SitWell Furniture

OPERATIONS PLAN BY TEAM

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Chapter 1 – Mission Statement

SitWell is a furniture company founded in 2017 located in MexiCali, California. We manufacture Ladder-back chairs. It is a privately owned company with 31 employees. We specialize in making comfortable ladder back chairs, offering good quality with affordable cost.

SitWell aims for a design that is simple and consistent to produce, thus creating a streamlined process, in order to focus on dependable delivery and low cost. We are hoping to target new homeowners and incoming college students, as we feel our chosen locations of Sacramento and Alameda County have a nice influx of potential customers. Our potential customers are furniture wholesalers at Sacramento & Alameda.

Chapter 2 - Operational Strategy

2.1 Competitive Priorities

SitWell Furnitures focuses on low cost operations, consistent quality & on time delivery.

Low Cost Operations

The primary objective was to lower the operations cost & certainly lower the selling price than competitors to attract maximum customers. Our target customers are new homeowners and incoming college students in bay area, selling chairs at affordable price will be the trump card to maximize our customers.

Consistent Quality

We diligently make sure that quality is not compromised at any step. Quality checks have been established into every process in our unit to guarantee chair's design and operating characteristics meet predetermined standards. Focus is to minimize human error and machinery defects.

On Time Delivery

It is very important for us that our customers receive the product on time. This is one of the reasons we have such a loyal customer base. Order-promising & customer satisfaction are two aspects that are very important to us. We encounter processes such as forecasting, scheduling, demand-inventory planning to meet the needs of customers at the right time.

2.2 Process Strategy

<u>Make to stock</u>

SitWell furniture strategy is make to stock. Manufacturing firms that hold items in stock for immediate delivery, thereby minimizing customer delivery times, use a make-to-stock strategy. We use all these strategies in our manufacturing process.
This strategy is feasible for standardized products with high volumes and reasonably accurate forecasts.

Reasons for choosing make to stock:

1. Reduce Operations Cost
2. Stock produced based on forecasted demand

3. Standardized Product, no variation.
4. Lower excess inventory
5. Prevent opportunity loss due to stock out
6. Mass produce standard products.
7. Minimize errors.

2.3 Process Choice

SitWell Furniture deals with Batch Process. The several reasons for choosing Batch Process are:

1. **Low Cost Choice**

One of the primary reasons to go for batch is that it can be set up with limited capital as it does not require large automated facilities. The key advantage of investing low cost in the process would make it more secure in case of loss.

2. **Increases flexibility**

Batch process allows making small changes to alter production run. Flexibility is a way to increase customer satisfaction as we would be available to take in orders or shift production based on demand.

3. **No Order or Conveyer Belt**

One of the main advantages of a batch process is that it is time efficient.

Chapter 3 - Process Flow

3.1 Basic Flow Diagram

Below is the outline of SitWell Furniture operations:

1. Receive raw materials
2. Inspect & Store the raw material in the storage
3. Manufacturing processes: cutting, lathing, drilling, ladder back sub-assembly, seat sub-assembly, seat-frame sub-assembly, paint, dry, and seat cushion assembly. (Every step in the manufacturing process includes inspection and quality check)
4. Perform Final Quality Assurance for Finished Goods
6. Packaging the Final Assembly/ Finished Goods
7. Store the Final Assembly/ Finished Goods at storage
8. Shipping to Retail Stores.

3.1.1 Basic Outline SitWell Operation

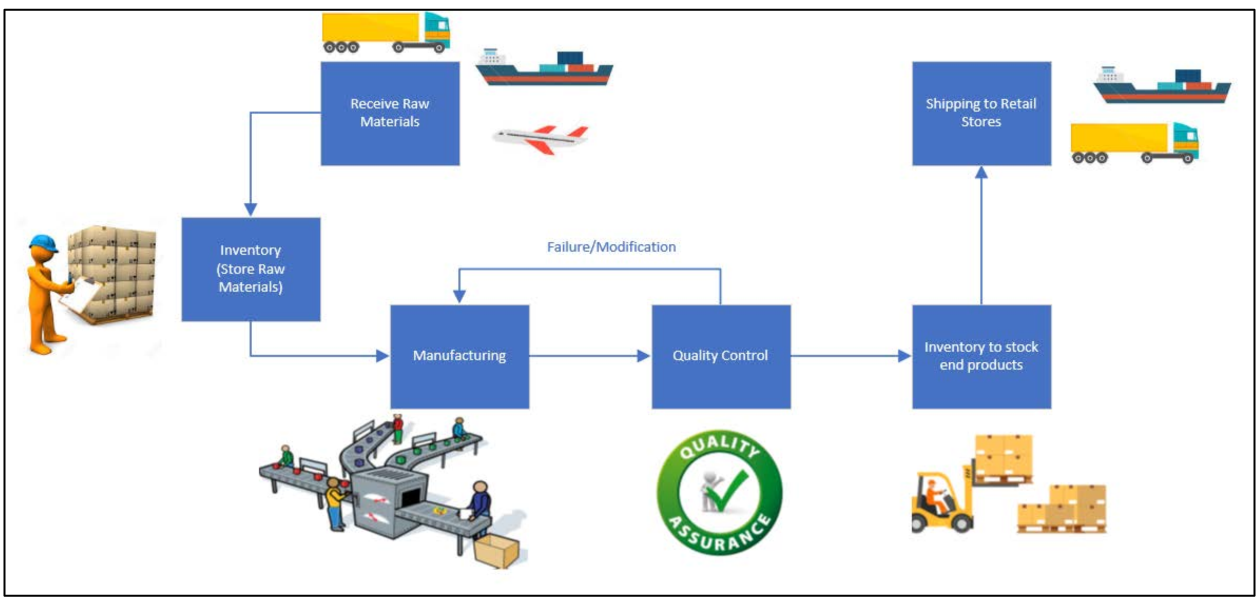


Figure 1 : Basic Outline SitWell Operation

3.1.2 Manufacturing Process Flow Diagram

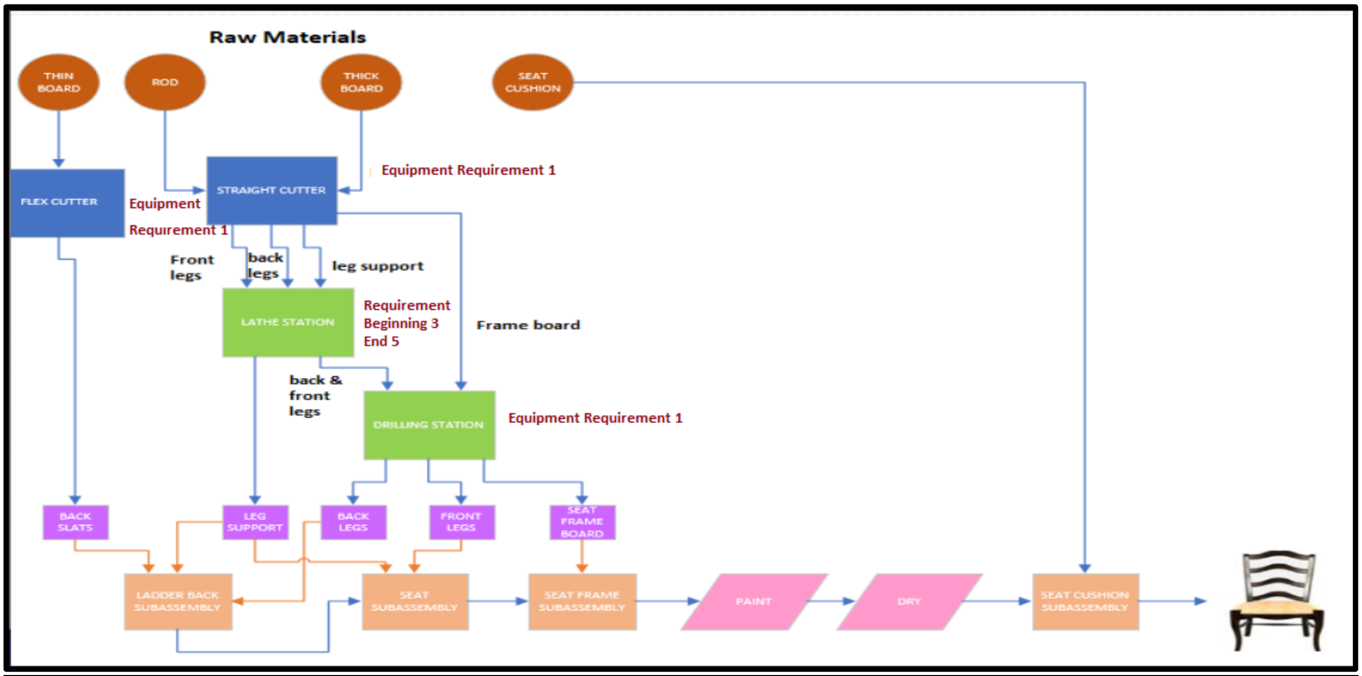


Figure 2: Manufacturing Process

3.1.3 Detailed Operation Steps

1. Receive raw materials from supplier.
2. Inspect and Stock Raw material in the inventory.
3. Transport the acceptable raw materials to the manufacturing unit.
4. Perform the cutting process for rod, thin board, and thick board raw materials.
5. Inspect the results of the cutting process, the components that pass inspection are transported to the Lathe Stations.
6. Perform the lathing process for back legs, front legs, and legs support components.
7. Inspect the results of the lathing process, the components that pass inspection are transported to the Drilling Stations.
8. Perform the drilling process for back legs, front legs, and front seat frame components.
9. Inspect the results of the drilling process, the components that pass the inspection are transported to the ladder back sub assembly to begin the Sub-Assembly activities.
10. Perform the ladder back sub-assembly process for back legs, back slats, and one leg support components. Then, transport the sub-assemblies to the seat sub-assembly station after inspection.
11. Perform the seat sub-assembly process with front legs and leg supports

components and ladder back sub-assembly. Then, transport them to the seat-frame sub-assembly station after inspection,

12. Perform the seat-frame sub assembly process with seat sub-assembly and seat frame boards component.
13. Inspect the results. If acceptable, they will be transported to the painting station to begin the Final Assembly activities. If they are rejected, they will be scrapped or recycled.
14. Perform painting process. Then, transport the assemblies to the drying station.
15. Perform drying process. Let the assemblies dry for 24 hours. Then, transport them to the last step for Final Assembly activities.
16. Perform the seat cushion assembly process with seat- frame sub-assembly and seat cushion.
17. Transport to Quality Assurance area for the Final Inspection.If the FGs are acceptable, they will be transported to the packaging station. If the components are being rejected, they will be scrapped or recycled.
18. Package all the Finished Goods and store them into the storage.
19. Put them into the truck to be ready for shipping to the retail stores.

