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Course Name: Lean & Six Sigma

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Project Title: Reduce the time spent to place the clothes on the hanger

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Introduction

Every summer vacation, I go to my parents' clothing store to help. So, there are 3 people in total to run the store. Which, most of the time we will act as multiply-roles such as customer guider, casher, and cleaner as well. And in these processes, sometimes, this will cause the customers to choose to hang around but did not buy clothes. Which this might because we cannot put on the clothes on time, and this might will lose some potential customers which will directly cause the loss of benefit of the store.

Background

In the store, we need to make sure that there are 3 pieces of clothes with the same type but different size at one hanger. And usually, if the clothes on the hanger are purchased by the customer, then, we should place it with the same size and type as purchased one. But things are not that easy. Many steps were getting involved such as some customers asking us to purchase the new style of clothes or if the customers do not find their suitable sizes but they still want it so we will prepare for them in next time when we purchase the clothes, so, there are many processes can be improved as this is a regular and sequential process that can use lean & six sigma to help.

Proposal

Section 1: Project Proposal

Student Information:

Group:
Zien Zheng

General Project Information:

Project Name:	Reduce the time spent on placing the clothes
Project Description: *For Six Sigma, state why you are undertaking this project.*	If customers get into our store, sometimes, the customers cannot find what they want, or, the style of clothes is out of fashion, so, we need to complement the clothes from the factory and placing the clothes on the hanger as soon as possible. Which in this process, firstly, is a regular thing that we will do, secondly, is data is easy to record. So, lean & six sigma can improve this processes.
Benefits upon completing project:	Save the money Reduce the time Increase the loyalty of the customer
Key Metrics: *(Six Sigma projects must show a financial saving. Other metrics can include Quality, Throughput, Time savings, Productivity,Utilisation)*	Time Quality
Estimated start/end dates:	25/10/2020 – 25/11/2020
Project Sponsor or Champion Name and Title:	My parents

Key player

The store is run by my parents, as my father is mainly in charge of purchase with a factory which can provide me with the purchase data, and my mother is mainly a shopping guide which can tell me the causes of dissatisfaction (or Voice of Customer). And I am in charge of applying lean & six sigma following DMAIC.

Project Gantt Chart

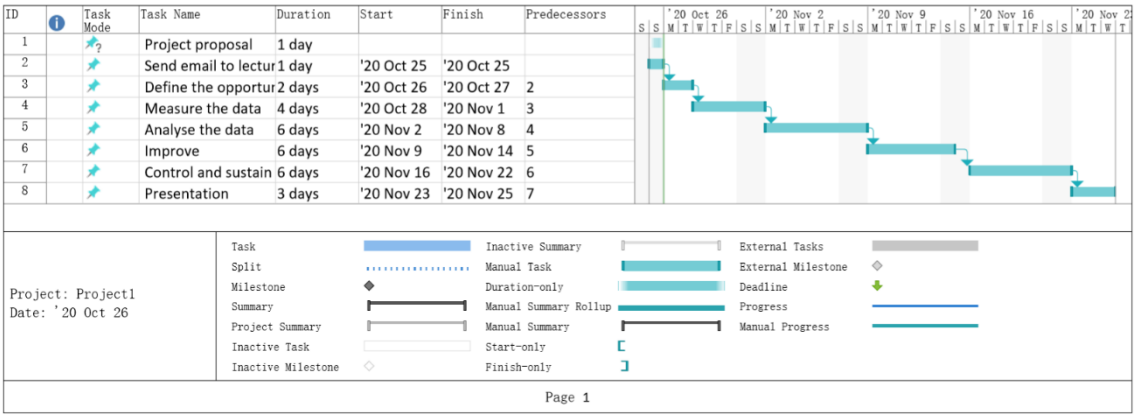


Figure 1 Timeline for the project (Note: The format of date is: Year-Month-Day)

Risk Assessment & Resources requirement

Resources required: *Money, Manpower or Material.*	Money Sale records Phone call records Customer feedback sheet

Risk assessment:

	Identified Risk	Probability 1-3 (H=3, M=2 L=1)	Impact 1-3 (H=3, M=2 L=1)	Exposure E= P x I	Appropriate Response
1	Discharge heavy package	M	H	6	Be careful and use trolley
2	Cut by packaging bag	L	M	2	Wear gloves when unpack the package

Define

Project chart as shown below:

Problem Statement *(What, Where, When, How much)*	What: Too much time if we placing a new or the customer wanted clothes on the hanger Where: The wastes occur at the warehouse, store, and shipping When: When shipping the clothes, researching the warehouse, and putting on the hanger. How much: The time from have the request from the customers to get the clothes on the hanger will normally spend 5 days.
Goal(s) *(metric based statement that includes current baseline, achievable and/or stretch goal, and time of completion)*	Based on the Voice of Customer (VOC), if customers cannot find their favourable clothes on the hanger, or the size is not suited for them, the customer will be dissatisfied with our store and will not come back again. So, the main goal for this project is to achieve to reduce 20% of the time spent to place another piece of clothes on the hanger to increase the customer's satisfaction. And as well as based on the needs of customers to import the suitable style of clothes which can reach 6σ standard.
Process boundaries/scope. *What is included / What is NOT included in your project?*	Including: Measure the time. Get the sale records. Not including: Contact with the factory. Contact with the express company.
Team mission statement *(Why do you exist?)*	To get involve with data define of problem, collect the measure result from my parents, analyze the data, improve the method, and sustain the result.
Team members/roles: *For the Green belt it is acceptable to be on the core team but you must clearly identify the tasks you have responsibility for.*	Me: Lead the data collection Validate the measurement Brainstorming Improve Sustain the result
Project timeline *(Date estimate of each DMAIC step). Provide separate GANNT chart for the project.*	Define 25/10/2020 – 27/10/2020 Measure 28/10/2020 – 1/11/2020 Analyze 2/11/2020 – 8/11/2020 Improve 9/11/2020 – 14/11/2020 Control 16/11/2020 – 22/11/2020

If we wish the customers to buy our clothes, the aim is to meet the requirements from the customers, so, I have collected the dissatisfaction reasons (Voice of Customer) and use Pareto graph to show the causes in

figure 2:

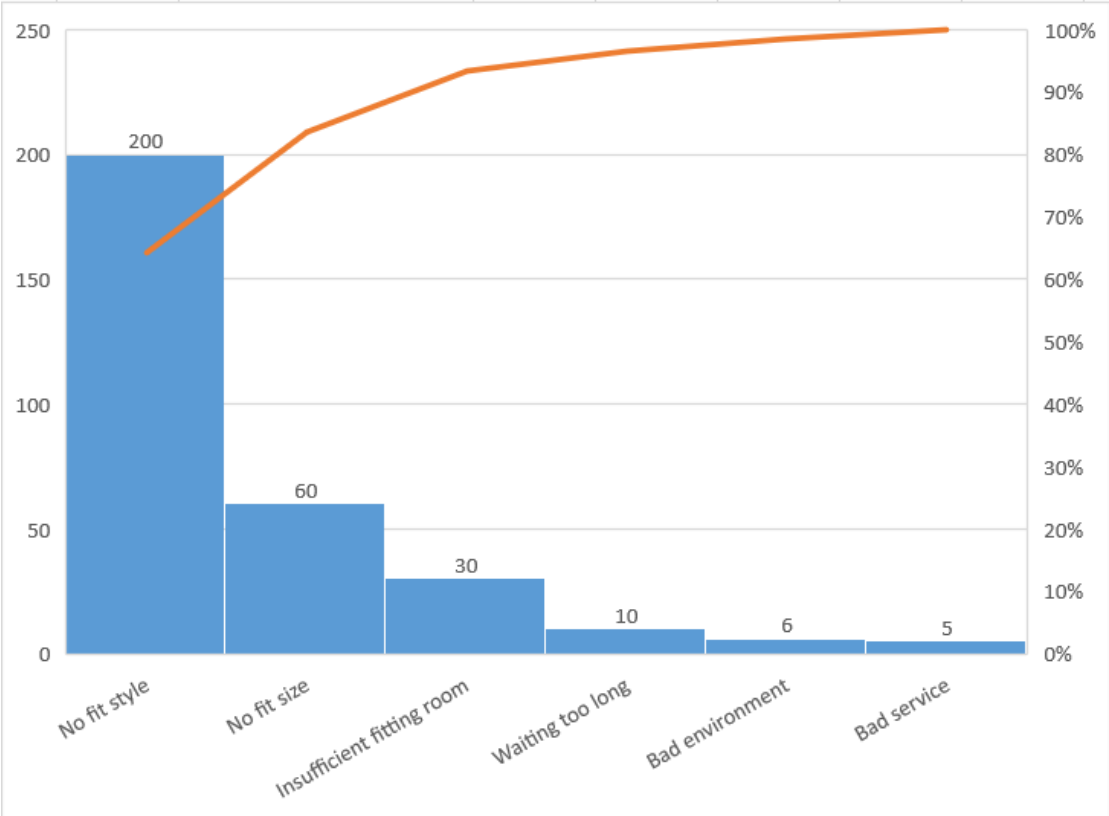


Figure 2 Customer dissatisfaction reasons (2 weeks)

As it is not hard to find that the lack of clothing styles which customers desired is the main complaining point from the customers, and another reason is there is no fit size for them.

