Hair Salon Process Improvement: A Lean Six Sigma Application to Service Industry

Jorge Luis Rivera Camacho
Manufacturing Engineering
Jose A. Morales, Ph.D.
Industrial Engineering Department
Polytechnic University of Puerto Rico

Abstract *— In this project the waiting elapsed time of a customer will be analyzed and standardized to reduce or eliminate this time. The main objective of this project is to keep customer waiting time within 0 to 15 minutes. Due to the lack of historic data to determine the past waiting time, a Voice of Customer (VOC), from a customer point of view, was made using 40 people sample. The results showed that the main two issues were parking availability and waiting time. In this project, DMAIC Lean Six Sigma Tools were used in the process time of the services offered by four stylists to determine the average time of each service and standardize them. As a result, the customer waiting more than 30 minutes decreased by 100%. The people waiting within the range of 15<30 minutes decreased by 13% and those within range of 0<15 minutes increased by 92%.*

Key Terms *- DMAIC, Service Failure, Service Time Standardization, Six Sigma.*

INTRODUCTION

There are three critical moments of truth for a hair salon – when a customer books an appointment, when they arrive for the appointment, and when the service has been performed. The first moment of truth is when the customer books an appointment. At this point, the customer has been attracted. The customer is putting his/her appearance, which is essentially an extension of his or herself, on the line.

The second moment of truth is when the client arrives for the haircut. At this point, they still have neither paid nor received any service. The service level here should be very high. At this stage, one of the biggest risks is with regards to the client's time. Should the stylist be running behind schedule, this represents a potential problem that must be dealt with proactively. Essentially, the customer has been asked to set aside some of their time. They are not necessarily undertaking the appointment at their convenience, it is as much at the convenience of the stylist. So respect for the client's time is paramount. That is what makes this such a key moment of truth – there is the risk of service failure from the outset here and any inability to address the issue or fail to recognize the client's needs can result is a total customer service failure as referred in Figure 1.

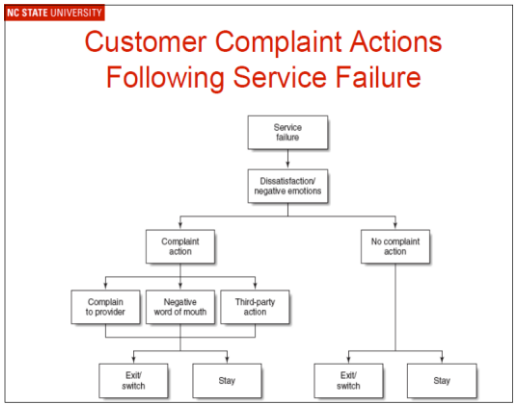


Figure 1
Service Failure: Customer Complaint Actions [1]

The third moment of truth is after the service has been performed. Until this point, the salon has been largely responsible for the moments of truth. Here it is the service rendered that is being evaluated. Future business will depend on customer satisfaction.

RESEARCH DESCRIPTION

The beauty industry is flooded with new businesses opening and customers have a huge amount of choice when it comes to choosing where to spend their money. With so many deals on the internet customer loyalty can be easily swayed.

Having interviewed, through the VOC, various different people on what they expect from a salon we know customers expect not only a great standard of treatment but of high levels of customer service too. Business cannot afford to lose customers to another business that is providing a better customer service and treatments to a higher standard.

For the purpose of this project the main services performed by the stylists will be standardize in order to reduce the customer average waiting time in no more than 15 minutes.

RESEARCH OBJECTIVES

The main objective of this project is to keep customer waiting time within 0 to 15 minutes without affecting service quality and customer service. To perform this objective the DMAIC methodology will be applied.

RESEARCH CONTRIBUTIONS

Standardizing the services time will allow the Salon to attend more customers by using in a more efficient way the working hours. Also, a confidence relationship between customer and the Salon will be created by making the customers feel that their time is being respected.

BACKGROUND

Willy Menendez Salon started services about a year ago. It is located in Hato Rey Puerto Rico and consists of 4 stylists, 1 manicurist and 1 receptionist. Currently, the appointments are recorded manually in an appointment book by the receptionist or any other employee. The time reserved for the customer in the appointment book is based on the requested services and the knowledge of the person who is making the appointment of the service rendered.