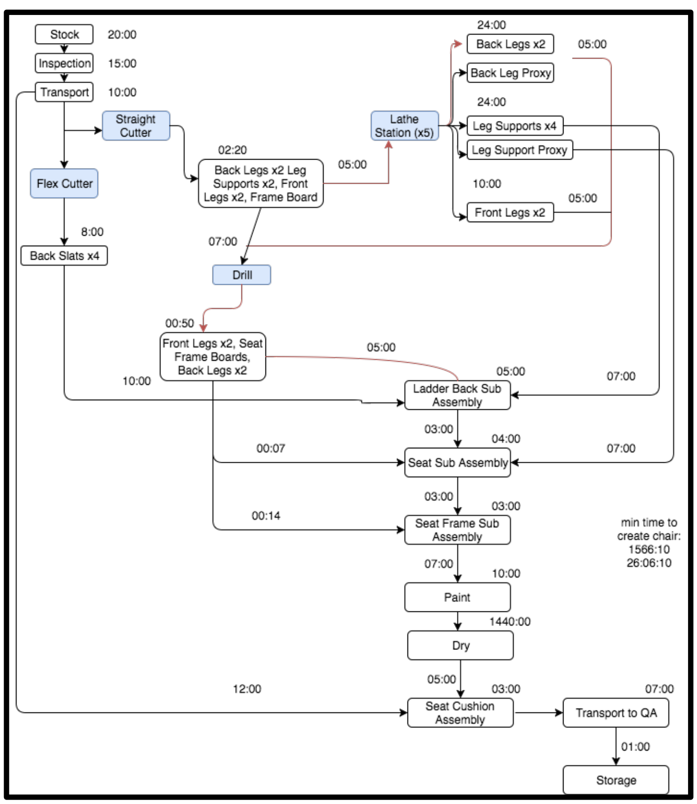


Figure 3: Operation Steps

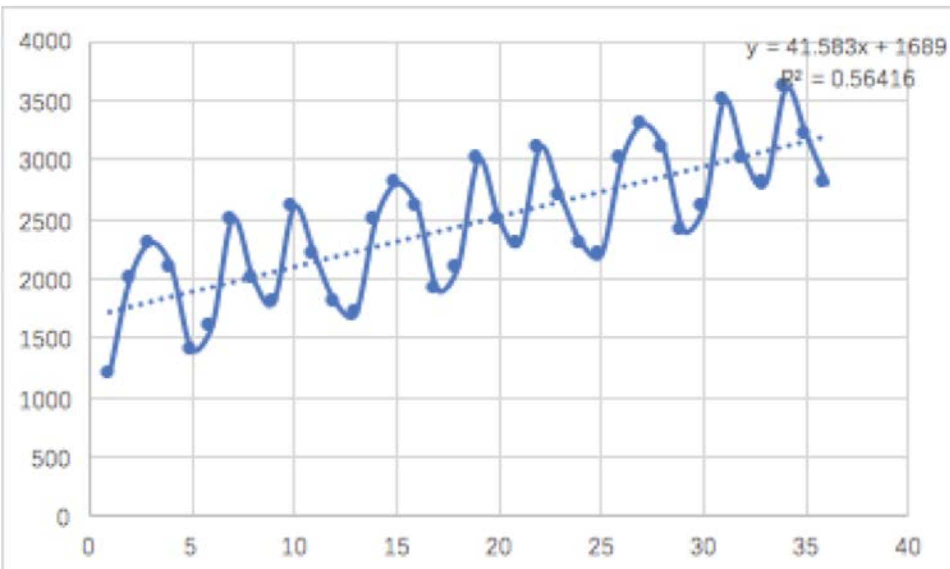
3.1.4 Process Chart

STEP	PROCESS	TIME	DISTANCE	OPERATION	TRANSPORT	INSPECTION	DELAY	STORE	PROCESS DESCRIPTION
1	Stock Raw Material in Inventory	20 mins	10 ft					•	Receive Raw Material. Inspect and store in inventory.
2	Raw material quality inspection	15 mins				•			If passed store them, else ship them back to suppliers
3	Transport to manufacturing unit	10 mins	15 ft		•				Transport materials to manufaccturing unit
	Straight Cutter								
4	Straight Cutter -Rods cut into Back Legs	10 secs/leg (20 secs for 2 back legs)		•					Straight Cutter used for cutting rods to make back legs
6	Staright Cutter -Rods cut into Front Leg	10 secs/leg (20 secs for 2 front legs)		•					Straight Cutter used for cutting rods to make front legs
5	Straight Cutter -Rods cut into Leg Support	10 secs/leg (40 secs for 4 leg support)		•					Straight Cutter used for cutting rods to make leg support
7	Straight Cutter -Thick board cut into Frame Board	1 min/board		•					Straight Cutter used for cutting thick boards to make frame baords
5	Back Legs Transported to Lathe Station	5 mins	10 ft		•	•			Inspection & Transport to Lathe Station
7	Front Legs Transported to Lathe Station	5 mins	10 ft		•	•			Inspection & Transport to Lathe Station
6	Leg Supports Transported to Lathe Station	5 mins	10 ft		•	•			Inspection & Transport to Lathe Station
8	Frame Board Transported to Drill Station	7 mins	20 ft		•	•			Inspection & Transport to Drilling Station
	Flex Cutter								
4	Flex Cutter - Thin board cut into back slats	2 mins/slat (8 mins for 4 slats)		•					Flex Cutter used for cutting thin boards to make back slats
5	Transport back slats to ladder back sub assembly	10 mins	30 ft		•	•			Inspection & Transport to Ladder back sub assembly
4	Transport Seat Cushion to seat cushion sub assembly	12 mins	35 ft		•				Transport Seat Cusion to Seat Cushion Sub assembly
	Lathe Station								
Beginning	Lathe 1: For Back Leg	12 mins/leg (24 mins for 2 back legs)		•					Cut Back legs processed Lathe machine 1
Beginning	Lathe 2: For Front Legs	5 mins/leg (10 mins for 2 legs)		•					Cut Front legs processed Lathe machine 2
Beginning	Lathe 3 : For Leg Supports	6 mins/support (24 mins for 4 supports)		•					Cut Leg Support processed Lathe machine 3
End	Lathe 4: For Back Legs			•					Cut Back legs processed Lathe machine 5 (When demand is high)
End	Lathe 5: For Leg supports			•					Cut Front Legs processed Lathe machine 6 (When demand is high)
7	Back legs Transported to Drill	5 mins	10 ft		•	•			Inspection & Transport to Drill
9	Front Legs transported to drill	5 mins	10 ft		•	•			Inspection & Transport to Drill
8	3 Leg supports transported to seat sub assembly	7 mins	20 ft		•	•			Inspection & Transport to Seat Sub Assembly
8	1 Leg Support Transported to ladder back sub assembly	7 mins	20 ft						Inspection & Transport to ladder back assembly
	Drill Station								
9	Seat Frame Boards	10 secs/board		•					Drill 2 holes in front seat frame board
8	Back Legs	10 secs/leg (20 secs for		•					Drill 2 holes in front legs
10	Front Legs	10 secs/leg (20 secs for		•					Drill 2 holes in back legs
9	Transport Back Legs to Ladder Back Sub Assembly	5 mins	10 ft		•	•			Inspection and Transportation
10	Tranport Seat Frame Boards to Seat Frame Sub Assembly	5 mins	10 ft		•	•			Inspection and Transportation
11	Transport Front Legs Seat Sub Assembly	5 mins	10 ft		•	•			Inspection and Transportation
	SUB ASSEMBLY								
10	Ladder Back Sub Assembly	5 mins		•					Assemble backlegs, back slat and 1 leg support
11	Transport Ladder Back sub assembly to seat sub	3 mins	7 ft		•	•			Inspection and Transport
12	Seat Sub assembly	4 mins		•					Assemble front legs & leg support to the ladder back assembly
13	Transport Seat sub assembly to seat frame sub	3 mins	7 ft		•	•			Inspection and Transport
14	Seat frame sub assembly	3 mins		•					Assemble seat frame board with rest of chair
	PAINT & DRY								
15	Transport to Paint/Dry Area	7 mins	20 ft		•	•			Transport & Inspection
16	Paint	10 mins / chair		•					Paint
17	Dry	24 hours		•					dry
	Cushion Assembly & Quality Check								
18	Transport to seat cushion sub assembly	5 mins	10 ft		•	•			Transport & Inspection
19	Seat Cusion Asssembly	3 mins/chair		•					assemble cushions to chair
20	Transport to Quality Assement Area	7 mins	20 ft		•	•			Transport & Inspection
	Storage								
21	Transport to Storage	10 mins	30 ft		•	•		•	Store the end product

Figure 4: Process Chart

Chapter 4 - Forecast

For the forecast, the demand numbers of chairs of the first year is given and it is required to come up with the forecast for second and third year. The methodology used to forecast the demand numbers of the second and third year is linear regression. The pattern of increasing for the demand of second and third year should be the same as the demand of the first year, meaning that the function to represent the demand for the three production years should have the same slope and intercept on the demand axis, as shown in Graph 1. After several computations, it can be found out that when the monthly demand of the second year is increased by 500 chairs compared to the monthly demand of the first year, they will have the same plot of the function, and the same applies for the third year, as shown in Table 1.



Graph 1 – Monthly Forecast

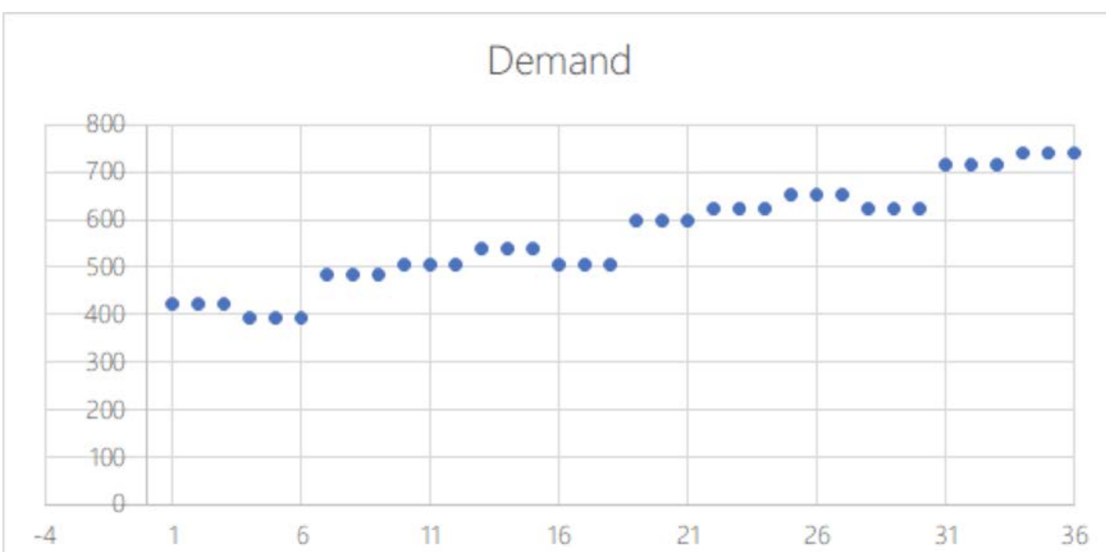
First Year	Second Year	Third Year
1200	1700	2200
2000	2500	3000
2300	2800	3300
2100	2600	3100
1400	1900	2400
1600	2100	2600
2500	3000	3500
2000	2500	3000
1800	2300	2800
2600	3100	3600
2200	2700	3200
1800	2300	2800

Table 1 – Monthly Forecast

To simplify the process of computations, the monthly demand should be transferred to quarterly demand and then be further divided into weekly demand. To achieve that, the quarterly demand is computed by adding up the demand of three consecutive months and then the weekly demand is derived by dividing the quarterly demand by 13 weeks, as shown in Table 2 and Graph 2.

Month	Unit	Sum of Quarter	Average Weekly Demand		Month	Demand
1	1200		13		1	423.076923
2	2000				2	423.076923
3	2300	5500	423.0769231		3	423.076923
4	2100				4	392.307692
5	1400				5	392.307692
6	1600	5100	392.3076923		6	392.307692
7	2500				7	484.615385
8	2000				8	484.615385
9	1800	6300	484.6153846		9	484.615385
10	2600				10	507.692308
11	2200				11	507.692308
12	1800	6600	507.6923077		12	507.692308
13	1700				13	538.461538
14	2500				14	538.461538
15	2800	7000	538.4615385		15	538.461538
16	2600				16	507.692308
17	1900				17	507.692308
18	2100	6600	507.6923077		18	507.692308
19	3000				19	600
20	2500				20	600
21	2300	7800	600		21	600
22	3100				22	623.076923
23	2700				23	623.076923
24	2300	8100	623.0769231		24	623.076923
25	2200				25	653.846154
26	3000				26	653.846154
27	3300	8500	653.8461538		27	653.846154
28	3100				28	623.076923
29	2400				29	623.076923
30	2600	8100	623.0769231		30	623.076923
31	3500				31	715.384615
32	3000				32	715.384615
33	2800	9300	715.3846154		33	715.384615
34	3600				34	738.461538
35	3200				35	738.461538
36	2800	9600	738.4615385		36	738.461538

Table 2 – Weekly Forecast



Graph 2 – Weekly Forecast

Chapter 5 - Master Production Schedule

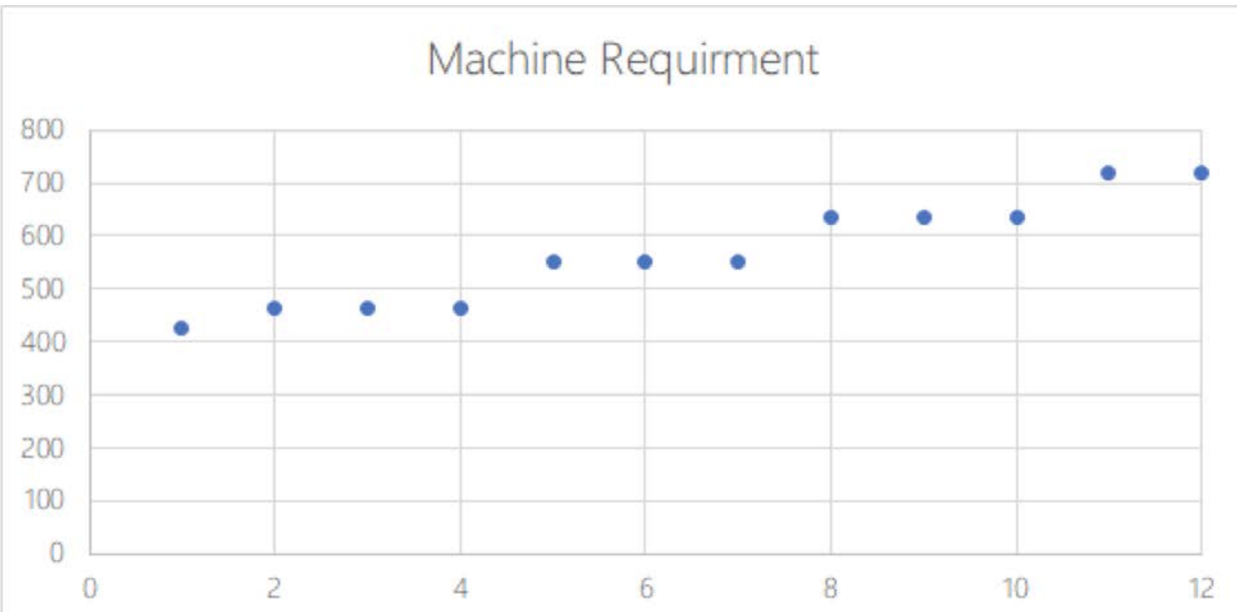
While the monthly demand varies, a fixed long-term schedule for the weekly production is needed as it is easier to manage. It can be seen from Table 2, the demand of the first 3 month is higher than the following 3 months, and the production cannot meet the required demand if using the mean value of production of the first 6 months, so the production of the first 3 months should be left alone. For the rest 33 months, the weekly production plan is changed every 9 months. The calculation of master production schedule is shown in Table 3 and the results are shown in Table 4 and Graph 3.

Product	Total # Week	Inventory	Quarter	Week #	Year
1700	4	500			
1700	4	200			
2125	5	25	1	4+4+5	
2325	5	250			
1860	4	710			
1860	4	970	2	5+4+4	
1860	4	330			
1860	4	190			
2325	5	715	3	4+4+5	
2325	5	440			
1860	4	100			
1860	4	160	4	5+4+4	1
2200	4	660			
2200	4	360			
2750	5	310	5	4+4+5	
2750	5	460			
2200	4	760			
2200	4	860	6	5+4+4	
2200	4	60			
2750	5	310			
2200	4	210	7	4+5+4	
3175	5	285			
2540	4	125			
2540	4	365	8	5+4+4	2
2540	4	705			
2540	4	245			
3175	5	120	9	4+4+5	
3175	5	195			
2540	4	335			
2540	4	275	10	5+4+4	
3600	5	375			
2880	4	255			
2880	4	335	11	5+4+4	
3600	5	335			
2880	4	15			
2880	4	95	12	5+4+4	3

Table 3 – Calculation of Master Production Schedule

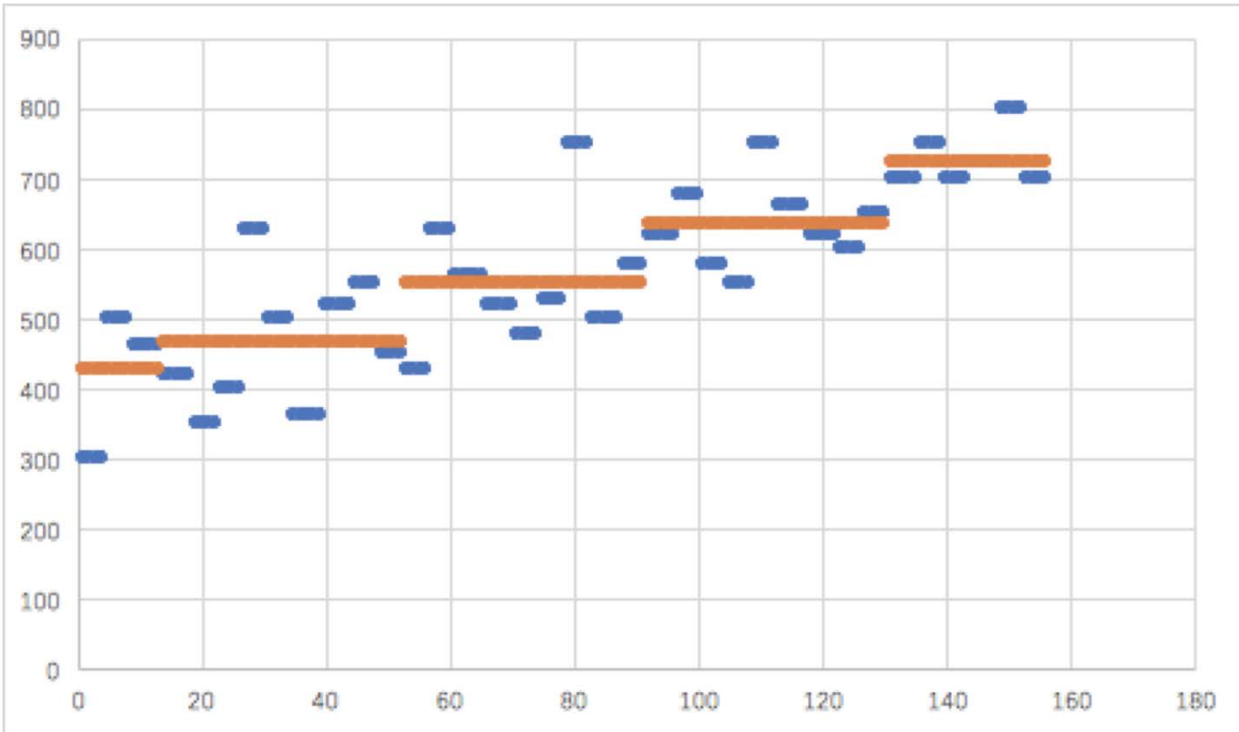
Quarter	Machine Requirment
1	425
2	465
3	465
4	465
5	550
6	550
7	550
8	635
9	635
10	635
11	720
12	720

Table 4 – Weekly Machine Requirement



Graph 3 – Weekly Machine Requirement

As Graph 4 shows, the orange lines represent the actual weekly production plan and the blue lines represent weekly demand. It can be seen that the area that the orange lines cover is big enough to cover the blue lines, meaning that the weekly demand can be satisfied by the weekly production plan.



Graph 4 – Demand vs. Production over weeks

Chapter 6 - Capacity Planning

The purpose of capacity plan is to come up with the numbers of machines needed to satisfy the production. For the example of straight cutter, it is supposed to work 24*7 = 168 hours per week, but it has a 95% uptime and a 2-hr/week maintenance time, so it is actually working 168*0.95-2=157.7 hours per week. The straight cutter is used to cut legs and seat frames. The times for the straight cutter to cut legs and seat frames are different; it needs 10 seconds to cut 1 leg and 6 seconds to cut 1 seat frame. There are 2 front legs, 2 back legs and 4 leg supports on each chair so it requires (2+2+4) *10=80 seconds to cut the legs for one chair; there are 4 seat frames on each chair so it requires 4*6=24 seconds to cut. The maximum number of weekly demand is 720 chairs, so the time of using the straight cutter each week is 720*(80+24) =74880 seconds=20.8 hours which is much less than the presumed 157.7 working hours. Thus, only one straight cutter is needed for the production plan. In addition, the same calculations can be applied for flex cutter and drill except that the actual working hours (410 – 696 hours) of lathe is more than the presumed 156.75 hours, so 3-5 lathes are needed. The capacity plan for the machines is shown in Table 5 – 8.