So, the most urgent issue is how to reduce the time to put on a suitable style and size of clothes on the hanger if we know what the customers want.

Here is the ideal processing map that if we want to place the new clothes on the hanger:

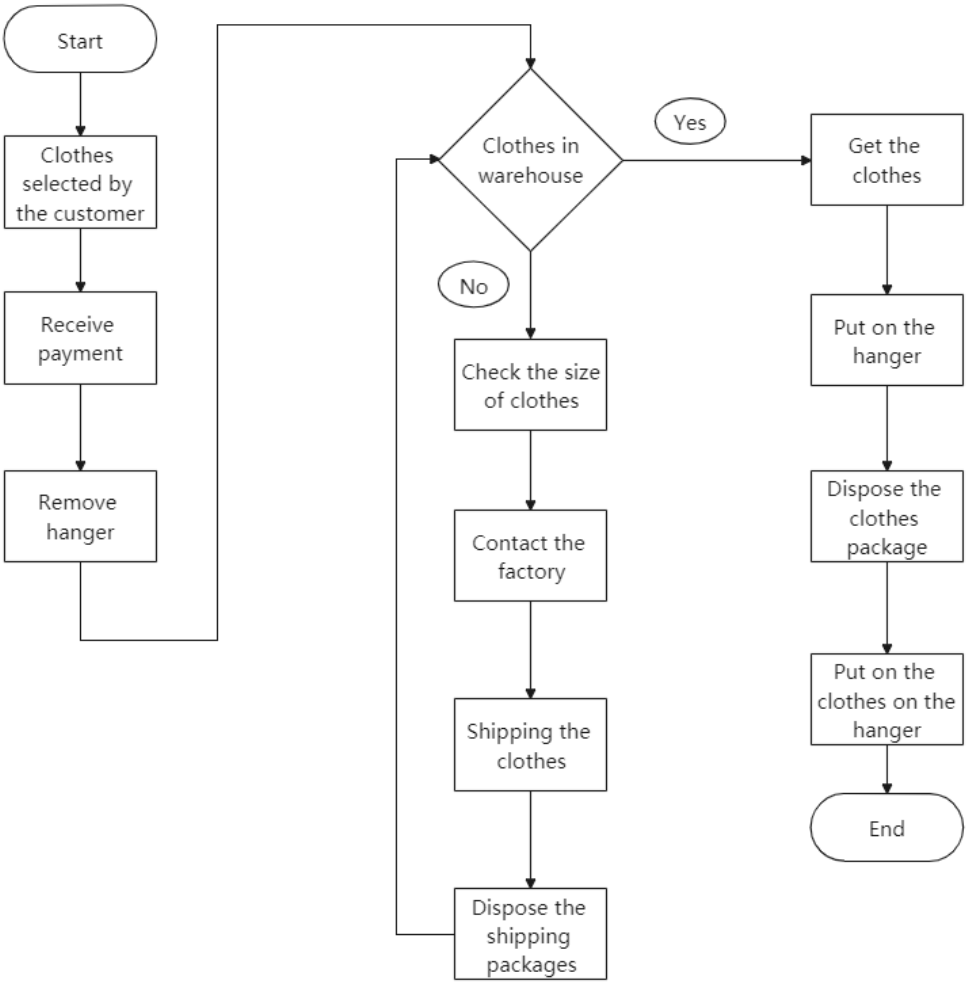


Figure 3 Placing the clothes on the hanger

And as well as based on the VOC, the SIPOC graph can be established as shown in figure 4.

Suppliers	Inputs	Processes	Outputs	Customers
Clothing factory	Phone call orders	Making the required clothes	Clothes	Our store
Express company	Packages	Deliver the clothes	Packages	Our store
Storage Provider	Inventory	Move the inventory to the warehouse	Space for store the clothes	Our store
Store	Clothes	Selling the clothes	Transaction	Consumers

Figure 4 SIPOC graph

Besides, based on the internal and external VOC, which shown in figure 5:

	VOC	Need	Requirement
Internal	The delivery time takes so long	Find a faster express company	Same fee rate but faster
	The shipping packages occupied too much space	Expose the shipping packages on time	Reasonable storage space use
	The clothes are not arrange properly	Arrange the clothes sequentially	Arrangement
External	I don't find the one I like	Put on the clothes that they want	Style
	I need to wait so long to get this style of clothes	Provide the clothes as soon as possible	Time reduction

Figure 5 VOC of internal and external customers

We can draw the Critical to Quality (CTQ) tree shown below:

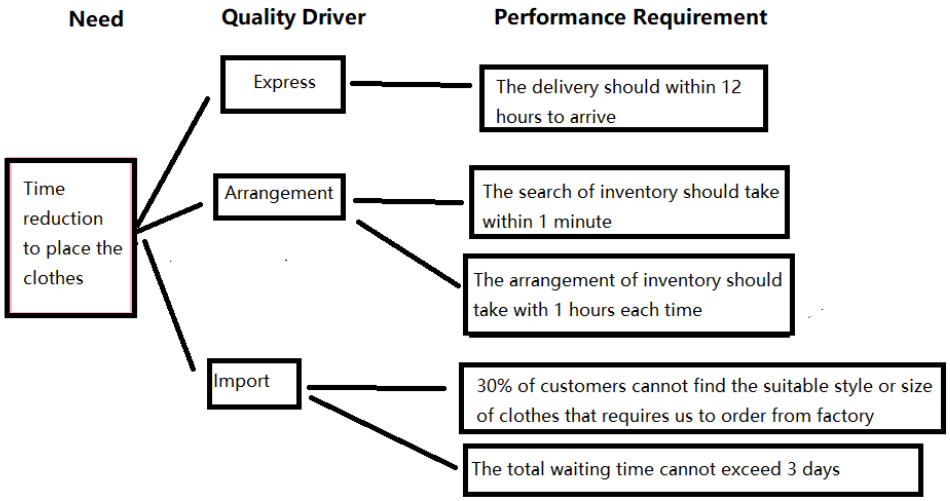


Figure 6 CTQ Tree

And based on graphs above, the following wastes can be identified:

1. Package delivery (Time)
2. The mess of the inventory (Time)
3. Work arrangement mess (Time)

As the main defects which customers cannot find suitable clothes (quality), so reduce the rate that customers couldn't find their favourable clothes is also one of the factors should be considered, and to placing their fitting clothes on time, the time spent will be gauged.

Measure

Firstly, the customers will purchase the clothes based on their judgement, thus, If a customer gets in the store, but does not purchase anything, then, we see this is a kind of defect, so, by observing the defect it will directly show us is there any improvement after applying with the lean & six sigma.

Before that, I have collected the previous 2 weeks of defects shown below:

WORKSHEET 1

Descriptive Statistics: Defect

Statistics

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Defect	14	0	25.00	1.40	5.23	19.00	21.00	23.00	29.75	35.00

	C1	C2	C3	C4	C5	C6	C7	C8	C9
	Day	Defect							
1	1	26							
2	2	21							
3	3	22							
4	4	23							
5	5	19							
6	6	32							
7	7	29							
8	8	24							
9	9	23							
10	10	19							
11	11	21							
12	12	23							
13	13	35							
14	14	33							

Figure 7 Sales record

As the average defects are 25. Which this shows "before", And typically, defects cannot be too low which means there are not many people who come into the store, but as well as cannot too high.

If USL = 26, LSL = 19 is the most suitable cases which will get the highest sales

record.

Then, here is the capability analysis result.

