	: Ika Murti Kristiyani, M.Pd.	Telah Menyetujui

Yogyakarta, 27 Juli 2022

Universitas Atma Jaya Yogyakarta

Teknologi Industri

Dekan

ttd.

Dr. A. Teguh Siswanto, M.Sc.

Dokumen ini merupakan dokumen resmi UAJY yang tidak memerlukan tanda tangan karena dihasilkan secara elektronik oleh Sistem Bimbingan UAJY. UAJY bertanggung jawab penuh atas informasi yang tertera di dalam dokumen ini

## DECLARATION OF ORIGINALITY

I certify that the research entitled "Implementation Of 5s Lean Manufacturing Method In Setiawan Mebel" 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 work of other people, except those cited in the quotations and the bibliography, as a scientific paper should. In addition, I certify that I understand and abide by the rule stated by the ministry of Education and Culture of 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 :



Name : Angger Wibisono Gunawan

Student ID : 15 14 08257

Date : July 21<sup>st</sup> 2022



## PREFACE

Praises to God for His blessings and guidance that led the author to finish this research, entitled “IMPLEMENTATION OF 5S LEAN MANUFACTURING METHOD IN SETIAWAN MEBEL”. This research specifically conducted as Final Project, one of the requirements to achieve bachelor degree in University of Atma Jaya Yogyakarta, Faculty of Industrial Technology, International Industrial Engineering Department. During the working process of this research, the author received many helps from several parties. Therefore, in this occasion the author wants to give gratitude for several parties that have helped the author including:

1. To God almighty for by His grace the author can complete the thesis report.
2. Mrs. Lenny Halim, S.T., M.Eng., as the supervisor lecturer for the author, for her patience to guide and advise the author during the working process of this research.
3. Mr. Gunawan as the owner of Setiawan Mebel, who gave permission to the author do the research and observation in his company.
4. The author's parents and siblings, with whose help and support help the author finish this research.
5. All of the author's friends, that cannot be mention for each of them, for their support and company during the working process of this research.
6. All of the employees of Setiawan Mebel, whose cooperation during the research and observation help the author's work to progress smoothly.

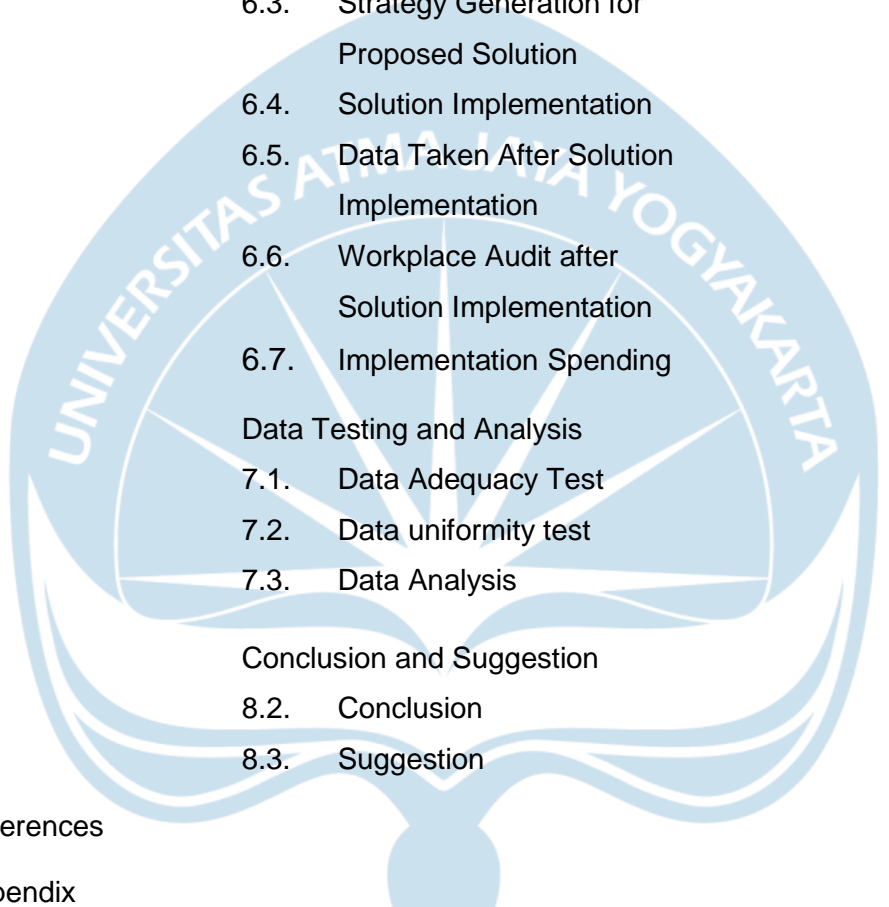
The author realizes that this research is far from perfect; therefore the author is open for constructive suggestions and advices regarding this research. However, the author hopes that this research will be useful for all of the readers.