<u>Equipment Planning</u>

Straight Cutter:

Straight Cutter			Quarter	Weekly Capacity	Front Leg *2	Back Leg *2	Leg Support *4	Sum of Legs	Time Need(sec	Time Need(Hr)
Available Work Hour	157.7		1	425	850	850	1700	3400	34000	9.444444444
Work Efficiency for legs(s/leg)	10		2	465	930	930	1860	3720	37200	10.33333333
Total # can cut	56772		3	465	930	930	1860	3720	37200	10.33333333
			4	465	930	930	1860	3720	37200	10.33333333
Work Efficiency for Seat-frame(min/boarc	1		5	550	1100	1100	2200	4400	44000	12.22222222
Work Efficiency for Seat-frame(s/frame)	6		6	550	1100	1100	2200	4400	44000	12.22222222
Total # can cut	94620		7	550	1100	1100	2200	4400	44000	12.22222222
			8	635	1270	1270	2540	5080	50800	14.11111111
			9	635	1270	1270	2540	5080	50800	14.11111111
			10	635	1270	1270	2540	5080	50800	14.11111111
			11	720	1440	1440	2880	5760	57600	16
			12	720	1440	1440	2880	5760	57600	16
					Seat Frame *4				Time Need(sec	Time Need(Hr)
			1	425	1700				10200	2.833333333
			2	465	1860				11160	3.1
			3	465	1860				11160	3.1
			4	465	1860				11160	3.1
			5	550	2200				13200	3.666666667
			6	550	2200				13200	3.666666667
			7	550	2200				13200	3.666666667
			8	635	2540				15240	4.233333333
			9	635	2540				15240	4.233333333
			10	635	2540				15240	4.233333333
			11	720	2880				17280	4.8
			12	720	2880				17280	4.8

Table 5 : Straight Cutter Capacity Plan

Flex Cutter:

					Back Slat				Time Need(min	Time Need(Hr)
Flex Cutter			1	425	1700				3400	56.66666667
Available Work Hour	148.5		2	465	1860				3720	62
Work Efficiency (min/slat)	2		3	465	1860				3720	62
Total # can cut	4455		4	465	1860				3720	62
			5	550	2200				4400	73.33333333
			6	550	2200				4400	73.33333333
			7	550	2200				4400	73.33333333
			8	635	2540				5080	84.66666667
			9	635	2540				5080	84.66666667
			10	635	2540				5080	84.66666667
			11	720	2880				5760	96
			12	720	2880				5760	96

Table 6: Flex Cutter Capacity Planning

Lathe:

					Front Leg *2				Time Need(min	Time Need(Hr)		
Lathe			1	425	850			10200	170	Beginning	End
Available Work Hour	156.75		2	465	930			11160	186	410.8333333	696
Work Efficiency for Back Leg(min/leg)	12		3	465	930			11160	186	2.620946305	4.4401914
Total # can cut	783.75		4	465	930			11160	186	3	5
Setup Time(min)	20		5	550	1100			13200	220		
			6	550	1100			13200	220		
Work Efficiency for Front Leg(min/leg)	5		7	550	1100			13200	220		
Total # can cut	1881		8	635	1270			15240	254		
Setup Time(min)	10		9	635	1270			15240	254		
			10	635	1270			15240	254		
Work Efficiency for Leg Supports(min/leg)	6		11	720	1440			17280	288		
Total # can cut	1567.5		12	720	1440			17280	288		
Setup Time(min)	15				Back Leg *2			Time Need(min	Time Need(Hr)		
			1	425	850			4250	70.83333333		
			2	465	930			4650	77.5		
			3	465	930			4650	77.5		
			4	465	930			4650	77.5		
			5	550	1100			5500	91.66666667		
			6	550	1100			5500	91.66666667		
			7	550	1100			5500	91.66666667		
			8	635	1270			6350	105.8333333		
			9	635	1270			6350	105.8333333		
			10	635	1270			6350	105.8333333		
			11	720	1440			7200	120		
			12	720	1440			7200	120		
					Leg Support *4			Time Need(min	Time Need(Hr)		
			1	425	1700			10200	170		
			2	465	1860			11160	186		
			3	465	1860			11160	186		
			4	465	1860			11160	186		
			5	550	2200			13200	220		
			6	550	2200			13200	220		
			7	550	2200			13200	220		
			8	635	2540			15240	254		
			9	635	2540			15240	254		
			10	635	2540			15240	254		
			11	720	2880			17280	288		
			12	720	2880			17280	288		

Table 7: Lathe Capacity Planning

Drill:

Drill					Front Leg *2	Back Leg *2	Leg Support *4	Sum of Legs	Time Need(sec	Time Need(Hr
Available Work Hour	163.66		1	425	850	850	1700	3400	34000	9.444444444
Work Efficiency for Leg(sec/leg)	10		2	465	930	930	1860	3720	37200	10.33333333
Total # can cut	58917.6		3	465	930	930	1860	3720	37200	10.33333333
			4	465	930	930	1860	3720	37200	10.33333333
Work Efficiency for Board(sec/leg)	10		5	550	1100	1100	2200	4400	44000	12.22222222
Total # can cut	58917.6		6	550	1100	1100	2200	4400	44000	12.22222222
			7	550	1100	1100	2200	4400	44000	12.22222222
			8	635	1270	1270	2540	5080	50800	14.11111111
			9	635	1270	1270	2540	5080	50800	14.11111111
			10	635	1270	1270	2540	5080	50800	14.11111111
			11	720	1440	1440	2880	5760	57600	16
			12	720	1440	1440	2880	5760	57600	16
					Seat Frame *4				Time Need(sec	Time Need(Hr
			1	425	1700				17000	4.722222222
			2	465	1860				18600	5.166666667
			3	465	1860				18600	5.166666667
			4	465	1860				18600	5.166666667
			5	550	2200				22000	6.111111111
			6	550	2200				22000	6.111111111
			7	550	2200				22000	6.111111111
			8	635	2540				25400	7.055555556
			9	635	2540				25400	7.055555556
			10	635	2540				25400	7.055555556
			11	720	2880				28800	8
			12	720	2880				28800	8

Table 8: Drill Capacity Planning

Chapter 7 - Location

7.1 Target Market

We have targeted our market as Housing (domestic) in the form of Kitchen and Dining, Living Room, Study Chair, Patio Chair, etc. We target our customers primarily as students in the area of Sacramento and Alameda where there are ample number of educational institutions, thereby attracting a major number of students who have been observed to have flipped homes at an average of 2000-20000 annually of late. Also, the fact that the average personal income would be as low as around 65000 per annum, would aid one of our competitive priorities as low cost chair making. So basically, we are hoping to target new homeowners and incoming college students, as we feel our chosen locations of Sacramento and Alameda County have a nice influx of potential customers.

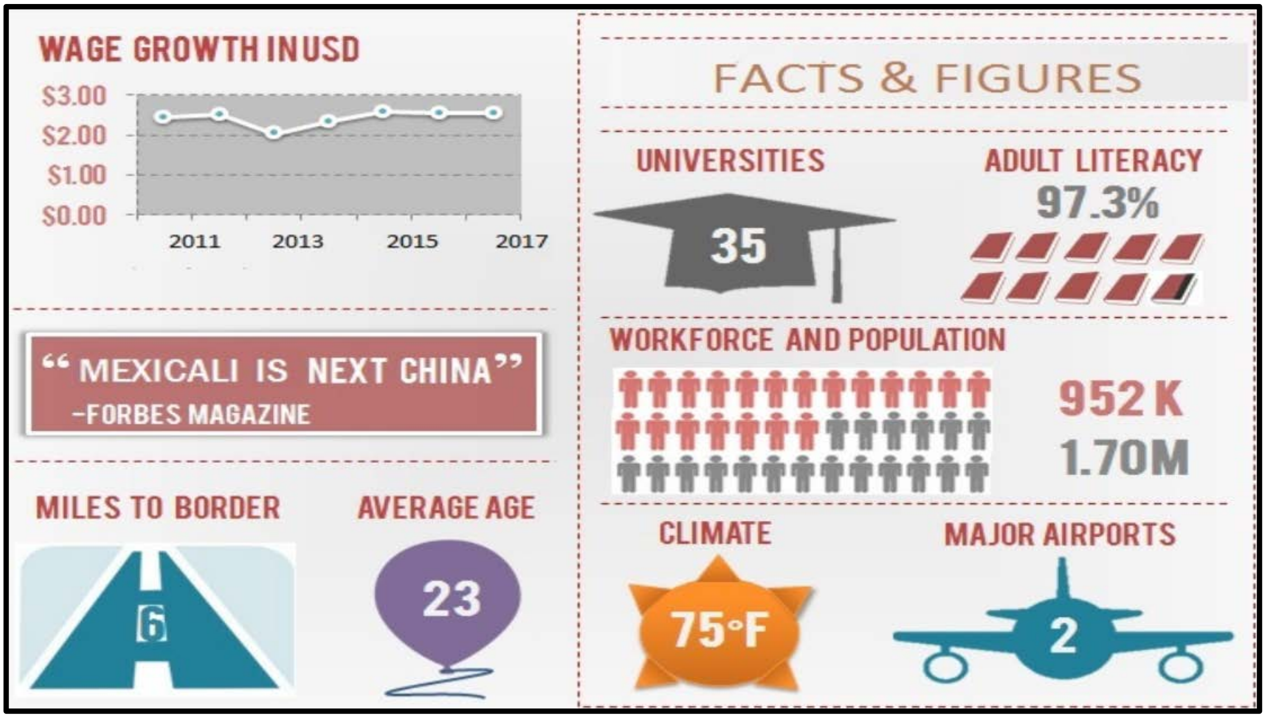
7.2 Factory Location

The method of selecting our factory location is as follows, with comparison in the respective categories: Labor costs, land cost, transportation & logistics, and taxes/duties. We understand that each location of interest will present numerous advantages and shortcomings relative to the other choices, and using this method allows us to holistically and objectively compare them. Our first location of interest is Shenzhen, China, a port city suitable for offshore manufacturing. With average labor rated at $3.52 USD an hour and linearly rising, it is the most affordable location in the short term. Industrial land rent is approximately 30 RMB per square meter per month, or about 75 cents US per square foot per month. Transportation is the most problematic, as it will have to be by sea first then handing over to ground carriers to reach our distributors. Due to overseas shipping from a foreign COO, we will also be expecting taxes and duties that will no doubt raise our bottom line costs. The second selection is Mexicali, Mexico. Mexicali is located an hour south of the US-Mexico border, typical port of entry is through San Diego, California. Labor rate is currently at $2.90 USD per hour and appears to be stable in the foreseeable future, favorable for long-term planning. Industrial land use is at $0.49 USD per square foot per month, considerably cheaper than the other location candidates. Since Mexicali is contiguous to the US by land, only land carriers are required for transportation. With NAFTA in effect, transporting goods to and from Mexico will be tax and duty free. Our final location choice is Gurgaon, India, our only consideration located in the farthest to US. With a minimum wage of $3.52 USD per hour, it has the most expensive labor rate of all three, although the most stable one at that. A figure of the most affordable industrial warehouses turned up $0.75 USD per square foot per month. Like Shenzhen, transportation will be handled by land/waterways. After evaluating our decision matrix, we've selected the Parque Industrial Nelson in Mexicali, Mexico to locate our manufacturing operations. This location already has a 160,000 square foot warehouse-style facility sitting atop, with overhead lighting, insulation, shipping docks, and line grids all included. This northwestern Mexico offers several advantages over other locations we've considered.

a) Location - Parque Industrial Nelson in Mexicali is within an hour's drive to the US-Mexico border (proximity to our destination market) and thus favoring ground transportation, avoiding troublesome and expensive logistics compared to offshore manufacturing. Freight services will be contracted out to major carriers, eliminating the need for us to take logistics in-house and allows us to focus our resources better on our products. Furthermore, Mexicali offers a host of incentives that benefit a start-up manufacturing company like ours. Corporate tax discounts in the first 5 years of operation, worker training, and grants for acquisition of land for development and/or industrial use are all categories which help us in the first few years of operation.

b) Cost of Property - At just $0.36 USD per square foot per year, rent is an order of magnitude cheaper compared to any available industrial space found in the continental US states and offshore. Our manufacturing footprint does not require the full 160,000 square foot space, and coupled with the facility's favorable amenities we are confident that the space can easily be shared with other businesses.

c) Labor – Mexico's standard labor rates stand at $2.90 USD per hour. We chose to benchmark China's labor wages, which have been on the rise and surpassed the $2.90 USD per hour rate, reinforcing our selection of Mexicali over offshoring.



7.3 Other advantages of choosing Mexicali

Skilled Labor – 1.3 million residents and 35+ technical and college level institutions in Mexicali

Developed Infrastructure – Utilities, real estate, transportation, communication, major interstate, fiber internet and highway access to the U.S.

English Fluency – Broad base of English speakers from which to hire supervisory level employees

Low Freight Cost – Short distance from Mexico to the U.S. marketplace

Land Accessibility – Border location provides easy access for U.S. and other foreign national visitors as well as working managers who live in or travel from the U.S.

Sea Ports – Located less than 200 miles from three major sea ports.

International Accessibility – Region has two international airports located in a 20 mile radius

Manufacturing Space – Plentiful industrial buildings available for lease in over 50 industrial parks

Mild Climate – Ideal climate to save on heating and cooling of facilities, highs from 69°F to 82°F

Government Incentives – Economic incentives are sometimes attainable for large companies

Pro-Business– Both government and unions are business friendly

IP Protection – Mexico honors, enforces, and protects intellectual property

Chapter 8 - Layout

The factory layout can be generalized as a U-shape, one-direction shop floor process. Inbound raw materials first enter through the north-eastern load docks, where the first stop is the IQA station. Materials satisfying our IQA criteria are delivered to various machine shop stations that immediately follow. The machine shop stations are designed to allow some expansion before major revisions are required, with ample spacing between each station so that a couple more machines (drills, lathes, cutters, etc.) may be added in the future. After machining processes are complete, the semi-finished components pass through the post-machining quality checks, where our floating QA personnel will have fixtures and go/no-go gauges to ensure correct parts fitment in the next stations. Satisfactory components move on to sub-assembly stations, where adhesives are applied to fitted chair sub-assemblies. Sub-assemblies are left to cure in the next station where another QA check evaluates fitment – this is critical as the adhesives have not cured at this point, allowing reworks to be made to components, thus avoiding complete scrapping of failed parts. Passing assemblies are painted here and allowed to dry/cure overnight; note that the floor space allocations in the painting area allows more than two days' worth and more of products to be held without issues. Next step is the cushion assembly wherein ordered seat cushions are installed to the chair frame, and the product is considered complete. From here the product can take one of two routes, heading either to storage or to the shipping docks.