Service times can vary depending on several factors as the type and long of hair, experience and techniques of the stylist. The stylist can only establish a more reliable service time when the customer sits on his chair. Unfortunately, the agenda is been already scheduled based on the process time the receptionist thought was correct when booking the customer. This situation makes the stylists to have an overbooked agenda with overlapping customers, which leads to a service failure.

To standardize the booking process and avoid overlapping customers, a new salon management software named *Insight-Salon & SPA* will be installed. This software will not only help with the booking process but with the payroll and inventory management as well.

METHODOLOGY

For the development and to achieve the objectives of this project DMAIC methodology were used. The DMAIC cycle is the driving force behind Six Sigma process improvement projects. This methodology is use when improving existing processes. DMAIC is an acronym for the 5 key phases in a process improvement project: Define, Measure, Analyze, Improve, and Control. Figure 2 shows a description of the DMAIC stages.

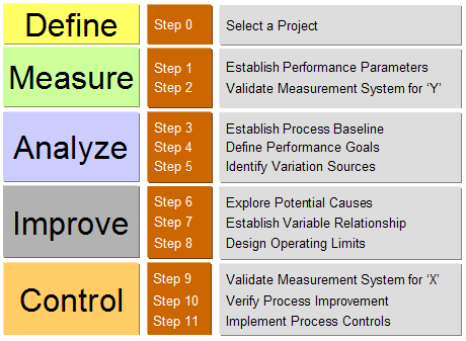


Figure 2
Description of DMAIC Stages [2]

Define Phase

Quality can be defined as meeting customer needs and providing superior value. Meeting customer needs requires that those needs be understood. The voice of the customer (VOC) is the term to describe the stated and unstated customer needs or requirements. The voice of the customer can be captured in a variety of ways: direct

discussion or interviews, surveys, focus groups, customer specifications, observation, warranty data, field reports, etc.

VOC was used as a tool to know and understand what the customers really want in a way to bring them the product/service they are expecting. The survey asked to write five (5) good things about the Salon and other five (5) to improve. Not all customers wrote the five of each.

Figure 3 shows the 80% of what customers think are good things in the salon. On the other hand, Figure 4 shows the 80% of what they think should be improved.

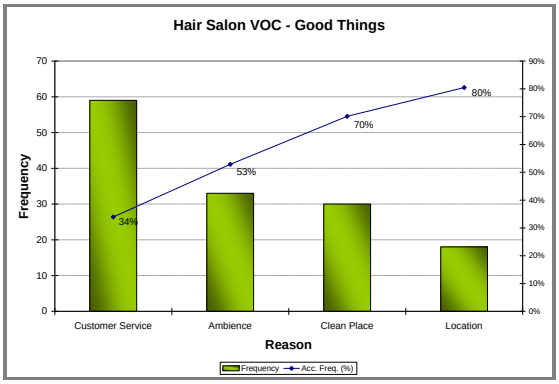


Figure 3
Pareto Chart - Good Things

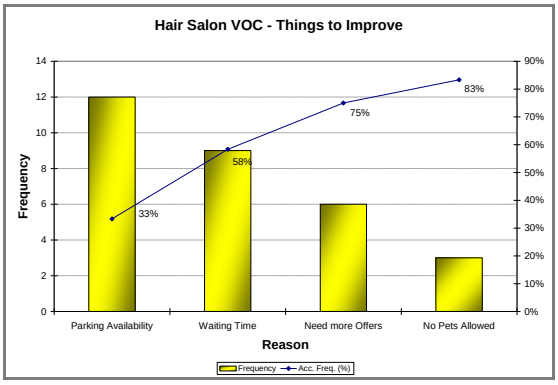


Figure 4
Pareto Chart – Things to Improve

The results showed that the main two issues to improve are parking availability and waiting time. Our efforts will focus on reducing the waiting time.

Measure Phase

Due to the lack of historical data new one had to be collected during 2 weeks. Eighteen services and 4 stylists were measured. Not all services rendered by the Salon were recorded because not all of them are always required by customers.

The most frequent services will be studied herein in order to standardize their times and upload them in the salon management software *Insight-Salon & SPA*. Times for remaining services will be estimated based on the experience of the stylists and validated through the time.

Analyze Phase

Hypothesis test was performed to compare the amount of time required to perform eighteen (18) services and to evaluate consistency and assuredness between stylists' process times. Hypothesis test was performed by using a 2 sample T-test.