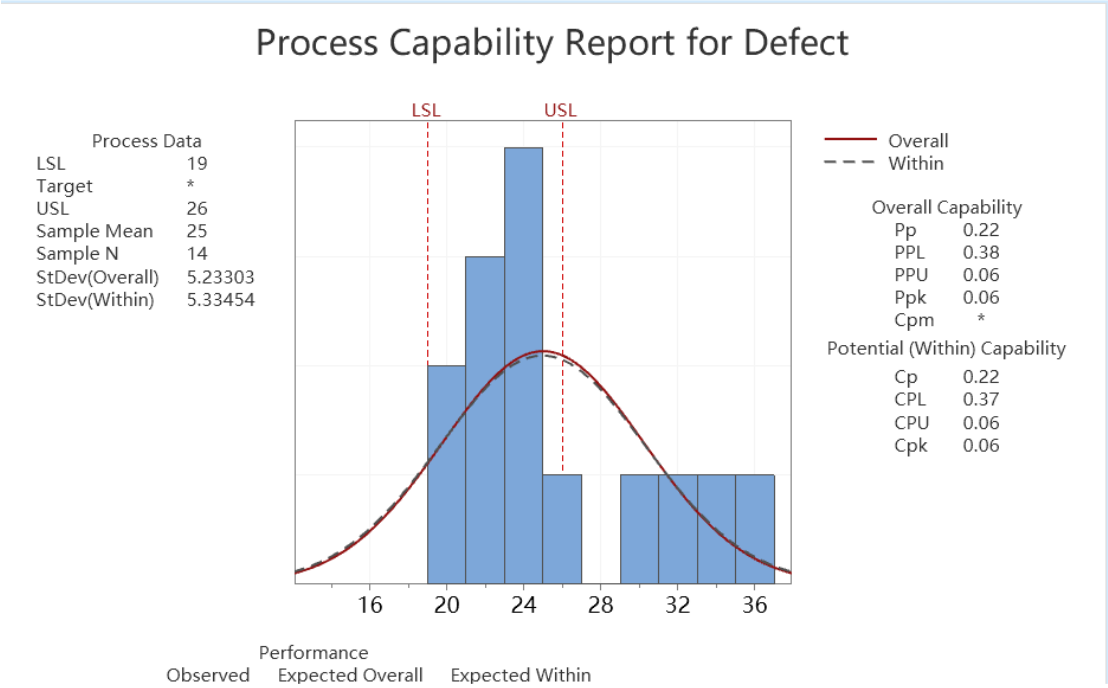


Figure 8 Capability analysis

Cpk = 0.06 which $0 < Cpk < 1$ shows that the distribution is closer to the left which means there are not enough customers enter our store.

And based on figure 2 of customers dissatisfaction reasons, customers are not satisfied with the style and size. And mostly, we will send the order to the factory once if the amounts of the requirements are large. Which from sending the order to placing the clothes on the hanger, it will take times, so, firstly the process map for placing new clothes on the hanger is shown in figure 9 below:

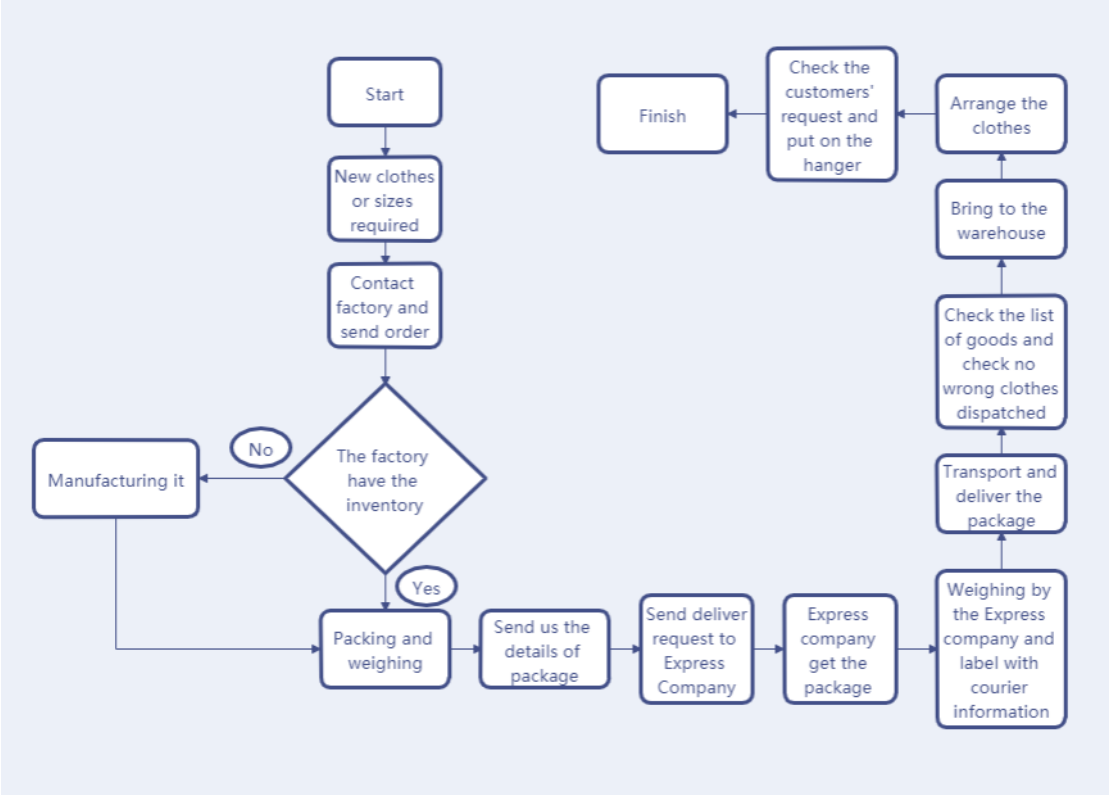


Figure 9 Process map for package shipment

Based on the process map, we can find there are several repeat works have done and will take more time and lead to the dissatisfaction of customers, and more detailed information is given in figure 10 shown below.

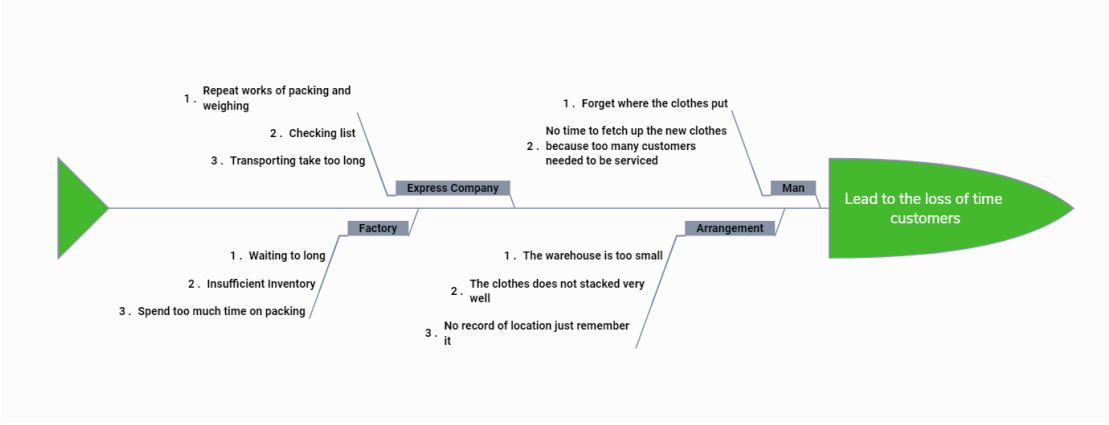


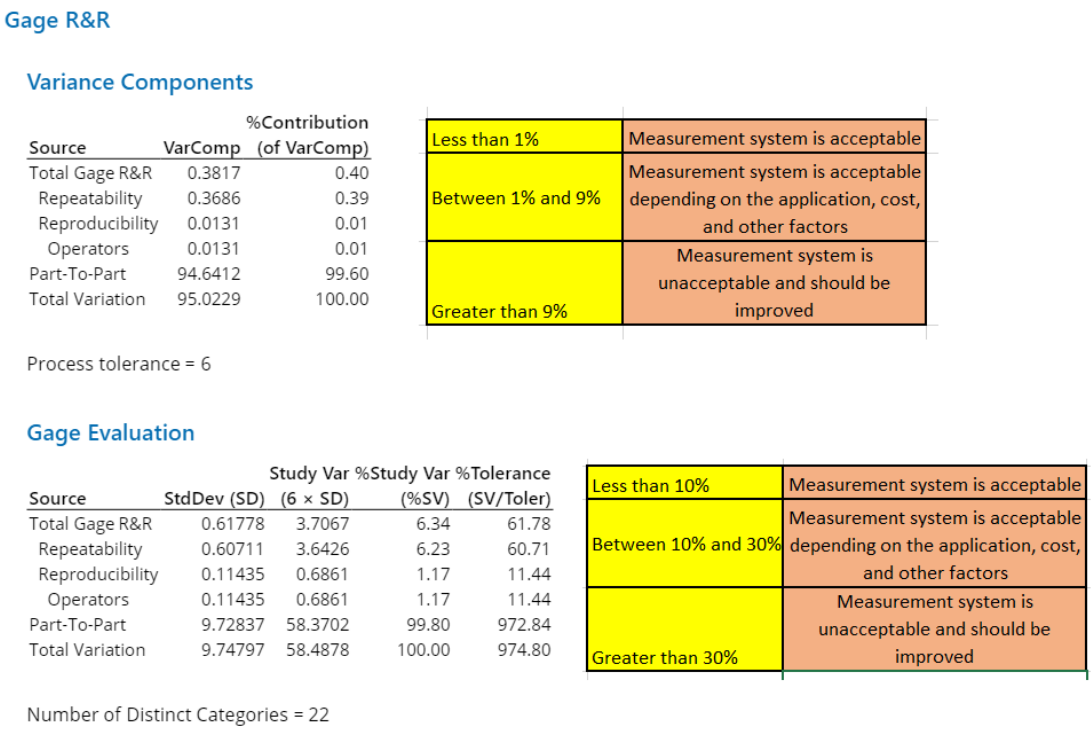
Figure 10 Diagram of effects of losing time