Our Mexicali facility will be staffed with the minimum amount of skilled and unskilled labor, sufficient to handle fluctuating demands while minimizing idle time. The workforce proposed shall be divided in the following categories, with job functions outlined in the next page:

Factory Floor Plan

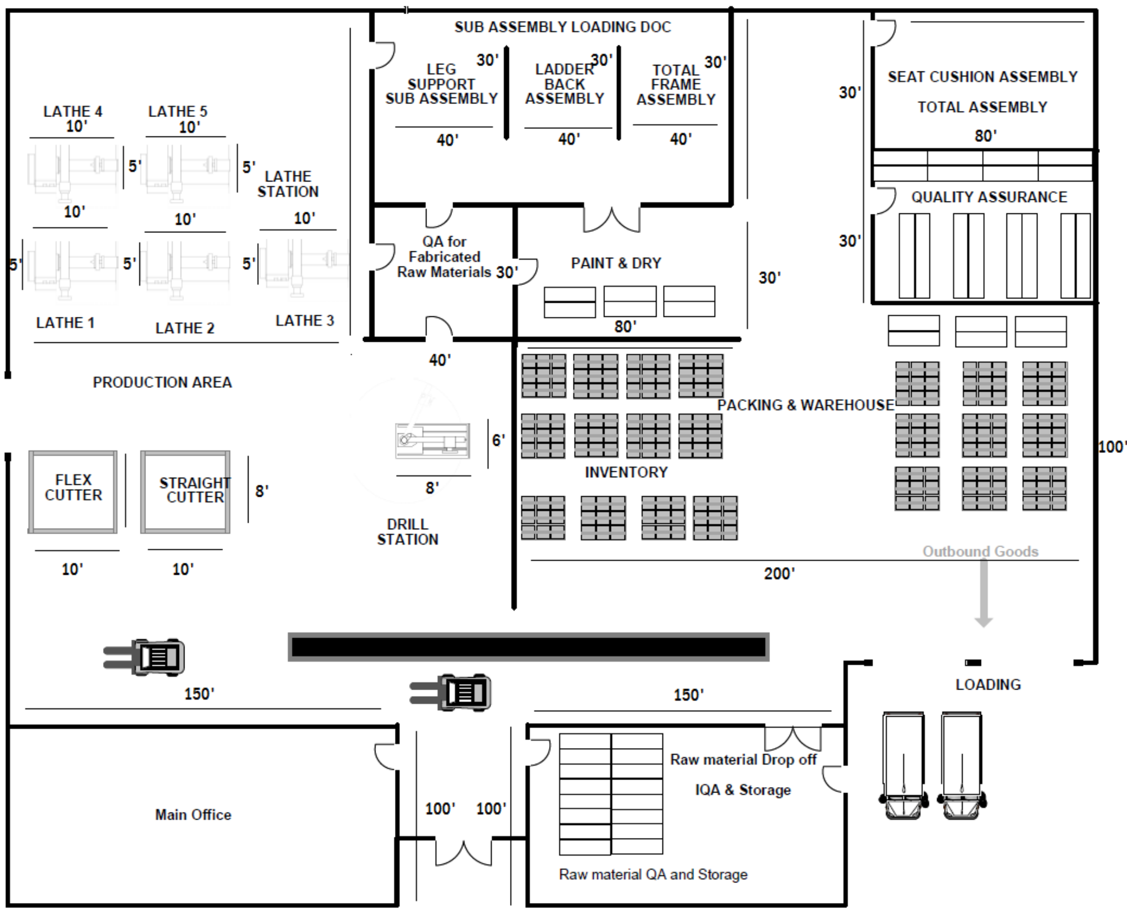


Figure 5: Factory Floor Plan

Chapter 9 - WorkForce Planning

30 regular skilled laborers, 1 analyst for procurement, 3 floating quality assurance engineers with 1 floor supervisor, and 1 full-time factory manager. The 30 skilled laborers will each be in charge of one of the following: a single process station, shipping, or receiving, paid at a standard hourly rate of $3.00 USD, who will be working in shifts of two; 15 per shift. When loading is high, priorities will be placed on manning the process stations from machining to paint, with final packaging/shipping done after production for the day is completed. Workers will be trained to operate the respective machines/processes at their respective stations, with opportunities to learn other stations to increase overall flexibility. 3 floating quality assurance personnel can be found at the IQA, EQA, and the two in-line quality check stations on the shop floor. This group will be paid a standard hourly rate of $5.00 USD and shall be present whenever regular production is in progress. Quality assurance must inspect incoming raw materials/production supplies to ensure they are adequate for further processing, documenting reason and quantity of rejects according to the quality specifications we agreed upon with our vendors, serving as the first point of data in our throughput analysis. In-line stations and final quality assurance will perform form and fitment checks after the machining and assembly processes, using a mix of fixtures, gages, and design specifications to verify components if components are correctly fabricated/assembled. The floating QAs will be trained in all of our manufacturing steps, hence the name 'floating' as they will be qualified to overlook any station on the shop floor. The lone supervisor role is to deliver guidance and provide management presence on the shop floor, for the floating QAs as well as the skilled operators at all stations. This supervisor will be paid a regular hourly rate of $10.00 USD and is scheduled the same way as the operators and QA personnel. Finally, a full-time manager will be hired to overlook all operations at the plant. This non-exempt position is earmarked for a $38,000.00 USD annual salary, and is not subject to the planned shift schedules as the operators but is required to be on-call whenever needed. The plant manager is tasked to maintain a record of shipments and receiving, throughput and quality reports, as well as executing shift changes and workforce well- being/punctuality. This plant manager is the final decision maker in any and all cases of incidents, accidents, and deviations from planned production schedules, with inputs from the supervisor.

Job Description	Number of Employees	Pay Details
Factory Workers (rotational shifts)	30	3 USD/hr
Procurement Analyst	1	6 USD/hr
QA Engineers	3	5 USD/hr
Floor Supervisor	1	10 USD/hr
Factory Manager	1	38000 USD/anum

Table 9: WorkForce Planning

Floor Staffing

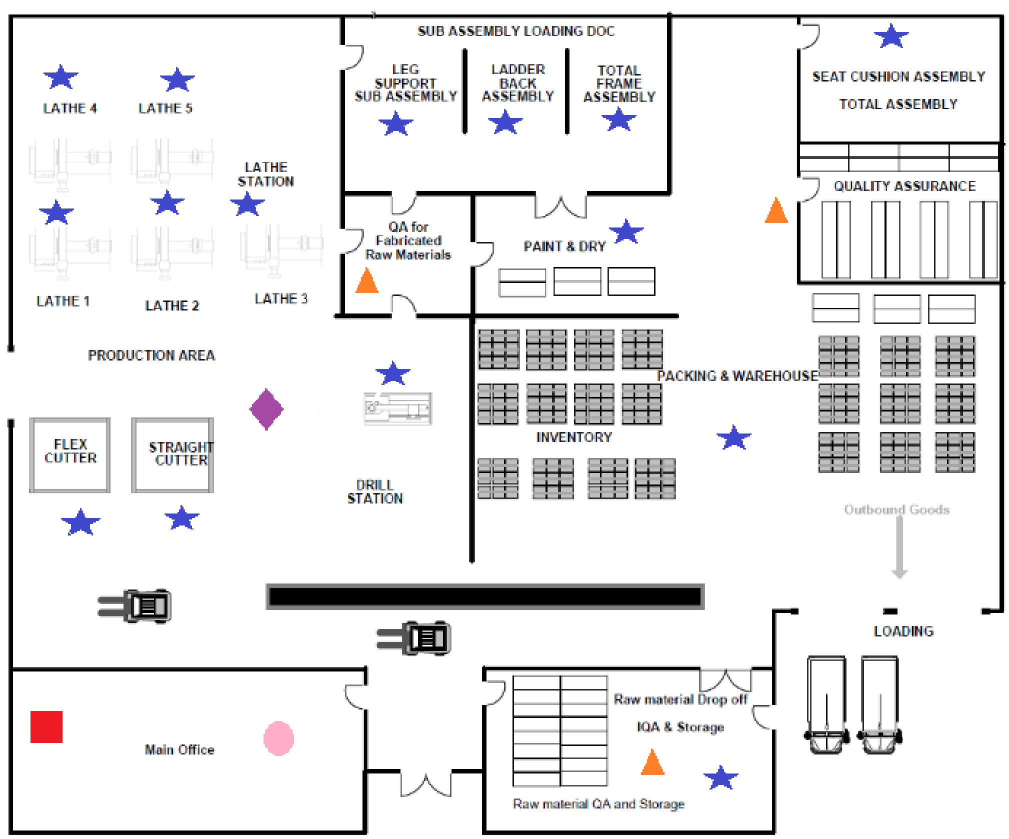
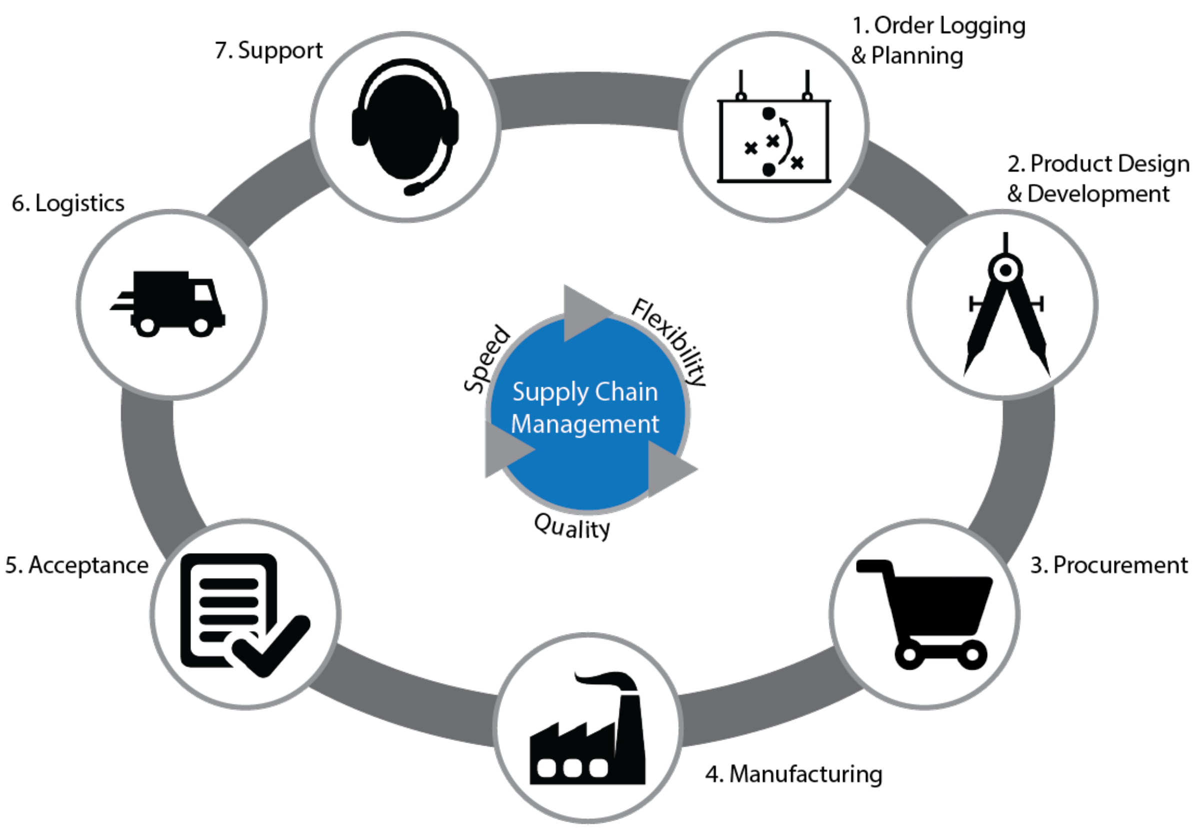


Figure 6: Floor Staffing

Chapter 10 - Supply Chain Management

SitWell furniture supply-chain management strategy begins right from the storage of raw materials to the origin and shipping of the manufactured chairs. This means that the supply-chain management approach deals with the storage of raw materials, work-in-process inventory and finished goods from the point of origin to the point of consumption. Such an approach ensures that inventory holding is positive all the time to maintain on-time delivery of the chairs. In order to simplify the raw material procurement process, SitWell furniture places orders in a periodic fashion. It is assumed that if the raw material suppliers are failing to fulfill the order, then it is solely their responsibility to supply the material of the same standards and at the same cost from a different supplier. A failure in achieving it would lead to a penalty in order to reimburse the loss sustained by SitWell furniture. The supply-chain management strategy adopted by SitWell furniture is “Efficient Supply Chain”. Since, the demand is predictable with low forecast errors, and consistent quality and on-time delivery is a priority, therefore, “Efficient Supply Chain” is most suited.



a) Demand Planning:

SitWell furniture conducts thorough demand planning to create reliable forecasts. This kind of planning helps SitWell furniture improve the accuracy of revenue forecasts and align inventory levels as per the demand. Table shows the forecast, which illustrates the demand of the chair.

b) Supply Planning:

The objective of supply planning is to balance supply and demand in a manner that achieves the financial and service objectives of SitWell furniture. This is accomplished with the help of demand planning and the location where the facility is established. The demand planning provides an efficient forecast and the location is selected in such a way that it is very close to all the suppliers. This proximity to the suppliers helps in procuring the raw material in advance and in minimum time in order to cover the demand and the production schedules.

10.1 Materials Requirements

As Figure 7 shows, one chair needs 2 back legs, 2 front legs, 4 leg supports, 4 back slats, 4 seat-frames boards and 1 seat cushion.

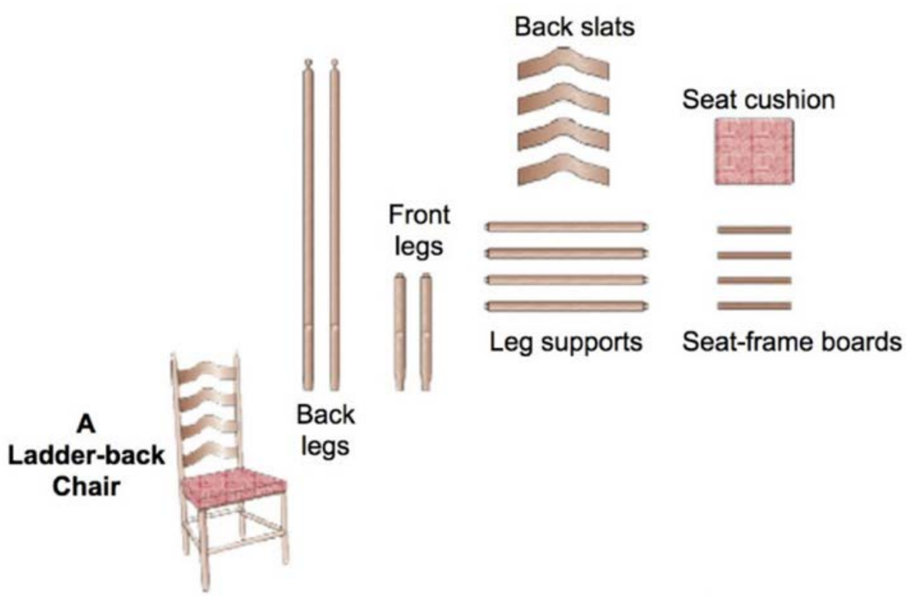


Figure 7 – Material Requirement

The process of making one ladder-back chair is shown in Figure 7.