- Confidence Intervals = 95%
- $\alpha = 0.05$
- $\sigma 1 \neq \sigma 2$
- H0: mu1 = mu2
- Ha: mu1 ≠ mu2
- If p-value ≥ α Accept H0

Table 1 below shows a summary of the hypothesis test where the mean value of processes CUT-LL (cut ladies long), CUT-LM (cut ladies medium) & HLF-M (high lights female medium), performed by Stylist #3, are not the same with the others stylists. Thus, times affected by Stylist #3 were completely taken out of sampling in order to get a more reliable process time and create a realistic standard time.

Table 1
Hypothesis Test Results

	Stylist 1_CUT-LL	Stylist 2_CUT-LL	Stylist 3_CUT-LL	Stylist 4_CUT-LL
Stylist 1_CUT-LL	-	$mu_1 = mu_2$	mu1 ≠ mu2	$mu_1 = mu_2$
Stylist 2_CUT-LL	$mu_1 = mu_2$	-	mu1 ≠ mu2	$mu_1 = mu_2$
Stylist 3_CUT-LL	mu1 ≠ mu2	mu1 ≠ mu2	-	mu1 ≠ mu2
Stylist 4_CUT-LL	$mu_1 = mu_2$	$mu_1 = mu_2$	mu1 ≠ mu2	-

	Stylist 1_CUT-LM	Stylist 2_CUT-LM	Stylist 3_CUT-LM	Stylist 4_CUT-LM
Stylist 1_CUT-LM	-	$mu_1 = mu_2$	mu1 ≠ mu2	$mu_1 = mu_2$
Stylist 2_CUT-LM	$mu_1 = mu_2$	-	mu1 ≠ mu2	$mu_1 = mu_2$
Stylist 3_CUT-LM	mu1 ≠ mu2	mu1 ≠ mu2	-	mu1 ≠ mu2
Stylist 4_CUT-LM	$mu_1 = mu_2$	$mu_1 = mu_2$	mu1 ≠ mu2	-

	Stylist 1_HLF-M	Stylist 2_HLF-M	Stylist 3_HLF-M	Stylist 4_HLF-M
Stylist 1_HLF-M	-	$mu_1 = mu_2$	mu1 ≠ mu2	$mu_1 = mu_2$
Stylist 2_HLF-M	$mu_1 = mu_2$	-	mu1 ≠ mu2	$mu_1 = mu_2$
Stylist 3_HLF-M	mu1 ≠ mu2	mu1 ≠ mu2	-	mu1 ≠ mu2
Stylist 4_HLF-M	$mu_1 = mu_2$	$mu_1 = mu_2$	mu1 ≠ mu2	-

I-MR Chart

I-MR Chart was another tool used to evaluate if the times measured from the stylists for a specific service were within limits for all of them. As seen in Figure 5, some times are out of limits. These times belong to Stylist #3. This analysis was performed for each of the services.

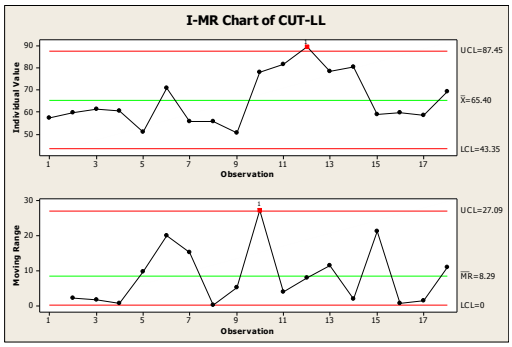


Figure 5
I-MR Chart CUT-LL

Table 2 shows the three processes that were out of control because of Stylist #3 without his values. After taking out all his times to get a more reliable data we can observe that process times for CUT-LL, CUT-LM & HLF-M decreased and got within control limits. Figure 6 shows the cut impact without the times of the stylist #3.