Then, my parents collected the time spent from sending orders to the factory to placing the clothes on the hanger for 2 times for each, respectively. Which the measurement result is as shown below:

	Time spend (Hours)			
	My father		My mother	
	1	2	1	2
Create the purchase list(1)	1.2	1.05	1	1.5
Contact the factory and sending orders(2)	0.1	0.12	0.15	0.22
Factory prepare the orders(3)	26.2	24.6	23.4	23.5
Factory contact the express company(4)	3.3	2.5	2	2.2
Express company shipping the packages(5)	18.7	20.2	19.7	19.5
Accept the package and move to the warehouse(6)	1	0.5	1.2	1.6
Check and arrange(7)	2.1	1.5	1.1	2.3
Put the clothes on the hanger(8)	0.8	0.55	0.4	0.35
Total	53.4	51.02	48.95	51.17

Figure 11 Time spend

To make sure that the measurement is repeatable and reproducible, and operators (my parents) is well trained in measuring. Gage R&R with use of ANOVA method is being used, the result as shown in figure 12.



Gage R&R

Variance Components

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.3817	0.40
Repeatability	0.3686	0.39
Reproducibility	0.0131	0.01
Operators	0.0131	0.01
Part-To-Part	94.6412	99.60
Total Variation	95.0229	100.00

Less than 1%	Measurement system is acceptable
Between 1% and 9%	Measurement system is acceptable depending on the application, cost, and other factors
Greater than 9%	Measurement system is unacceptable and should be improved

Process tolerance = 6

Gage Evaluation

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)	%Tolerance (SV/Toler)
Total Gage R&R	0.61778	3.7067	6.34	61.78
Repeatability	0.60711	3.6426	6.23	60.71
Reproducibility	0.11435	0.6861	1.17	11.44
Operators	0.11435	0.6861	1.17	11.44
Part-To-Part	9.72837	58.3702	99.80	972.84
Total Variation	9.74797	58.4878	100.00	974.80

Less than 10%	Measurement system is acceptable
Between 10% and 30%	Measurement system is acceptable depending on the application, cost, and other factors
Greater than 30%	Measurement system is unacceptable and should be improved

Number of Distinct Categories = 22

Figure 12 Gage R&R

The total gage R&R contribution 0.4% which smaller than 1% and %SV=6.34% which is also smaller than 10%. Both of these two results can show that the measurement system is acceptable

Besides, the Number of Distinct Categories = 22 which is also bigger than 5

that shows the measurement system is adequate.

Then look at the measurement result report shown below:

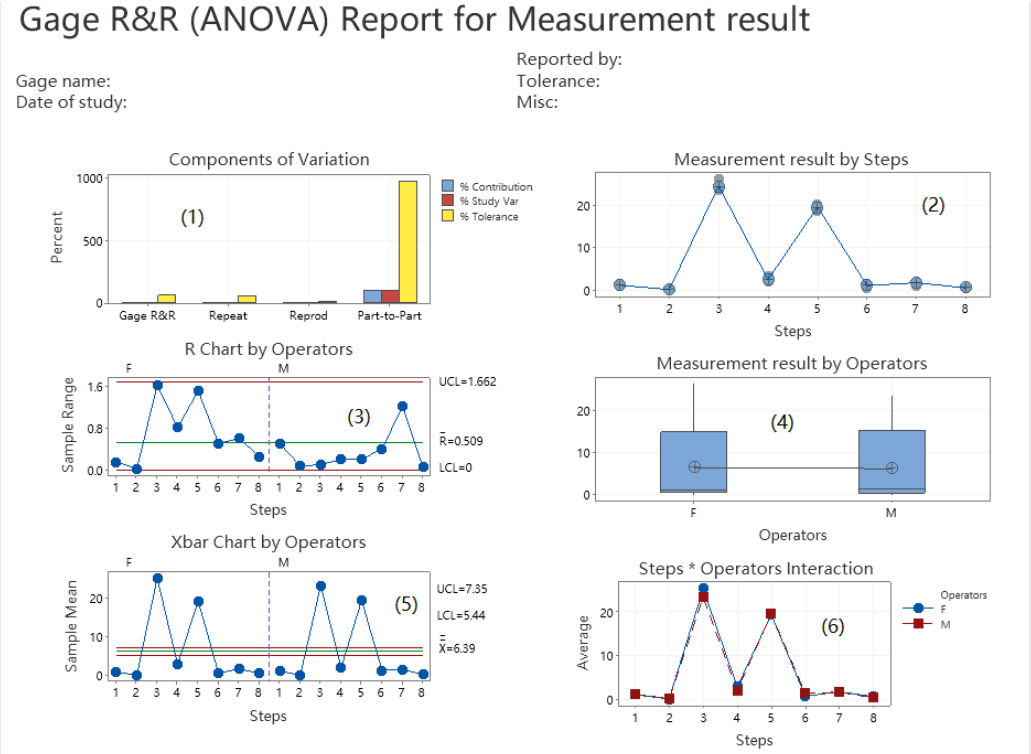


Figure 13 Gage R&R result report

In (1) at figure 13, the part-to-part is larger than Gage R&R which shows that much of the variation is due to the differences between the parts, in my circumstance is the differences between the steps. Which is exactly meet the facts. And this can be also confirmed in (2) in the graph which the different steps get the different level.

In (4), which can show that all of the p-value of the test is greater than 0.

And based on the (5), it can show that the variation is mainly due to the steps.

In (6), the operators which are my parents, which shows that there is no significant interaction between the operators.

Analyze

Based on figure 11, the average time cost for each step can be calculated:

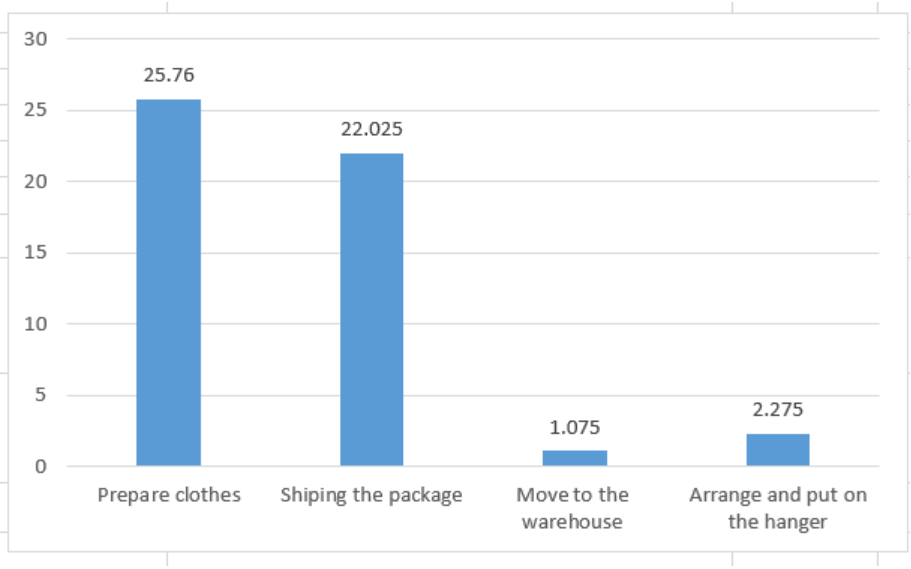


Figure 14 Average time cost from the previous test

As based on these data, the Value Stream Map can be drawn:

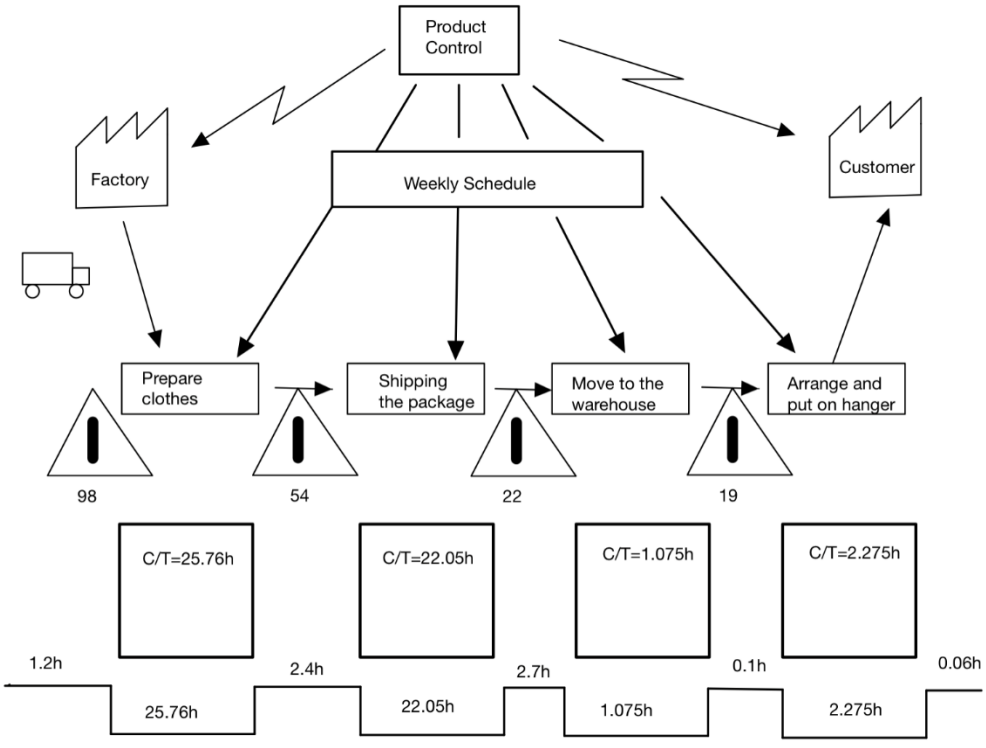


Figure 15 Value Stream Map

Non-Value-added Time NVA/T = 1.2h+2.4h+2.7h+0.1h+0.06h = 6.46h

The Value-added Time VA/T = 25.6h+22.05h+1.075h+2.275h = 51.135h

And the waste can be determined as: Waste = 6.46/(6.46+51.135) = 11.2%

Which means there are 88.79% of value-added.

As this is a weekly schedule, I have collected the previous sale records and as shown below:

Sale record			
27	22	23	29
19	23	22	22
26	22	24	27
27	23	27	32
26	18	25	28
32	28	25	31
24	26	23	27
Average for each week			177
Average for each day			25.2857

Figure 16 The previous 4 weeks sales record

The average clothes sold for a week is 177. However, the needed demands are about 230 per week (which is 32.86 for each day), which means the customer demands are 230. Then, if the store opening 12 hours per day, which the total opening time is 12x7 = 84h, so, the ideal TAKT time can be determined:

$$TAKT = \frac{84}{230} = 0.365\ h = 21.9\ min$$

But actual TAKT for now is:

$$TAKT = \frac{84}{177} = 0.475\ h = 28.47\ min$$

Which means there about 28.47-21.9 = 6.57min of room for improvement.

Then, based on the given data in figure16, we can evaluate its normality:

Probability Plot of Sale record

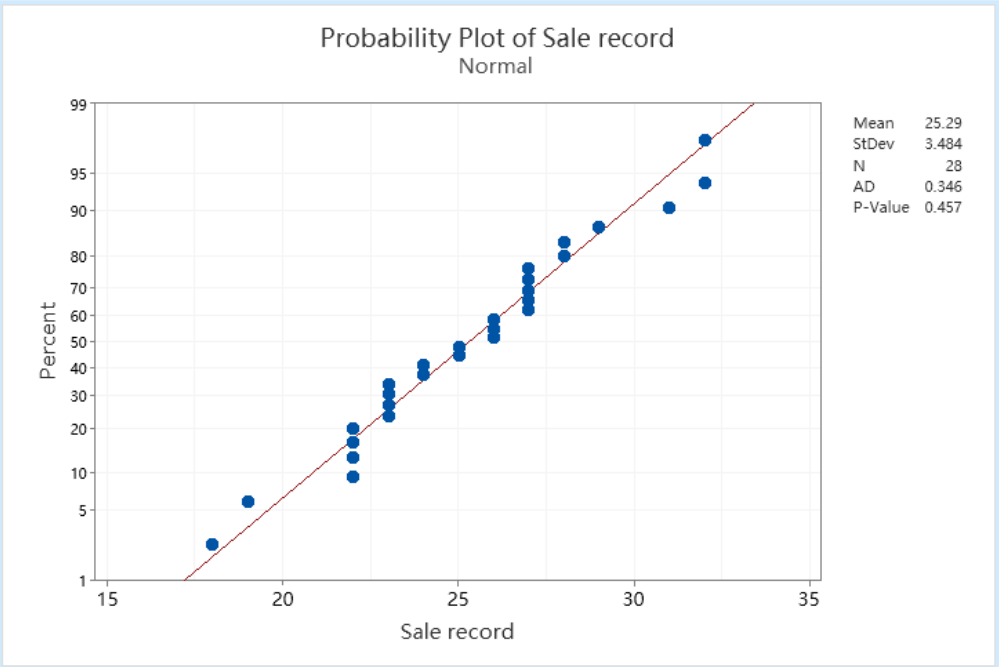


Figure 17 Normality evaluation

The p-value for this set of data is 0.457 which is greater than 0.05 and shows that the data is normally distributed.

So, we can use the Z test to evaluate if there is a significant difference between the sales record to our expected value now:

Descriptive Statistics: Sale record

Statistics

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Sale record	28	0	25.286	0.658	3.484	18.000	23.000	25.500	27.000	32.000

Figure 18 Basic info about the data

We can state a hypothesis that as follow:

$H_0: \mu \geq 32.86$ (The daily sales are greater than ideal sales)

$H_1: \mu \leq 32.86$ (The daily sales are smaller than ideal sales)

$$Z = \frac{\bar{x} - \mu}{\sigma/\sqrt{n}} = \frac{\bar{x} - \mu}{SE} = \frac{25.286 - 32.86}{0.658} = -11.51$$

As we use the 5% level of significance, which shown below:

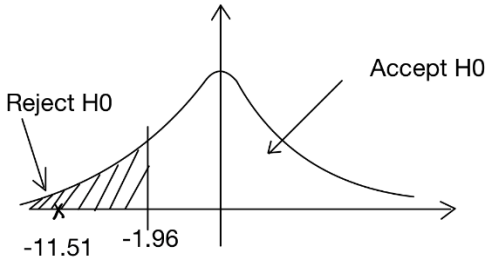


Figure 19 Hypothesis test

So, we reject the null hypothesis which the daily sales are greater than the ideal sales that are not true, and we accept the alternative hypothesis that the daily sales are lower than the ideal sales.

As now we find out that we have the room to improvement, then, think about 8 types of main wastes produced in the process.

Wastes were found:

1. Transportation: Express company is not quite fast.
2. Waiting time: Factory has spent too long to finish the order.
3. Human Resources: We did not arrange the tasks properly.
4. Over-processing: The factory will pack the clothes and the express company will pack the clothes as well.
5. Overproduction: We ordered too many clothes.
6. Motion: The warehouse is not that close to our store.
7. Inventory: Some clothes might out-of-fashion if we do not sell them in one season.
8. Defects: The style of clothes is not fit for this season.

As well as based on the figure 10 fishbone map, for each of the stages, the problems can be identified as follow:

1. The factory preparing the clothes has spent too much time.
2. The express company has taken too long to ship the packages.
3. Our arrangement is not good enough.

And that is the Root Cause we need to evaluate and eliminate.

Improve

We have found the 3 root causes in the analyze phase, then here are the factors that can affect each process.

Process	Factors
Factory	Chao(+)
	Yiwu(-)
Express Company	SF Express(+)
	China Post(-)
Arrangement Method	Size classfication(+)
	Style classification(-)

Figure 20 Factors for each process

So, this will be a $2^3 = 8$ study, which is 2 levels of 3 factors, and if we run the replication twice, the total response will be $8 \times 2 = 16$. Hence, we can build the full factorial of Design of Experiment (DOE) test shown as follow:

	C1	C2	C3	C4	C5	C6	C7	C8
	StdOrder	RunOrder	CenterPt	Blocks	Factory	Express Company	Arrangement Method	Response
1	1	1	1	1	-1	-1	-1	45.6
2	2	2	1	1	1	-1	-1	53.3
3	3	3	1	1	-1	1	-1	54.2
4	4	4	1	1	1	1	-1	41.3
5	5	5	1	1	-1	-1	1	61.6
6	6	6	1	1	1	-1	1	53.3
7	7	7	1	1	-1	1	1	54.1
8	8	8	1	1	1	1	1	45.8
9	9	9	1	1	-1	-1	-1	47.3
10	10	10	1	1	1	-1	-1	54.2
11	11	11	1	1	-1	1	-1	55.4
12	12	12	1	1	1	1	-1	40.2
13	13	13	1	1	-1	-1	1	63.2
14	14	14	1	1	1	-1	1	55.7
15	15	15	1	1	-1	1	1	53.5
16	16	16	1	1	1	1	1	48.8
17								

Figure 21 DOE

Then, to make sure the hypothesis test can be run, the normal probability plot is being used.