Yogyakarta, 26<sup>th</sup> July, 2022

Angger Wibisono Gunawan

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	Title Page	i
	Identification Page	ii
	Declaration of Originality	iii
	Preface	iv
	Table of Contents	v
	List of Tables	vii
	List of Figures	ix
	List of Appendices	x
	Abstract	xi
1	Introduction	1
	1.1. Background	1
	1.2. Problem Formulation	3
	1.3. Objective	3
	1.4. Scope and Limitation	3
2	Literature Review and Theoretical Background	4
	2.1. Literature Review	4
	2.2. Theoretical Background	6
3	Research Methodology	10
	3.1. Tools Used in Research	10
	3.2. Research Methodology	11
4	Problem Analysis and Solution Selection	15
	4.1. Problem Analysis	15
	4.2. Alternative Solutions	16
	4.3. Alternative Methods	16
5	Preliminary Data	22
	5.1. Observation	22
	5.2. Data Taken before Solution	25

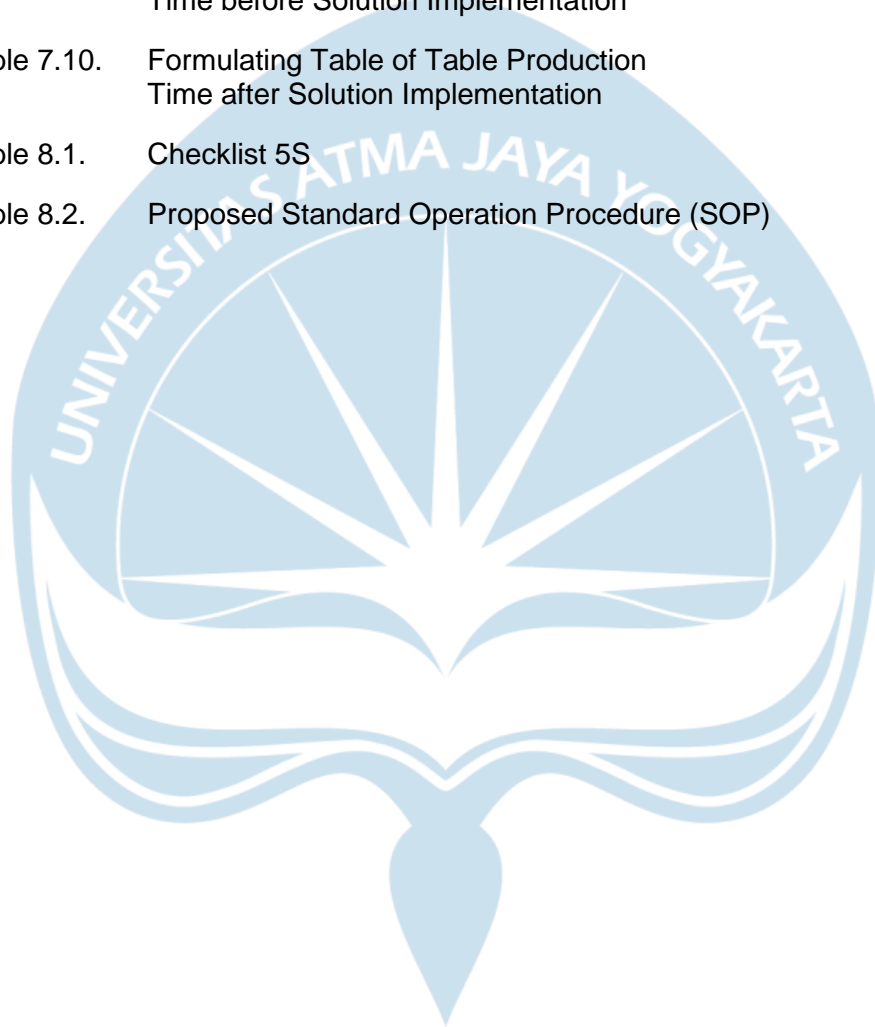


	Implementation	
	5.3. Customer Complaint	31
6	Solution Implementation	32
	6.1. Workplace Audit before Solution Implementation	32
	6.2. Cause Analysis	33
	6.3. Strategy Generation for Proposed Solution	34
	6.4. Solution Implementation	35
	6.5. Data Taken After Solution Implementation	42
	6.6. Workplace Audit after Solution Implementation	46
	6.7. Implementation Spending	47
7	Data Testing and Analysis	49
	7.1. Data Adequacy Test	48
	7.2. Data uniformity test	53
	7.3. Data Analysis	59
8	Conclusion and Suggestion	61
	8.2. Conclusion	61
	8.3. Suggestion	61
	References	63
	Appendix	65

## LIST OF TABLES

	Page
Table 5.1. Chair production time taken before solution implementation	25
Table 5.2. Chair production time taken before solution implementation	26