10.2 Bill of Materials

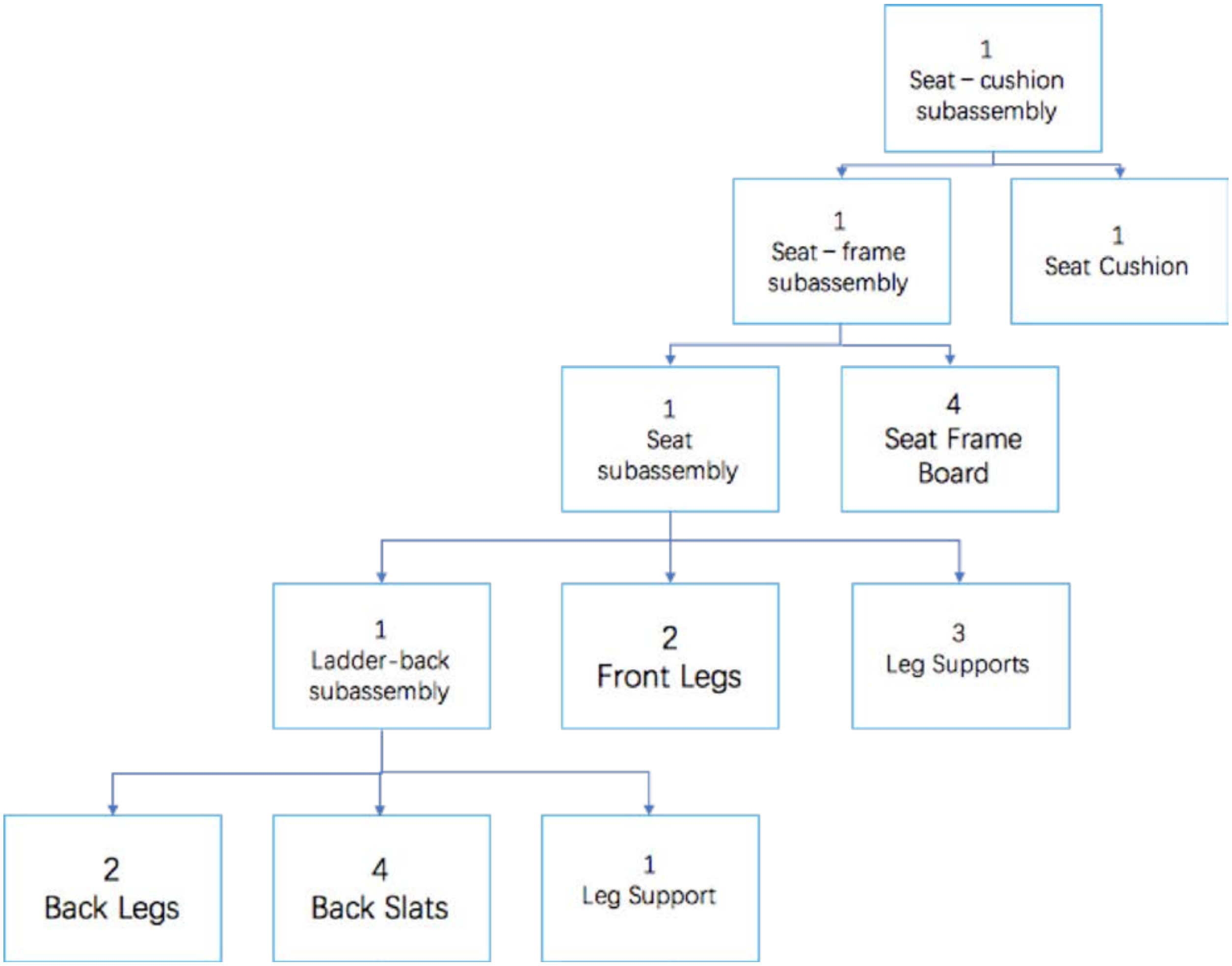


Figure 8 – Bill of Materials

The cost of each part of chairs is shown in Table 10.

	Rod		Thin Board		Thick Board		Seat Cushion		
Quarter	Material Purchasing	Cost	Material Purchasing	Cost	Material Purchasing	Cost	Material Purchasing	Cost	Quarterly Material Cost
1	18460	27690	3705	7410	2210	5525	5525	27625	68250
2	20150	30225	4030	8060	2418	6045	6045	30225	74555
3	20150	30225	4030	8060	2418	6045	6045	30225	74555
4	20150	30225	4030	8060	2418	6045	6045	30225	74555
5	23920	35880	4810	9620	2860	7150	7150	35750	88400
6	23920	35880	4810	9620	2860	7150	7150	35750	88400
7	23920	35880	4810	9620	2860	7150	7150	35750	88400
8	27560	41340	5525	11050	3302	8255	8255	41275	101920
9	27560	41340	5525	11050	3302	8255	8255	41275	101920
10	27560	41340	5525	11050	3302	8255	8255	41275	101920
11	31200	46800	6240	12480	3744	9360	9360	46800	115440
12	31200	46800	6240	12480	3744	9360	9360	46800	115440

Table 10 - Cost of Raw Materials

Chapter 11 - Inventory Management

The company will use Q system for MRP (material requirements plan) as it has individual review frequencies, possible quantity discounts and lower, less-expensive safety stocks which agrees with the company's operation strategy (low cost, consistent quality and on-time delivery).

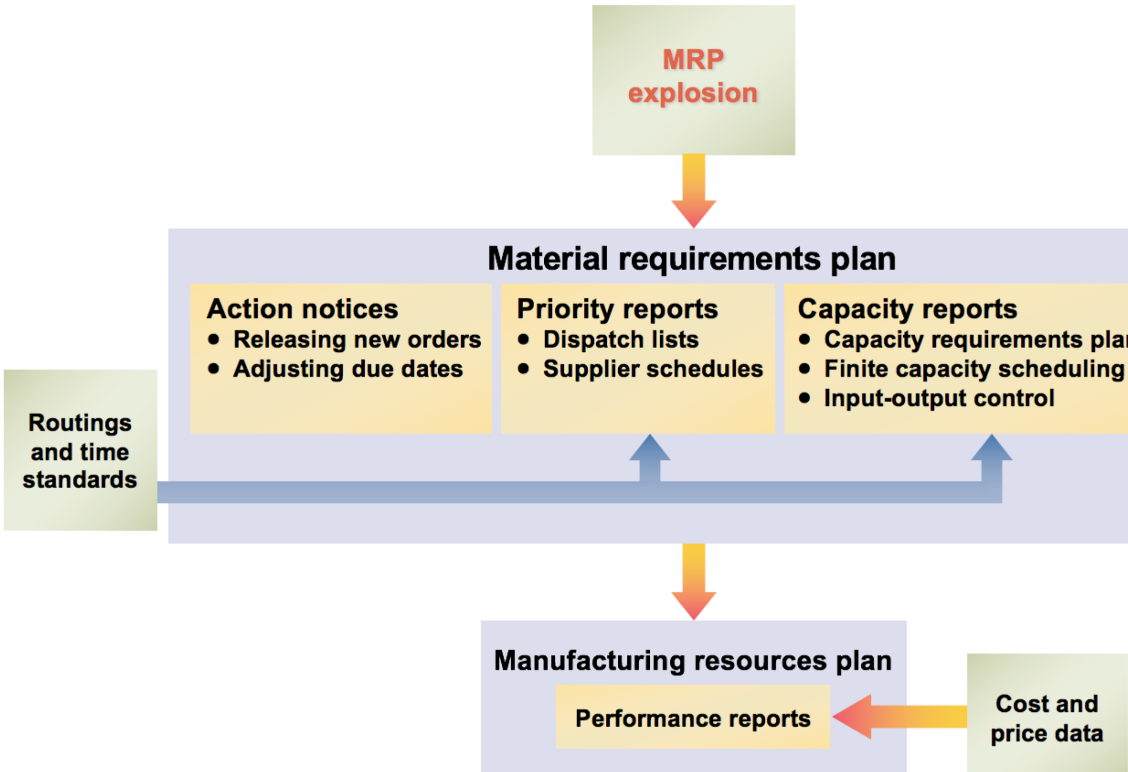


Figure 9 - MRP Outputs

As already been calculated in the master production plan, the inventory of the chairs is shown in Table 11. The maximum and minimum numbers of the inventory are 970 and 15 chairs which seem reasonable to the layout of the company.

Month	Inventory
1	500
2	200
3	25
4	250
5	710
6	970
7	330
8	190
9	715
10	440
11	100
12	160
13	660
14	360
15	310
16	460
17	760
18	860
19	60
20	310
21	210
22	285
23	125
24	365
25	705
26	245
27	120
28	195
29	335
30	275
31	375
32	255
33	335
34	335
35	15
36	95

Table 11: Chair Inventory Management

According to the calculations of cost of raw materials in Section 10.2 Bill of Materials, the prices for buying those materials are not much different, so the frequency for purchasing those materials is 3-month. The tables below show the calculations for raw material inventory and the figures below show the comparison between required materials (blue lines) by demand and their inventory (orange lines).

Rod			
Month	Total # Week	Monthly Used Material	Inventory
1	4	5666.666667	18416.66667
2	4	5666.666667	12750
3	5	7083.333333	7083.333333
4	5	7750	20150
5	4	6200	12400
6	4	6200	6200
7	4	6200	20150
8	4	6200	13950
9	5	7750	7750
10	5	7750	20150
11	4	6200	12400
12	4	6200	6200
13	4	7333.333333	23833.33333
14	4	7333.333333	16500
15	5	9166.666667	9166.666667
16	5	9166.666667	23833.33333
17	4	7333.333333	14666.66667
18	4	7333.333333	7333.333333
19	4	7333.333333	23833.33333
20	5	9166.666667	16500
21	4	7333.333333	7333.333333
22	5	10583.33333	27516.66667
23	4	8466.666667	16933.33333
24	4	8466.666667	8466.666667
25	4	8466.666667	27516.66667
26	4	8466.666667	19050
27	5	10583.33333	10583.33333
28	5	10583.33333	27516.66667
29	4	8466.666667	16933.33333
30	4	8466.666667	8466.666667
31	5	12000	31200
32	4	9600	19200
33	4	9600	9600
34	5	12000	31200
35	4	9600	19200
36	4	9600	9600

Table 12 - Rod Inventory Management

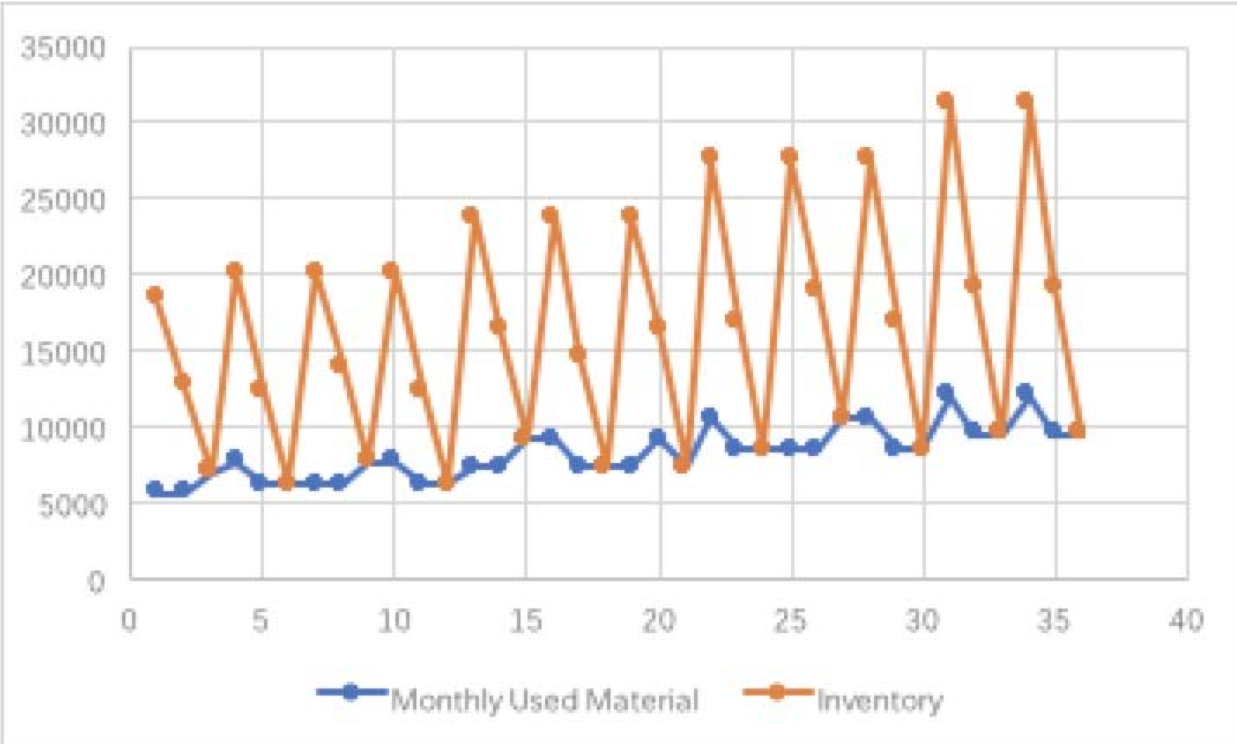


Figure 10 - Rod Inventory Management

Thin Board			
Month	Total # Week	Monthly Used Material	Inventory
1	4	14820	48165
2	4	14820	33345
3	5	18525	18525
4	5	20150	52390
5	4	16120	32240
6	4	16120	16120
7	4	16120	52390
8	4	16120	36270
9	5	20150	20150
10	5	20150	52390
11	4	16120	32240
12	4	16120	16120
13	4	19240	62530
14	4	19240	43290
15	5	24050	24050
16	5	24050	62530
17	4	19240	38480
18	4	19240	19240
19	4	19240	62530
20	5	24050	43290
21	4	19240	19240
22	5	27625	71825
23	4	22100	44200
24	4	22100	22100
25	4	22100	71825
26	4	22100	49725
27	5	27625	27625
28	5	27625	71825
29	4	22100	44200
30	4	22100	22100
31	5	31200	81120
32	4	24960	49920
33	4	24960	24960
34	5	31200	81120
35	4	24960	49920
36	4	24960	24960

Table 13 - Thin Board Inventory Management

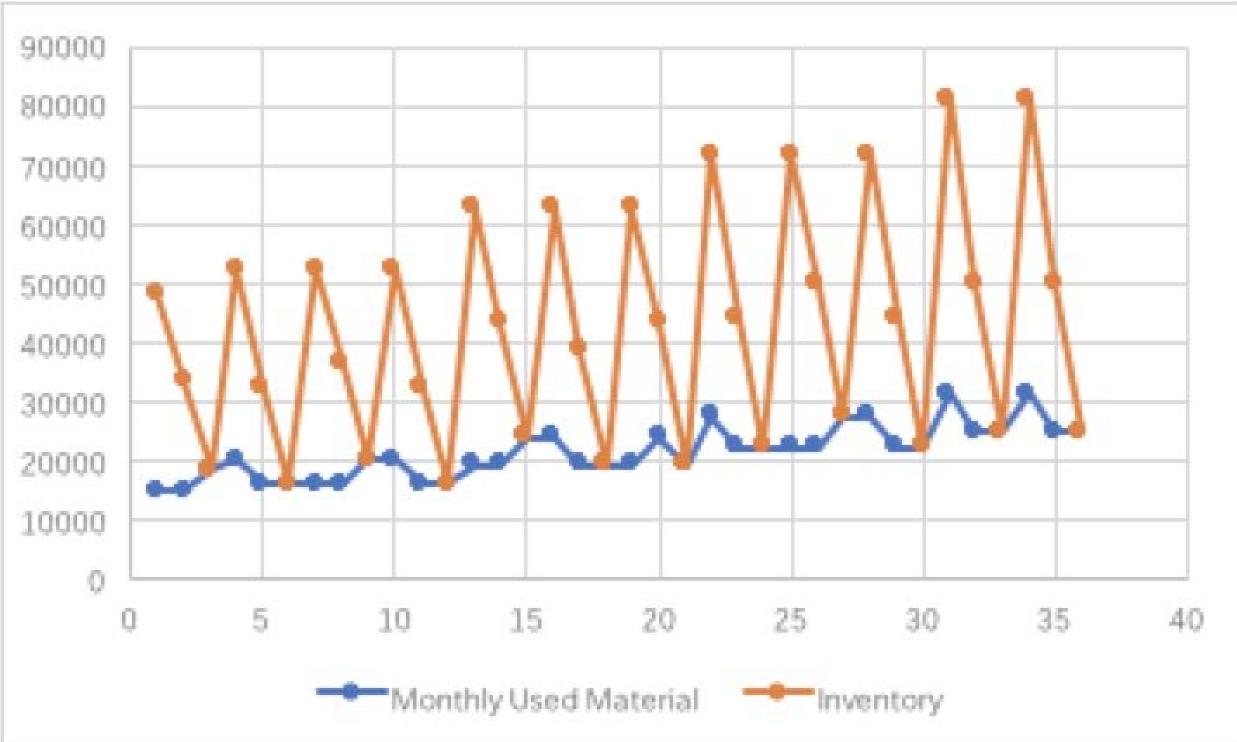


Figure 11 - Thin Board Inventory Management

Thick Board			
Month	Total # Week	Monthly Used Material	Inventory
1	4	8840	28730
2	4	8840	19890
3	5	11050	11050
4	5	12090	31434
5	4	9672	19344
6	4	9672	9672
7	4	9672	31434
8	4	9672	21762
9	5	12090	12090
10	5	12090	31434
11	4	9672	19344
12	4	9672	9672
13	4	11440	37180
14	4	11440	25740
15	5	14300	14300
16	5	14300	37180
17	4	11440	22880
18	4	11440	11440
19	4	11440	37180
20	5	14300	25740
21	4	11440	11440
22	5	16510	42926
23	4	13208	26416
24	4	13208	13208
25	4	13208	42926
26	4	13208	29718
27	5	16510	16510
28	5	16510	42926
29	4	13208	26416
30	4	13208	13208
31	5	18720	48672
32	4	14976	29952
33	4	14976	14976
34	5	18720	48672
35	4	14976	29952
36	4	14976	14976