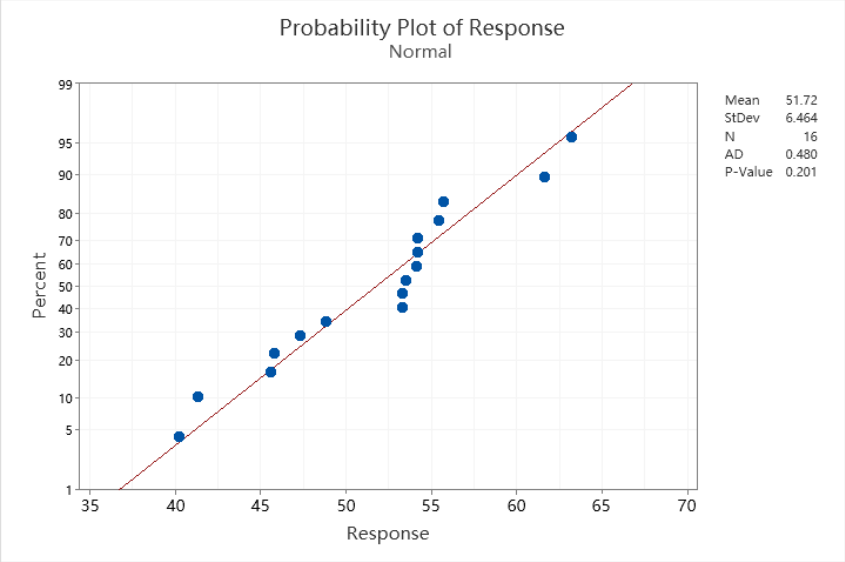


Figure 22 Normal distributed test for response

As the p-value of this set of response data is 0.201 which is greater than 0.05, which is normally distributed so that we can run the hypothesis test.

And the ANOVA test can be shown as follow, which the Response = 626.76, with 16 degrees of freedom.

S	R-sq	R-sq(adj)	R-sq(pred)
1.22551	98.08%	96.41%	92.33%

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	7	614.75	87.821	58.47	0.000
Linear	3	340.15	113.382	75.49	0.000
Factory	1	111.83	111.831	74.46	0.000
Express Company	1	104.55	104.551	69.61	0.000
Arrangement Method	1	123.77	123.766	82.41	0.000
2-Way Interactions	3	145.21	48.404	32.23	0.000
Factory*Express Company	1	99.50	99.501	66.25	0.000
Factory*Arrangement Method	1	14.63	14.631	9.74	0.014
Express Company*Arrangement Method	1	31.08	31.081	20.69	0.002
3-Way Interactions	1	129.39	129.391	86.15	0.000
Factory*Express Company*Arrangement Method	1	129.39	129.391	86.15	0.000
Error	8	12.02	1.502		
Total	15	626.76			

Regression Equation in Uncoded Units

Response = 51.719 - 2.644 Factory - 2.556 Express Company + 2.781 Arrangement Method
- 2.494 Factory*Express Company - 0.956 Factory*Arrangement Method
- 1.394 Express Company*Arrangement Method
+ 2.844 Factory*Express Company*Arrangement Method

Figure 23 ANOVA Test and Response

And the standardized effects Pareto chart is shown as follow:

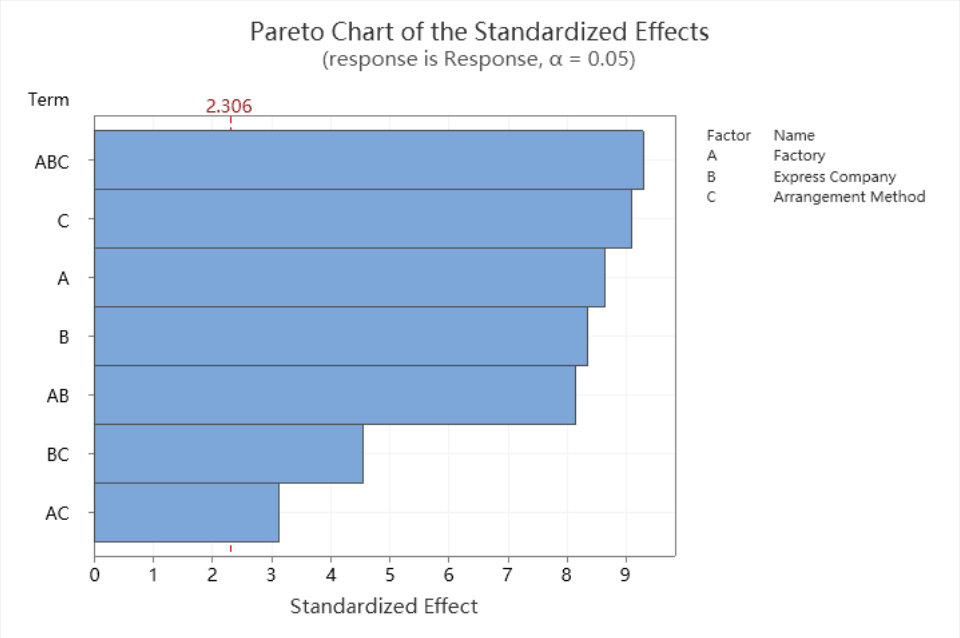


Figure 24 Pareto

Which all of the main effects and interaction effects are greater the critical value (2.306) which accord with the objective facts.

And based on the graph, the effects of the time cost and its weight of effect can be seen as ABC, C, A, B, AB, BC, AC. Which we know that ABC takes the biggest weight in the interaction effect, then, for the main effects, the C (Arrangement Method) take the major effect of the whole procedure.

And the more detailed impact from changing the level of the factors on the response can be obtained from the main effects plot and interaction plot are shown below:

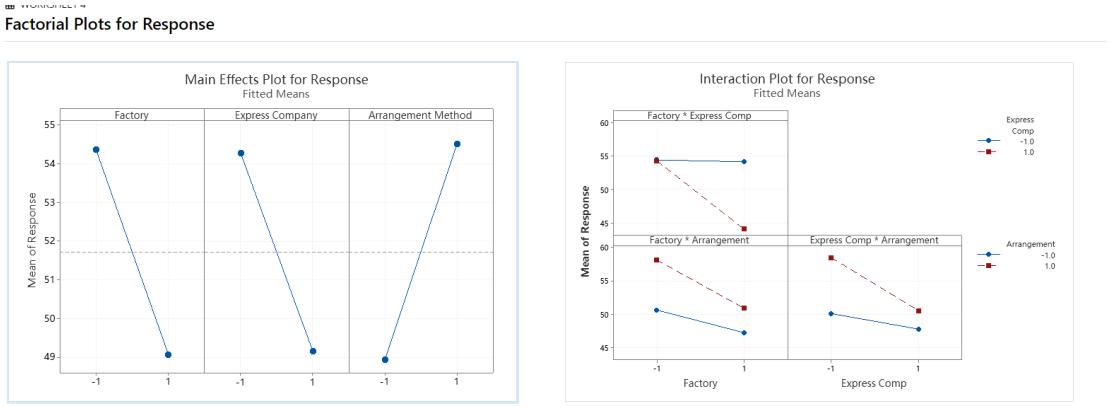


Figure 25 Factorial Plots for Response

From the main effects plot, we can know that for the factors A(Factory) and B

(Express Company) the minimum of their responses is both happens at when the level is 1, and for C (Arrangement Method), it happens at the level is -1.

And looking at the interaction plot, we found that the most significant interaction effect is from the combination of A (Factory) and B (Express Company).

Besides, the cube plot is shown as follow:

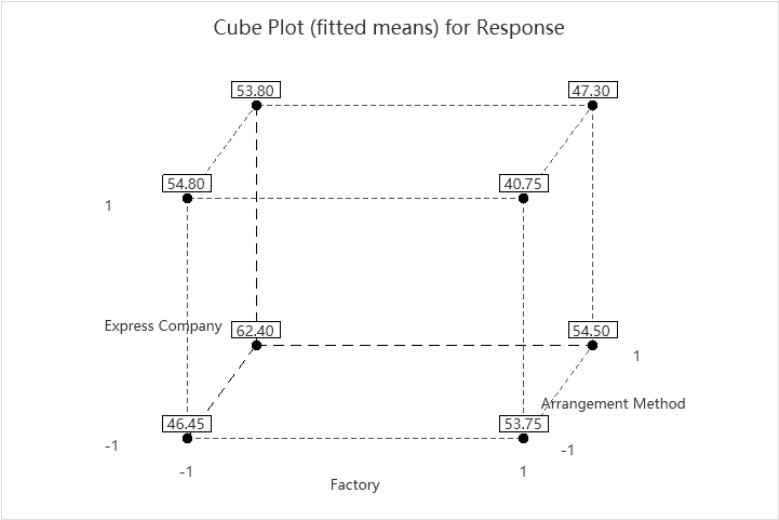


Figure 26 Cube plot for response

Which the best combination is [1][1][-1] with the response of 40.75. And the worst combination is [-1][-1][1] with the response of 62.4.