Table 5.3. Chair production time taken before solution Implementation	27
Table 5.4. Table production time taken before solution implementation	28
Table 5.5. Table production time taken before solution implementation	29
Table 5.6. Table production time taken before solution implementation	30
Table 5.7. Customer Complaint Data	31
Table 6.1. 5S Audit Checklist on the company	32
Table 6.2. Observation findings	33
Table 6.3. Strategies Generated	34
Table 6.4. Chair production time taken after solution implementation	42
Table 6.5. Chair production time taken after solution implementation	43
Table 6.6. Table production time taken after solution implementation	44
Table 6.7. Table production time taken after solution implementation	45
Table 6.8. Workplace Audit after Solution Implementation	46
Table 7.1. K Value for Level of Confidence	48
Table 7.2. S Value for Level of Accuracy	48
Table 7.3. Chair Production Time before Solution Implementation	49
Table 7.4. Chair Production Time after Solution Implementation	50
Table 7.5. Table Production Time before Solution Implementation	51

Table 7.6.	Table Production Time after Solution Implementation	52
Table 7.7.	Formulating Table of Chair Production Time before Solution	54
Table 7.8.	Formulating Table of Chair Production Time after Solution Implementation	56
Table 7.9.	Formulating Table of Table Production Time before Solution Implementation	57
Table 7.10.	Formulating Table of Table Production Time after Solution Implementation	58
Table 8.1.	Checklist 5S	61
Table 8.2.	Proposed Standard Operation Procedure (SOP)	62