Table 14 - Thick Board Inventory Management

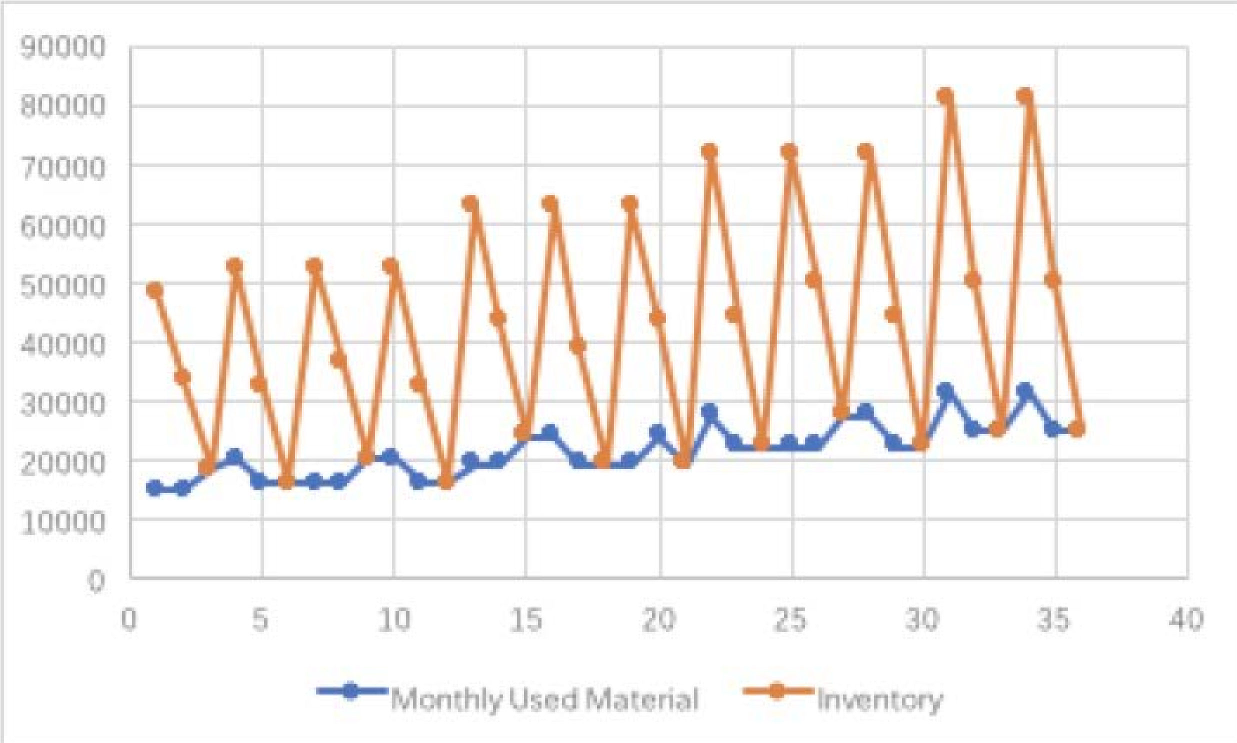


Figure 12 - Thick Board Inventory Management

Seat Frame			
Month	Total # Week	Monthly Used Material	Inventory
1	4	22100	71825
2	4	22100	49725
3	5	27625	27625
4	5	30225	78585
5	4	24180	48360
6	4	24180	24180
7	4	24180	78585
8	4	24180	54405
9	5	30225	30225
10	5	30225	78585
11	4	24180	48360
12	4	24180	24180
13	4	28600	92950
14	4	28600	64350
15	5	35750	35750
16	5	35750	92950
17	4	28600	57200
18	4	28600	28600
19	4	28600	92950
20	5	35750	64350
21	4	28600	28600
22	5	41275	107315
23	4	33020	66040
24	4	33020	33020
25	4	33020	107315
26	4	33020	74295
27	5	41275	41275
28	5	41275	107315
29	4	33020	66040
30	4	33020	33020
31	5	46800	121680
32	4	37440	74880
33	4	37440	37440
34	5	46800	121680
35	4	37440	74880
36	4	37440	37440

Table 15 - Seat Frame Inventory Management

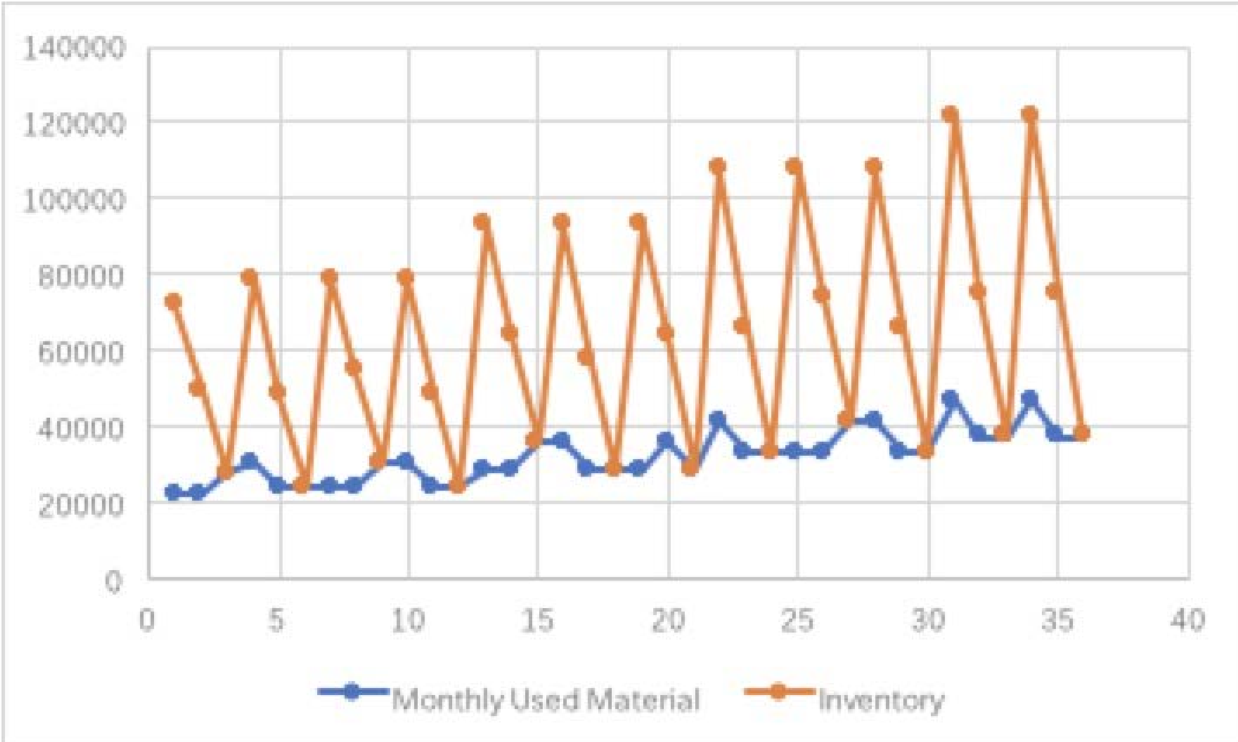


Figure 13- Seat Frame Inventory Management

Chapter 12 - Quality Assurance

12.1 Total Quality Management System Overview

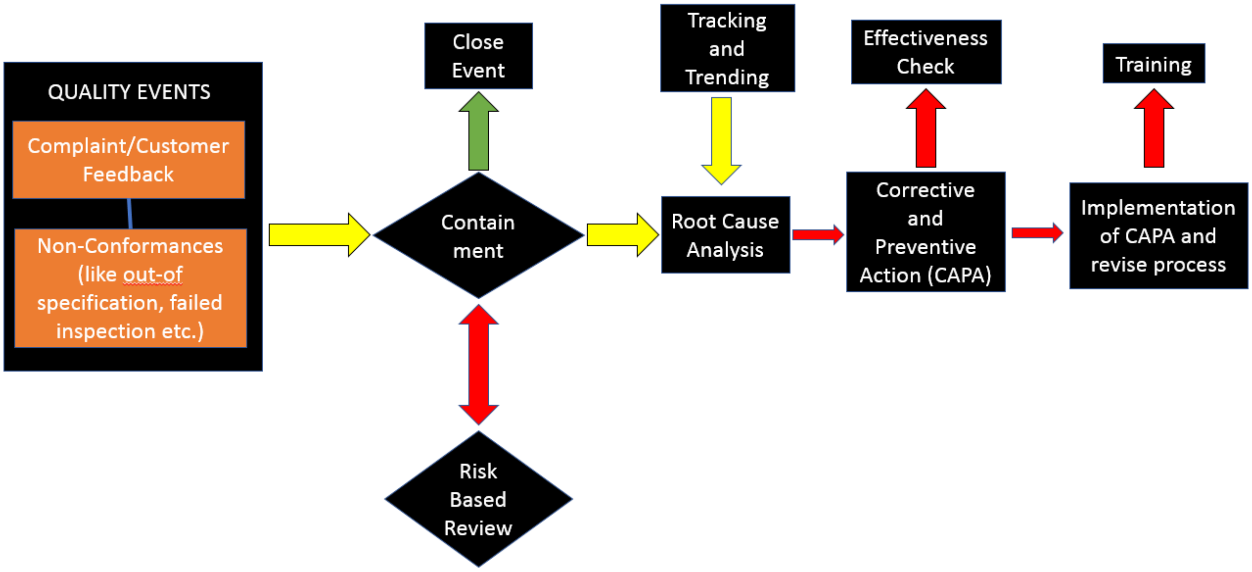
Total Quality Management or TQM is a quality assurance approach for continuous quality improvement of the product and reducing scrap during the manufacturing process by collecting customer feedback and continuously training employees to the company's procedures. At Sitwell Furniture, management ensures that all employees are made aware of the company's goals by developing a quality policy that is appropriate for the purpose of the organization, includes a commitment to comply with requirements and to maintain the effectiveness of the quality management system, provides a framework for establishing and reviewing quality objectives.

12.1.1 Quality Policy at Sitwell Furniture

Sitwell Furniture is totally committed to understanding and meeting the quality needs and expectations of all the customers for comfortable ladder-back chairs at affordable cost. We are also committed to work together as a team to meet or exceed those customer expectations while also meeting quality objectives for continuous improvement by promoting communication including customer feedback and employee meetings.

12.2 Quality Management System

TQM approach boasts of increasing company's profits while simultaneously providing quality products to customers. The following chart is the way in which Sitwell Furniture continuously improves product quality by acting upon quality events such as customer feedback or complaints and non-conformances occurring due to failed inspection of raw materials, out of specification sub-assemblies, etc.



The company has implemented controls for the following:

1. Suppliers: Suppliers are strictly monitored on the basis of cost, compliance to meet requirements, and on-time delivery.
2. Purchasing: Purchasing power is defined by the management to influence whom the company does business with and how they meet material requirements.
3. Incoming and Receiving Inspection: Raw materials are received and inspected against material requirements.
4. Manufacturing and Process Controls: The manufacturing process is continuously monitored at every step by implementing Statistical Process Monitoring as discussed below.

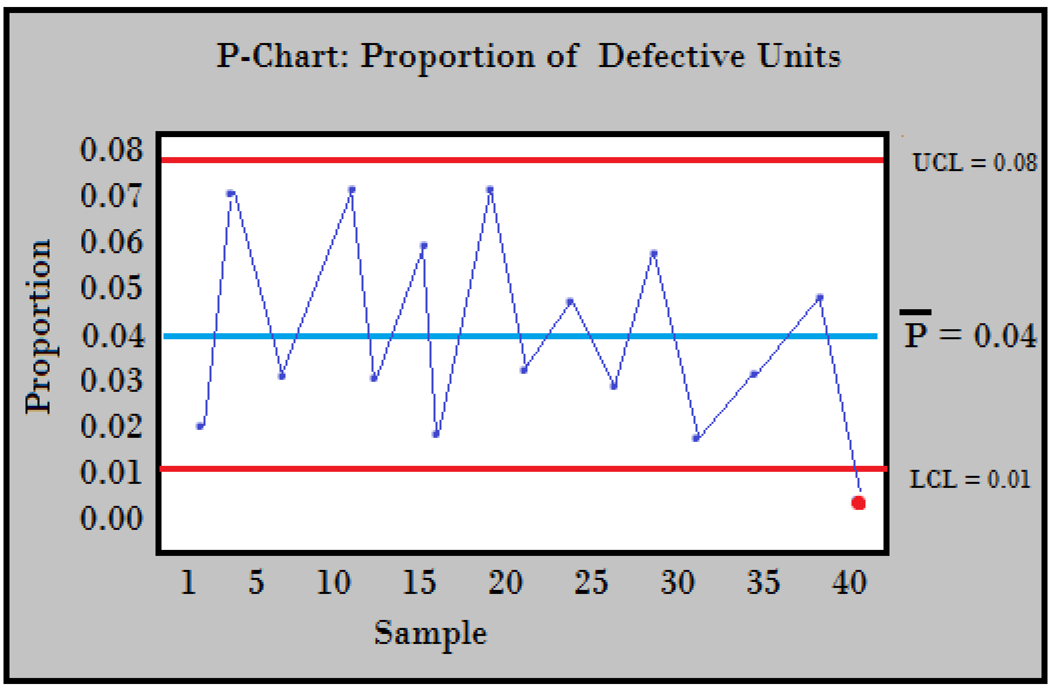
12.3 Process Control using SPC

Statistical Process Control is a method of quality control used widely in the manufacturing industry to monitoring and control processes using statistical methods. This ensures that the process produces “in-spec” material thus, maintaining quality of the finished product as well as decreased scrap.

At Sitwell Furniture, inspection is implemented at every stage of the manufacturing process. SPC concepts are applied to control the process outputs by implementing control charts on the manufacturing floor. One of the processes – cutting back legs, is controlled as follows:

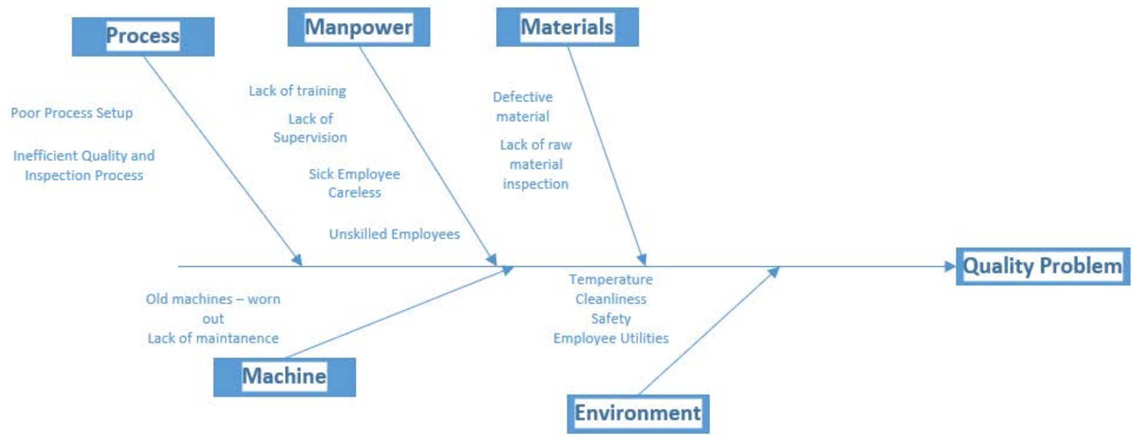
The back legs are cut to the specification of 1±0.05 m. Therefore, the lower and upper control limits for this dimension are set at 0.95 m and 1.05 m respectively. All measurements that fall between these limits are known as “in-spec” measurements. However, the measurements failing to be between these limits are known as “out-of spec" measurements. Measurements are taken throughout each shift and analyzed at the end of the shift. In case of an out of spec measurement, all parts produced during the shift are put on hold and sorted for failure. A root cause analysis of the potential failure must be performed, which may lead to implementation of corrective and preventive action (CAPA) to either revise the manufacturing process or reworking the failed parts. This is followed by re-training the employees on the floor with the revised or rework process. Following failure, integrated system testing is performed to identify preventive action. Once CAPA is implemented, an effectiveness check is performed to ensure the reworked or revised procedure results in acceptable parts.