Then, we can verify the response via using the optimization, the corresponding response can be obtained:

Response Optimization: Response

Parameters

Response	Goal	Lower	Target	Upper	Weight	Importance
Response	Minimum		40	63.2	1	1

Solution

Solution	Factory	Express Company	Arrangement Method	Response Fit	Composite Desirability
1	1	1	-1	40.75	0.967672

Multiple Response Prediction

Variable	Setting
Factory	1
Express Company	1
Arrangement Method	-1

Response	Fit	SE Fit	95% CI	95% PI
Response	40.750	0.867	(38.752, 42.748)	(37.289, 44.211)

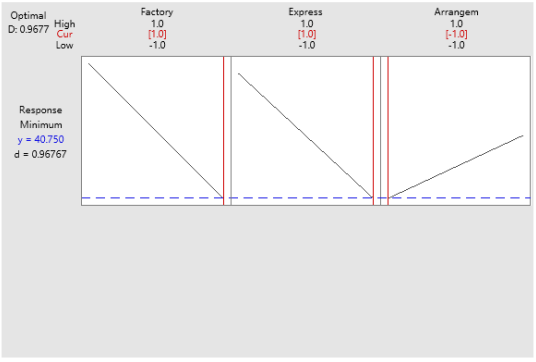


Figure 27 Optimization of response

The goal of this project is to reduce the time cost 20% to put the clothes on the hanger, which the current time averagely is 51.135 hours, and our goal is to

reduce to 51.135-51.135*20%=40.908hours.

Now, based on the optimization of response shown in figure 26, the best processes procedure (Level) can be determined which is [1][1][-1], which the corresponding entities are, for the Factory, choose Chao, for Express Company, choose SF Express, and the Arrangement Method is using the Style Classification method. Which in this way, the total time cost will be 40.75hours, and which (51.135-40.75)/51.135=20.3% which has achieved the goal of this project.

Then, we have recorded the time cost at Measurement phase for the initial performance, and now, if we take a look at the performance after the improvement which shown below:

	Time spend (Hours)			
	My father		My mother	
	1	2	1	2
Create the purchase list(1)	1.12	1.16	0.98	1.21
Contact the factory and sending orders(2)	0.12	0.21	0.14	0.14
Factory prepare the orders(3)	19.6	18.7	19.2	18.8
Factory contact the express company(4)	1.7	1.6	1.6	1.72
Express company shipping the packages(5)	14.7	15.4	16.2	15.7
Accept the package and move to the warehouse(6)	0.85	0.72	0.91	0.87
Check and arrange(7)	1.2	1.5	1.1	1.4
Put the clothes on the hanger(8)	0.85	0.88	0.77	0.84
Total	40.14	40.17	40.9	40.68

Figure 28 The time cost record after improvement

Then, we use gage R&R to verify the data again to make sure that our measurement system is good, which we have the following result:

Gage R&R

Variance Components

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.0787	0.14
Repeatability	0.0787	0.14
Reproducibility	0.0000	0.00
Operators	0.0000	0.00
Part-To-Part	58.0450	99.86
Total Variation	58.1237	100.00

Gage Evaluation

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)
Total Gage R&R	0.28054	1.6832	3.68
Repeatability	0.28054	1.6832	3.68
Reproducibility	0.00000	0.0000	0.00
Operators	0.00000	0.0000	0.00
Part-To-Part	7.61872	45.7123	99.93
Total Variation	7.62389	45.7433	100.00

Number of Distinct Categories = 38

Figure 29 Gage R&R after improvement

In Variance Components we have total Gage R&R is 0.14% which is smaller than 1% and in Gage Evaluation, Total Gage R&R is 3.68% which is smaller than 10%. So, the result can show that the measurement system is acceptable.

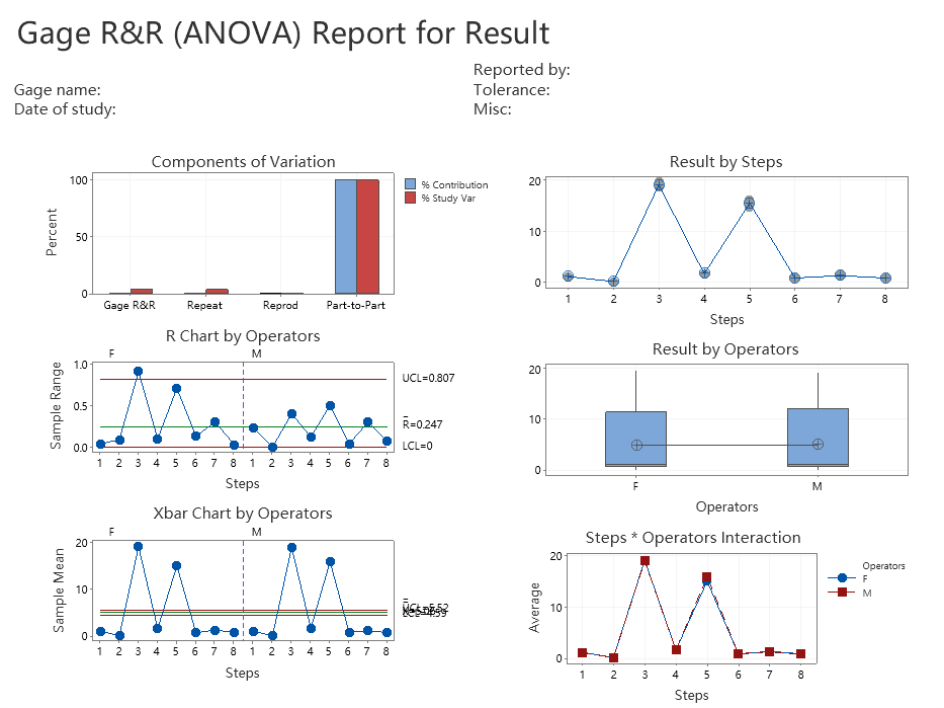
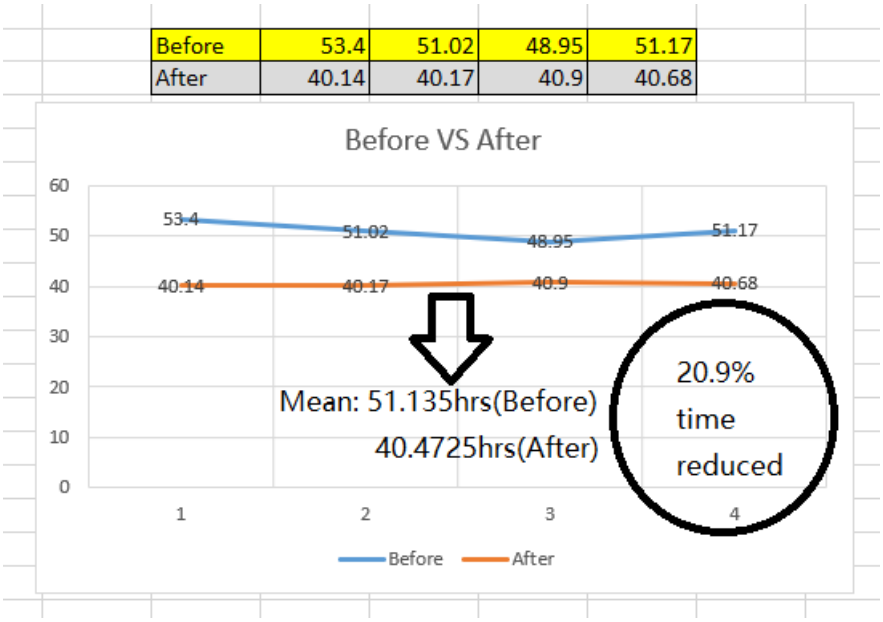


Figure 30 Gage R&R Report after improvement

And if we comparing to the initial time cost which shown below:



Before	53.4	51.02	48.95	51.17
After	40.14	40.17	40.9	40.68

Figure 31 Comparison between before and after

Which the time cost reduced 20.9% which is a significant improvement.

Before:

Figure 32 Before

After:

Figure 33 After, classification by style

Control

Control Plan:

1. Contact the factory in advance to tell them to prepare the clothes in advance.
2. Contact the express company no need to pack the package again, just weigh the package.
3. Arrange the personnel to receive the package and send to the warehouse.
4. Classify the clothes by the style.
5. Record the clothes distribution location of the different clothes.

And then, for monitor and visualize the performance, a timer is being used to record each stage of time cost and put on the excel sheet.

Besides, record the frequencies of customer come into the store but does not purchase anything.