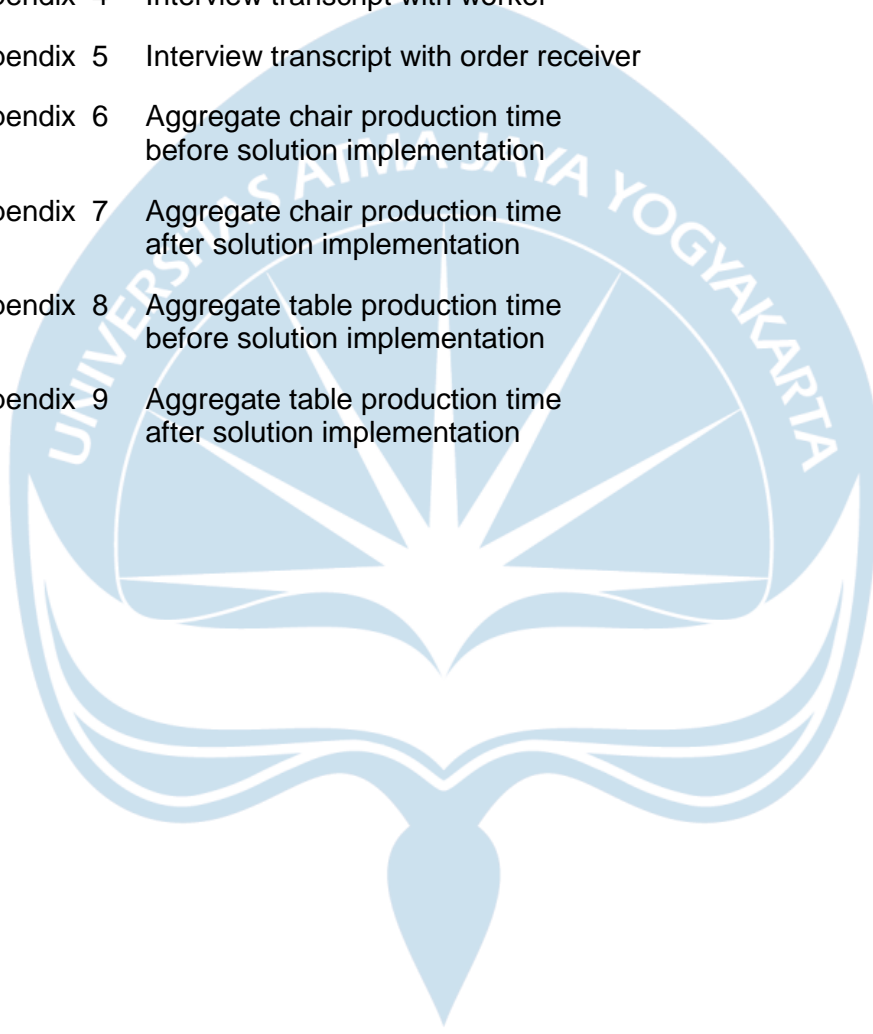


## LIST OF FIGURES

	Page
Figure 3.1. Research Methodology	11
Figure 3.2. Fishbone Diagram	15
Figure 6.1 Workplace after Cleaning	36
Figure 6.2 Workplace after Cleaning	36
Figure 6.3 Workplace after Cleaning	36
Figure 6.4 Workplace after Cleaning	37
Figure 6.5 Area designated for WIPs	37
Figure 6.6 Designated Workplace Partition	38
Figure 6.7 Layout of Workplace with Designated Areas	38
Figure 6.8 Peg Board	39
Figure 6.9 Unlabeled and unorganized blade storage	40
Figure 6.10 A bin to store wood scraps for easier removal	40
Figure 6.11 Training workers through speaking	41
Figure 6.12 Training workers through speaking	41
Figure 7.1 Chair Average Production Time	59
Figure 7.2 Table Average Production Time	60

## LIST OF APPENDICES

	Page
Appendix 1 Training on workers	65
Appendix 2 Training on workers continued	66
Appendix 4 Interview transcript with owner	67
Appendix 4 Interview transcript with worker	68
Appendix 5 Interview transcript with order receiver	69
Appendix 6 Aggregate chair production time before solution implementation	70
Appendix 7 Aggregate chair production time after solution implementation	72
Appendix 8 Aggregate table production time before solution implementation	73
Appendix 9 Aggregate table production time after solution implementation	75



## ABSTRACT

Setiawan Mebel have problems regarding production time that result in customer complaints because of late production completion and/or delivery because of elements in the workplace that is not supportive and hinder the production activity of the company. The observation is done on chair and table production starting from September to October 2020.

The solution that are proposed are increasing production capability and reducing production time, reducing production is chosen as the solution to solve the problem of the company because it fulfill the critical success factor. And to apply the solution 2 methods are considered, 5S and Six Sigma (DMAIC), the methods chosen is 5S because this method is more suitable for the company's condition.

The result of the research is reduction of production time by 7.82% in chair production time from 638.71 seconds/product on average to 588 seconds/product on average, and 9.58% in table production time from 798.64 seconds/product on average to 722.13 seconds/product on average. Meaning that the research that was concluded is a success, because the objective of reducing production time has been fulfilled by the research.

Keywords: 5S, Productivity. Lean Manufacturing.