Table 2
Standard Times w/o Stylist #3

Service Code	Average Time (min)	Std Time (min)
CUT-LL	65.40	59.18
CUT-LM	50.64	45.32
HLF-M	90.72	87.65

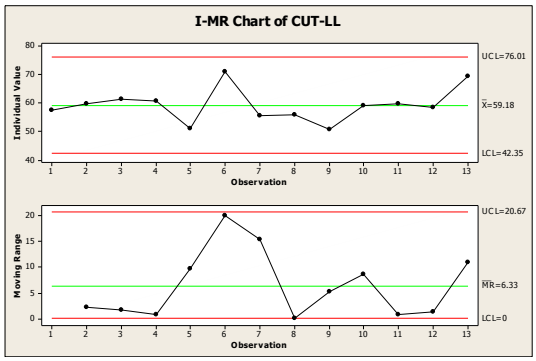


Figure 6
I-MR Chart CUT-LL w/o Stylist #3

Final Standard Times

After completing the analysis, the times for the eighteen services were standardized. Table 3, 4 & 5 below show the final standard times to use with the software *Insight Salon & SPA*.

Table 3
Final Standard Times (minutes)

BBO	BL	BM	BML	BS	C-CHNG
98.08	56.53	43.39	47.59	29.39	75.93
103.12	55.03	48.07	50.28	33.18	71.23
111.34	58.40	48.73	49.21	33.99	70.18
108.83	66.94	47.04	39.53	31.21	77.58
97.60	61.79	40.74	46.29	30.79	69.55
104.72	64.05	39.97	53.81	26.30	81.74
102.58	66.82	44.66	45.11	34.39	73.25
105.21	44.49	45.45	54.51	28.30	80.93
101.30	55.20	38.04	56.45	32.54	76.43
101.27	52.58	45.07	49.53	28.26	80.05
102.37	61.50	51.72	37.66	30.24	78.16
101.22	53.97			27.35	74.43
105.87	67.05			32.77	72.88
112.32	57.37			29.63	77.58
112.14	72.63			37.32	68.12
				33.58	82.91
				29.63	73.69
				22.71	
				26.48	
104.53	**59.62**	**44.81**	**48.18**	**30.42**	**75.57**

Table 4
Final Standard Times (minutes)

C-DEC	C-DEMI	C-RET	CUT-LL	CUT-LM	CUT-LS
65.45	46.44	63.62	57.45	46.69	45.79
56.71	27.20	55.59	59.63	47.04	40.63
68.84	41.45	54.59	61.27	52.17	47.79
61.09	13.43	56.24	60.54	43.89	42.37
55.70	33.27	68.16	50.92	51.19	40.26
49.24	30.11	65.92	70.87	43.61	47.78
63.25	46.77	58.20	55.59	41.97	44.07
61.96	29.53	59.58	55.66	42.56	52.21
61.09	37.71	56.91	50.56	40.48	45.12
	21.56	68.20	59.09	58.76	54.19
		63.13	59.80	47.66	44.75
		64.06	58.55	44.96	37.40
		65.31	69.44	35.00	
		66.60		40.34	
		62.22		43.45	
		56.46			
		62.01			
		58.02			
		63.03			
		65.00			
		54.34			
60.37	**32.75**	**61.29**	**59.18**	**45.32**	**45.20**

Table 5
Final Standard Times (minutes)

CUT-MEN	HLF-L	HLF-M	HLF-P	HLF-S	K-M
14.95	90.71	75.95	92.44	81.73	100.09
20.21	91.79	86.70	85.55	95.05	87.40
28.72	71.91	84.73	103.96	101.50	102.38
31.57	80.18	80.40	98.31	81.73	103.72
36.34	84.99	86.84	85.94	94.10	104.39
25.27	82.41	88.03	96.14	81.68	90.97
31.22	99.10	103.31	95.06	89.62	79.54
34.12	103.22	83.06	77.88	100.76	94.95
35.30	93.23	90.56	89.74	102.17	92.42
30.42	101.50	99.54	98.90	99.58	102.38
25.04	95.69	75.71	97.03		
30.21	82.61	97.37	93.74		
28.75	99.34	88.43	89.32		
30.55	92.25	90.66	89.36		
26.77		96.36			
25.37		74.75			
30.59					
34.13					
30.54					
28.70					
26.99					
22.10					
36.27					
25.64					
28.74	**90.64**	**87.65**	**92.38**	**92.79**	**95.82**

Improve Phase

During the Improve Phase, a software will be installed to manage the areas of automated appointments, easy sales, client profile, employees' productivity, payroll, services, retail & professional products and marketing. The name of the software is *Insight-Salon & SPA Software*.