Then, the new sale record is shown below:

	1	2	3	4	R	Average
Day 1	42	29	41	35	13	36.75
Day 2	26	26	45	39	19	34
Day 3	28	35	39	33	11	33.75
Day 4	37	44	27	40	17	37
Day 5	32	33	31	27	6	30.75
Day 6	43	40	36	29	14	37
Day 7	33	43	38	34	10	37
TAKT TIME	20.46700508					

Figure 34 New Sale Record

As the new TAKT time is 20.47min which is smaller than 21.9min which meet the goal we set. And if we look at the Control Chart

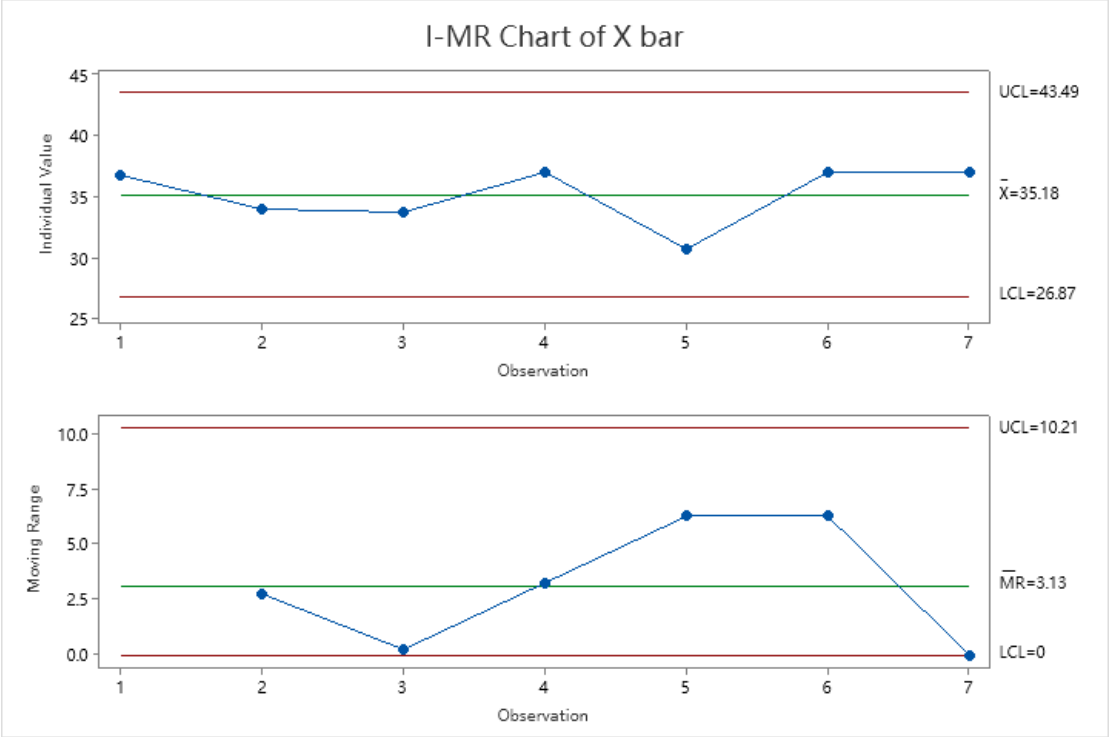
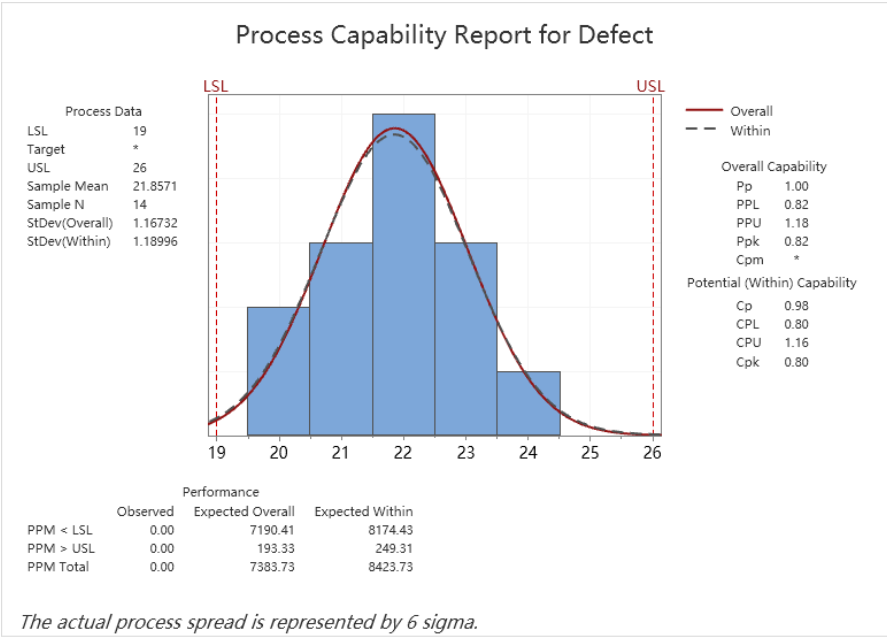


Figure 35 Control Chart

Based on the graph shown above, all the data are located between USL and LSL which can tell that the control performance is good.

Then, collect the new defects (The counting of customers come into the store but not purchase the clothes) which shown below:



Day	Defect
1	22
2	21
3	22
4	23
5	20
6	22
7	22
8	20
9	23
10	21
11	21
12	23
13	22
14	24

Figure 36 Capability Analysis

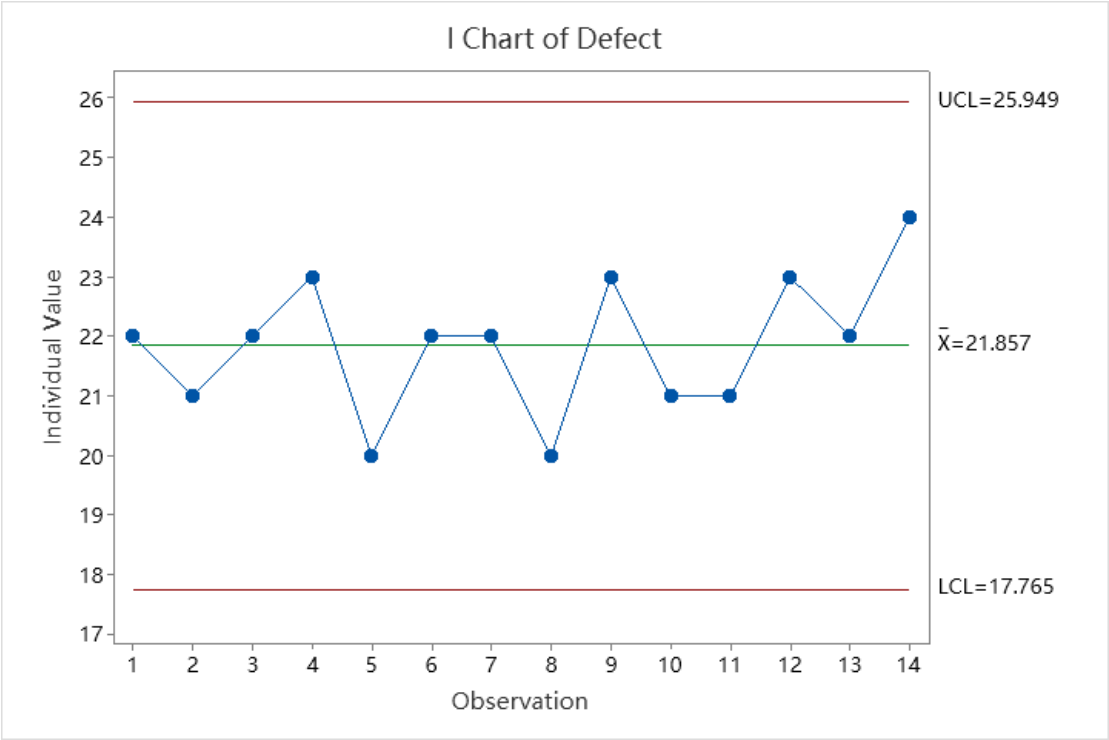


Figure 37 Control Chart

Based on the graphs shown above, there is no data out of control, which is all good and should keep on maintaining this condition.

And this is the whole process for the lean & six sigma project.

FORM A1

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PLAGIARISM DISCLAIMER

STUDENT NAME: Zien Zheng

STUDENT NUMBER: A00268964

PROGRAMME: Mechanical Engineering

YEAR: 4th year

MODULE: lean & Six Sigma

LECTURER: Martina Cunningham

ASSIGNMENT TITLE: Reduce time spent to place the clothes

DUE DATE: 26/11/2020

DATE SUBMITTED: 24/11/2020

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Dated: 24/11/2020