Scrap rate monitoring on the manufacturing floor will be performed using p-chart wherein the proportion of non-conforming units during each shift will be charted and monitored on a monthly basis. Control limits are set depending upon the sample of sub-assemblies manufactured during each shift. An example chart is shown below:



12.4 Risk Analysis using FishBone Diagram

We have identified the different causes that would become a threat to the quality of our furniture and have taken adequate measures to prevent all kinds of vulnerabilities.



Chapter 13 - Break Even Analysis

We can calculate the Break-Even-Analysis based upon the values we can assume of our project. We are calculating our costs in quarters, as opposed to months, as we feel that it will give us a better overview of our expenses over time. We can assume 3 months to be equivalent to 1 quarter, and thus all calculations based upon months will be multiplied by 3 to allow a better comparison. We will be calculating for raw income, as taxes will only apply on income generated, and thus will not be required for breaking even.
Below will be a summary of all costs.

LAND
We calculated the approximate lease of land in Mexicali to be approximately $0.49, or 50 cents per square foot per month. Taking this information, we can also take the approximate land we need to build an optimal factory. Using our layout diagram, we need around 620 square feet in order to build a factory that is able to hold all the equipment we need to be using. Therefore, we can assume that we only need around $0.49 x 620 x 3 = $911.40 to cover the cost of land. We will also be paying $3400 for the cost of leasing a factory.

LABOR
Because we are aiming for a low cost operations design, we also try to cut back on our labor costs. Therefore, we assume that we can use 10 rotating skilled laborers (that are trained in multiple fields) in order to handle most of the manual operations in the factory. On average, Mexicali has labor costs at around $3.00 per hour. It is also stated that on average, a salary-based employee will work 9 hours a day. Assuming weekends are taken, they will also be working 5 days per week. We are also assuming approximately 4 weeks in a month. Therefore, we can assume that the cost of our floor employees will be approximately $3.00 x 10 x 9 x 5 x 4 x 3 = $16200 per quarter.
We can use this similar format for calculating the rest of our labor costs. An analyst will cost around $6.00 per hour, and we will most likely only be using one. Therefore, this will cost $6.00 x 1 x 9 x 5 x 4 x 3 = $3240 per quarter.
We will be requiring 3 Q&A staff to check the quality of the product we are producing. Paying at a salary of $5.00 per hour, this will cost $5.00 x 3 x 9 x 5 x 4 x 3 = $8100 per quarter.
Because our staff size is small, we will only be requiring 1 floor supervisor. Paying at a salary of $10.00 per hour, this will cost $10.00 x 3 x 9 x 5 x 4 x 3 = $19200 per quarter.
We will be requiring one person to take care of bookkeeping, decision making, etc. The job will be around $38000 annually, which is around $9500 per quarter.
Per quarter, the total cost of labor should total should be approximately $56240.

MATERIALS

Using our Forecast model, we can predict our demand for the coming quarters. With this demand, we can calculate the needed materials to make enough chairs to meet demand. Each chair requires 1 coat of paint (around $5.00 per coat), 1 cushion ($5.00 per cushion), 4 seat frame boards (10 per bundle, calculated at $1.00 per chair), 4 back slats (6 per bundle, calculated at $1.33 per chair), 4 leg supports (3 per bundle, $2.00 per chair), and 4 legs ($6.00 per chair). This growing demand-price model will be displayed below.

We will also tack on a $10,000 per month budget allocation for overhead costs - this will cover uses such as office materials, import fees, legal fees, etc.

MACHINERY

Because we are aiming for a low cost operation, we try to lower the amount of required machinery to only the minimum, and a little more to not be too bogged down by production. Therefore, we aim for 1 straight cutter ($2000), 1 flex cutter ($2800), and 1 drill ($1000). In order to not get too bogged down with production speed, we are aiming for 3 lathe machines initially, then purchasing 2 more machines when demand begins to rise. This will cost, in total, $40000. In total, our machine costs will be a flat cost of $45,800.

TRANSPORTATION

We will need to deliver our product once it is complete, to a location where it can be accessible by a customer. Thus, we will be requiring the services of trucks to transport our goods. On average, the distance between Mexicali and Sacramento or Berkeley is around 612 miles. A simple search shows that on average, a truck driver is paid $3.00 per mile. Thus, each truck hired will be approximately $1836. We also approximated a single truck to be able to hold 2,000 chairs.

Unlike our previous models, where we needed to calculate in quarters in order to buy in bulk, we cannot ignore the demand per month, and thus must deliver our goods every month in order to meet demand. Thus, some trucks may end up carrying less than optimal capacity. Calculating using our monthly forecast, and then adding up the amount of trucks per month for a quarter, we can calculate how much money will be spent per quarter on transportation. This will be shown below.

TOTAL

There are multiple ways to pay for the machinery - we can pay for all of it up front, or we can pay over the course of the 3 years, or somewhere in between. We decided to pay for it through the course of 3 years, as that way our prices will stay stable, and we will make much more of a profit once the machinery is paid off. With this model, on average, a chair will cost $30-40 to produce. While setting price does not affect demand, we decided to stay true to our model and create low cost products. Therefore, we have decided to price our chairs at $75. This will give us a slightly smaller profit, but allow us to keep our prices low for our customers.

The calculation of our quarterly sales break even is by adding all the cost values of the quarter, including land, labor, materials, machinery (evenly distributed cost), and transportation. Using this information, we can calculate our quarterly units break even, by dividing the quarterly cost by our price of $70. The below images will show how many units are required to be sold in order to break even.

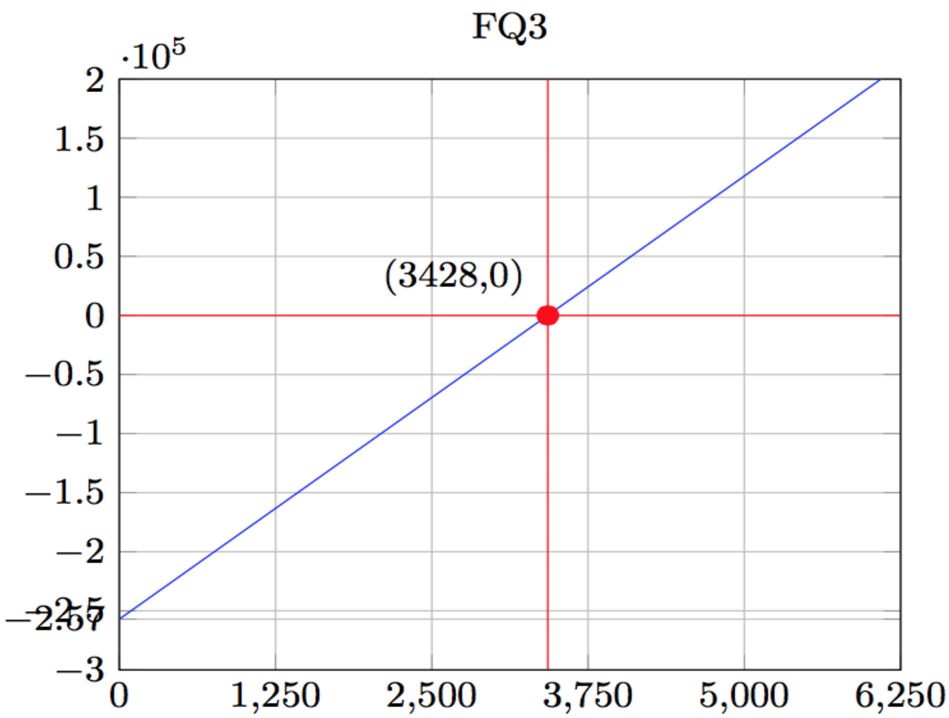
PROFITS

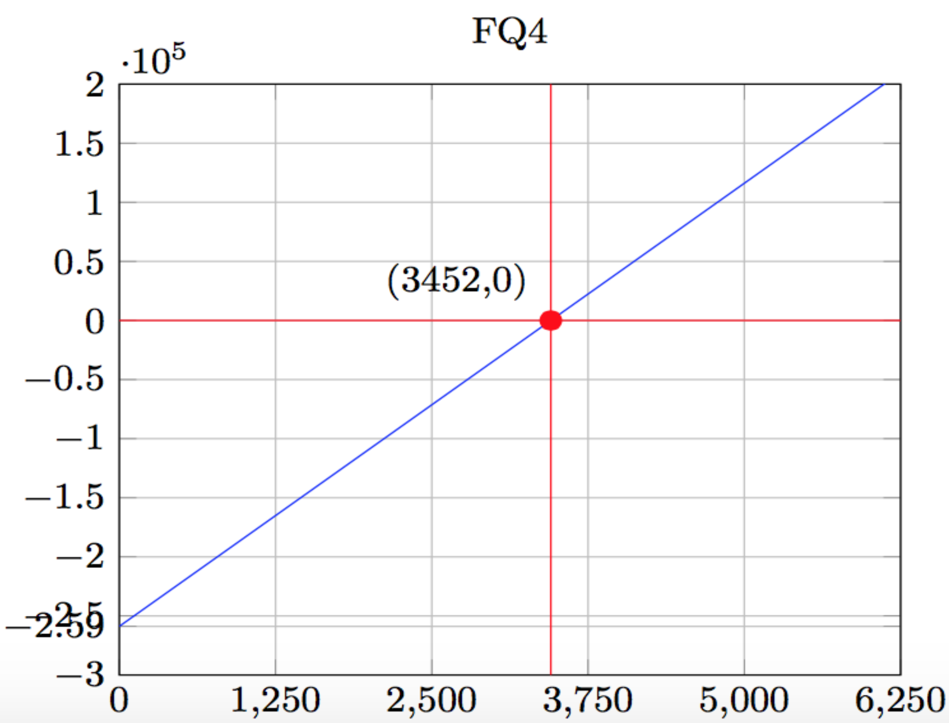
Mexicali taxes 25% on product that comes out of the province. Alameda County (Berkeley in particular) has a sales tax of 9.25%. Sacramento, on the other hand, has a sales tax of 8.25%. Therefore, we can assume on average, our product is going to be taxed 33.75% on the net income of each chair that is sold. While this does cut heavily into our profits, we should begin to increase our profits after the three years, when the machinery has been successfully paid off. We believe that with keeping our costs lower, our demand should rise far beyond the demand of competitors, and thus, push our profits into a much higher zone in the future.

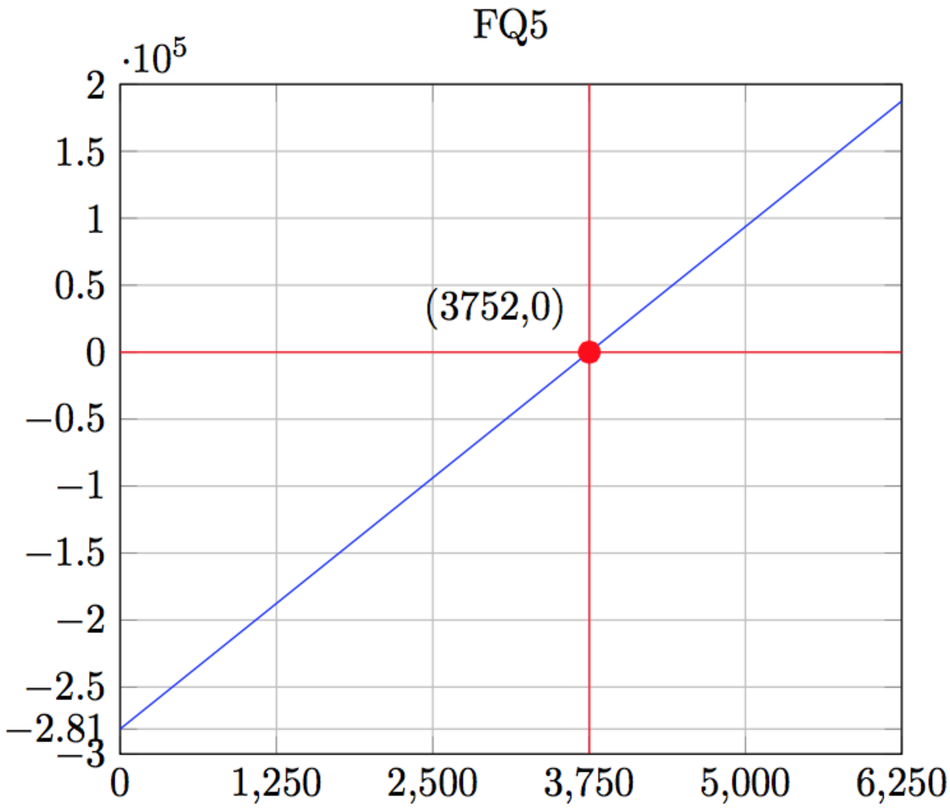
13.1 Break Even Analysis Calculations

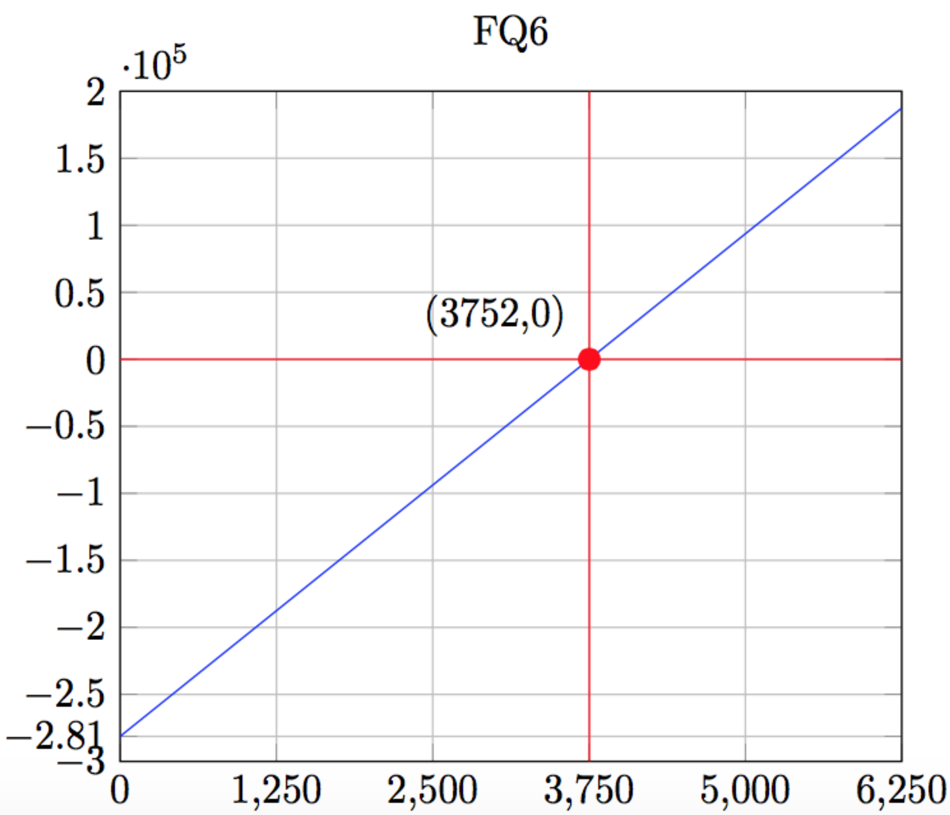
	Total Cost (USD/ quarter)	assuming 3 months = 1q	California Corporate Tax Rate = 8.84%	Berkeley Sales Tax Rate = 9.25%	Sacramento Sales Tax Rate = 8.25%	Income Tax of MexiCali = 25%		weekly requirement*(#weeks /quarter)	612 mi between Dest and Source, Assuming $3 per mile, $1836 per truck	
LAND	911.4	**OVERHEAD COSTS (per quarter)**						13	1836	
LABOR	86640	30000								
MATERIALS	Total	Legs (front+back)	Supports	Back Slats	Seat Frame Boards	Cushions	Paint	Demand	Amount of Trucks Needed (2000 chairs per truck)	Cost of trucks
q1	112341.67	33150	11050	7366.67	5525	27625	27625	5525	4	7344
q2	122915	36270	12090	8060	6045	30225	30225	6045	4	7344
q3	122915	36270	12090	8060	6045	30225	30225	6045	4	7344
q4	122915	36270	12090	8060	6045	30225	30225	6045	5	9180
q5	145383.34	42900	14300	9533.34	7150	35750	35750	7150	5	9180
q6	145383.34	42900	14300	9533.34	7150	35750	35750	7150	5	9180
q7	145383.34	42900	14300	9533.34	7150	35750	35750	7150	6	11016
q8	167851.67	49530	16510	11006.67	8255	41275	41275	8255	6	11016
q9	167851.67	49530	16510	11006.67	8255	41275	41275	8255	6	11016
q10	167851.67	49530	16510	11006.67	8255	41275	41275	8255	6	11016
q11	190320	56160	18720	12480	9360	46800	46800	9360	6	11016
q12	190320	56160	18720	12480	9360	46800	46800	9360	6	11016
MACHINES	Total	Straight Cutter	Flex Cutter	Lathe	Drill		Lease of Factory (3 years)			
	45800	2000	2800	40000	1000		3400			
TOTAL	Raw Monthly Cost (no machinery, including trucks, including factory lease)	Break Even Cost (per chair)	Machinery Up Front (for theory)	Break Even Cost	Machinery Evenly Distributed/ Quarterly Sales Break Even	Break Even Cost	Quarterly Raw Income	Quarterly Units Break Even	Quarterly Net Income	Profit
q1	242637.07	43.92	286437.07	52.21	246453.74	44.61	414375	3287	167921.26	111247.83
q2	253210.4	41.89	253210.4	41.89	257027.07	42.52	453375	3428	196347.93	130080.5
q3	253210.4	41.89	253210.4	41.89	257027.07	42.52	453375	3428	196347.93	130080.5
q4	255046.4	42.2	255046.4	42.2	258863.07	42.83	453375	3452	194511.93	128864.15
q5	277514.74	38.82	277514.74	38.82	281331.41	39.35	536250	3752	254918.59	168883.56
q6	277514.74	38.82	277514.74	38.82	281331.41	39.35	536250	3752	254918.59	168883.56
q7	279350.74	39.08	279350.74	39.08	283167.41	39.61	536250	3776	253082.59	167667.21
q8	301819.07	36.57	301819.07	36.57	305635.74	37.03	619125	4076	313489.26	207686.63
q9	301819.07	36.57	301819.07	36.57	305635.74	37.03	619125	4076	313489.26	207686.63
q10	301819.07	36.57	301819.07	36.57	305635.74	37.03	619125	4076	313489.26	207686.63
q11	324287.4	34.65	324287.4	34.65	328104.07	35.06	702000	4375	373895.93	247706.05
q12	324287.4	34.65	324287.4	34.65	328104.07	35.06	702000	4375	373895.93	247706.05

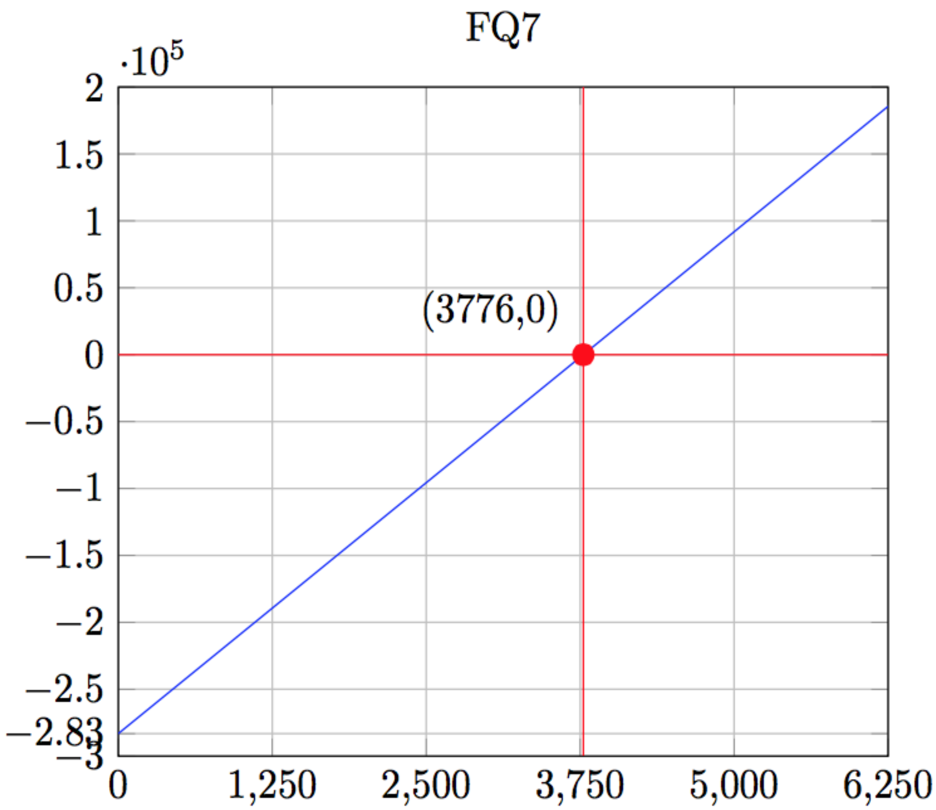
13.2 Fiscal Quarter Break Even Analysis Graphs

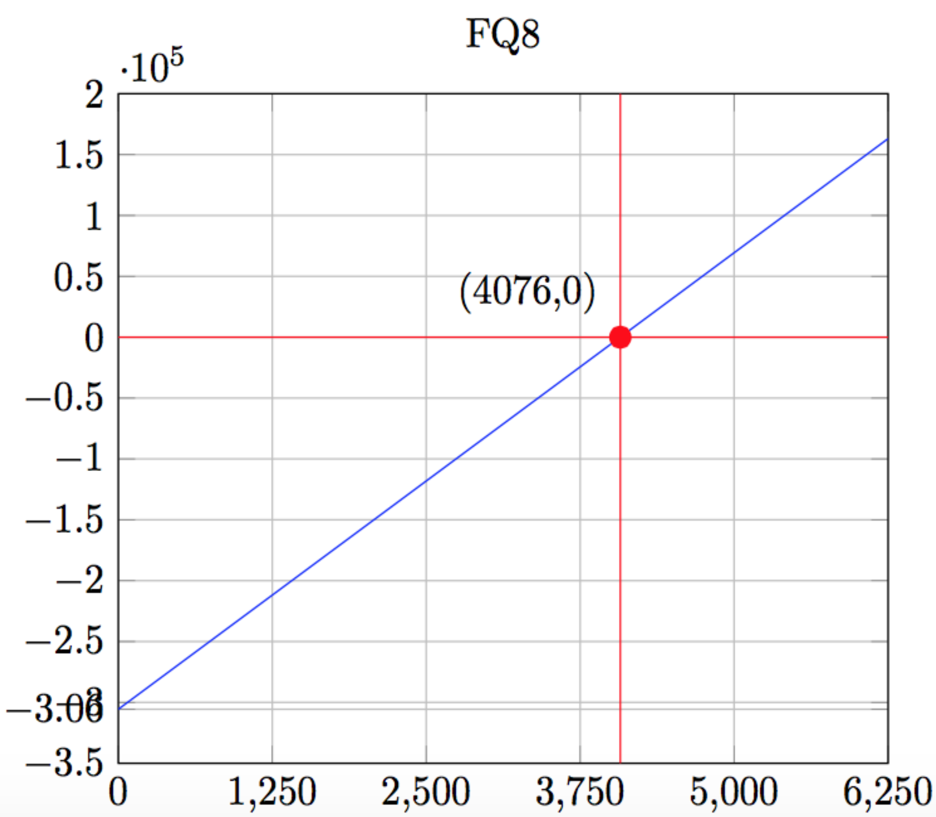





FQ5
$\cdot 10^5$
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−2.81
−3
0
1,250
2,500
3,750
5,000
6,250
(3752,0)


FQ6
$\cdot 10^5$
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−2.81
−3
0
1,250
2,500
3,750
5,000
6,250
(3752,0)


FQ7
$\cdot 10^5$
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−2.83
−3
(3776,0)
0
1,250
2,500
3,750
5,000
6,250


FQ8
$\cdot 10^5$
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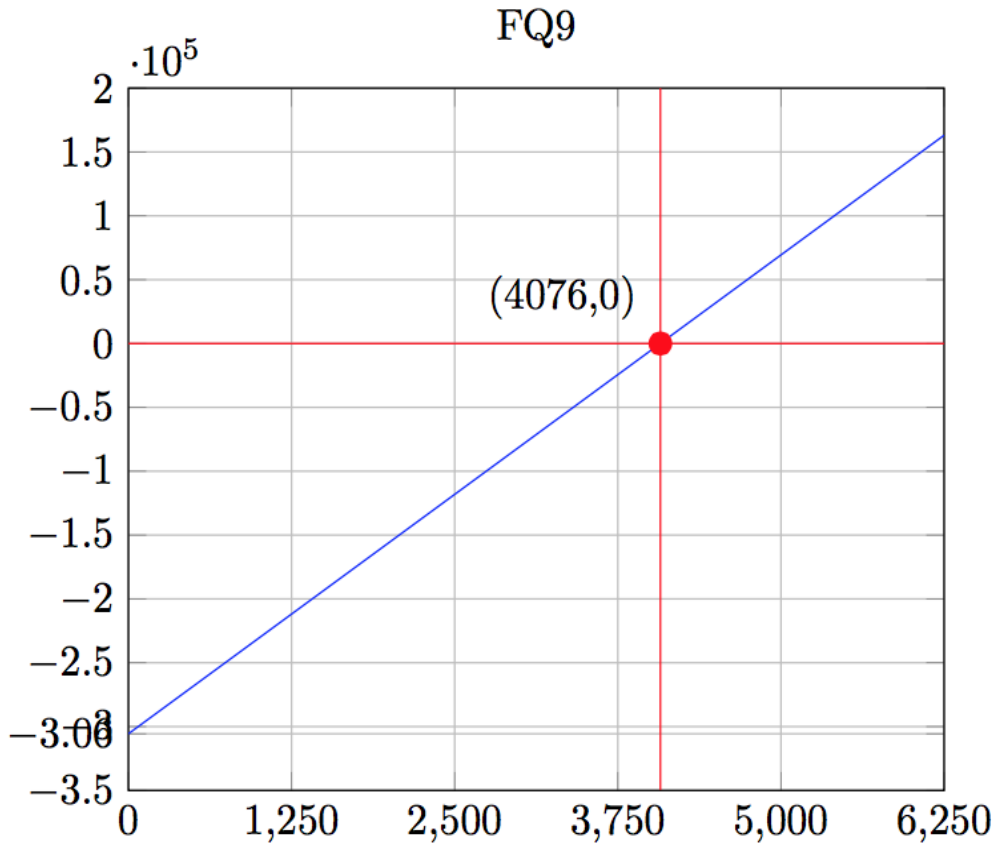
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3.06
−3.5
(4076,0)
0
1,250
2,500
3,750
5,000
6,250


FQ9
$\cdot 10^5$
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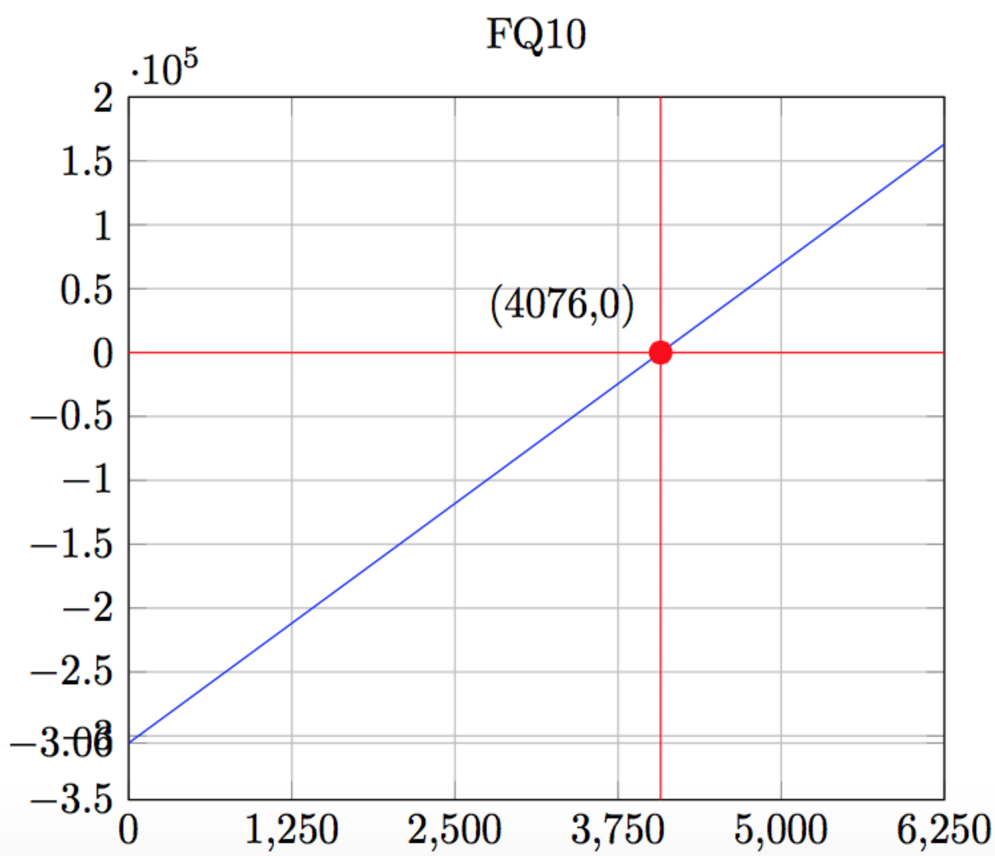
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3.06
−3
−3.5
(4076,0)
0
1,250
2,500
3,750
5,000
6,250


FQ10
$\cdot 10^5$
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1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3.06
−3
−3.5
(4076,0)
0
1,250
2,500
3,750
5,000
6,250

Chapter 14 - Summary

We aim to deliver a low cost product to our customers, aiming to satisfy the middle income group, initially specifically in the districts of Alameda County and Sacramento, California. Therefore, our main focuses for the company are to have low cost operations, consistent quality, and an on time delivery. We are meeting this by focusing our strategy primarily upon lowering our costs, with methods such as minimal machinery, cost of labor, low inventory upkeep, and location, while attempting to produce our product quickly, efficiently, and consistently, using batch processing, an automated Q&A system, and a made-to-stock strategy. We aim to change our procedure once our demand begins to rise, as with rising demands, we will begin to scale our company out, purchasing more machines in order to meet rising demand. We aim to market our product initially to retailers, such as Walmart or Target, as it is one of the most cost-efficient ways to market our product to the world. Looking into the future, we may choose to open up our own location. While our profits initially will be low, we aim to deliver our product at a lower cost, in the hopes that it will increase our demand for future years.