Insight incorporates over 50 different reports to help manage the salon. *Insight's* reports were designed to improve staff performance, cash-flow and business growth. It also has add-on futures like real-time online booking.

Insight Salon & SPA software was implemented to book appointments using the standard times set at the beginning of this project. After installing the software all the appointments were moved from the book to the computer. As expected, the appointments were overlapping for Stylist #1, 2 & 3. As shown in Figure 7, double booking was forced to these three stylists in order to accommodate the appointments and be able to have a real picture of what the salon is expecting during that specific day.

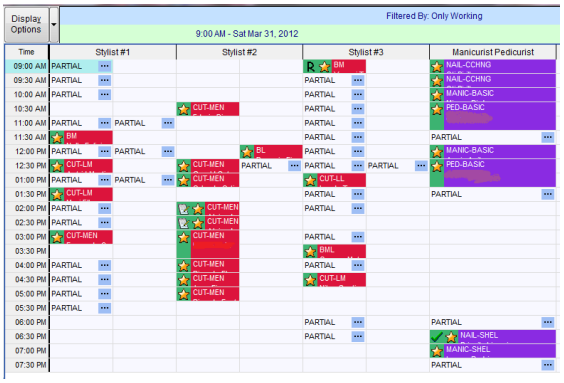


Figure 7
Insight Software Appointment Book- March -31.

Currently, the appointments are scheduled in the computer using the standard times established in this project. As a result, the appointments don't overlap and the stylists have the time to work without worrying that another customer is waiting at the lobby to be served while he/she still attending another one as shown in Figure 8.

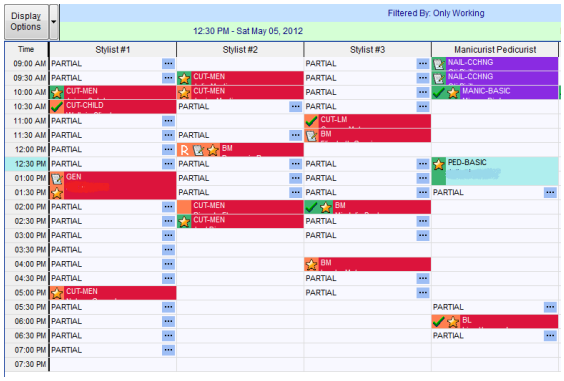


Figure 8
Insight Software Appointment Book- May -5th.

Figure 8 shows how the appointment schedule looks after setting up the standard times in the software *Insight Salon & SPA*. As it can be seen, any of the stylists has appointments overlapping.

Beside the standard times used to control the appointments overlapping, *Insight Salon & SPA Software* provides the futures to automatically make the payroll and control the inventory levels & replenishment. These areas will not be discussed herein but were also part of project agreement with Willy's Salon.

After the implementation of the software and standard times, the customer waiting more than 30 minutes decreased by 100%. The people waiting within the range of 15<30 minutes decreased by 13% and those within range of 0<15 minutes increased by 92%.

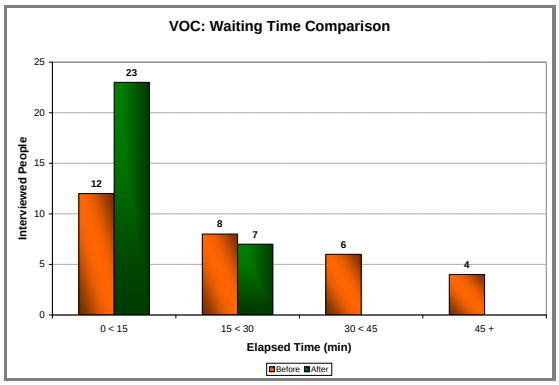
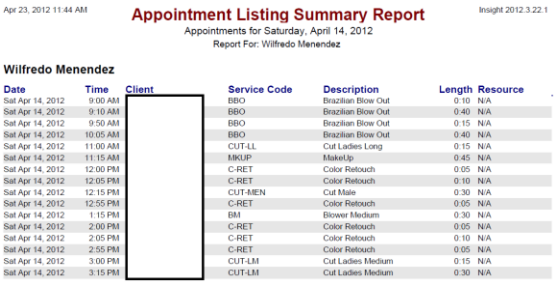


Figure 9
Waiting Time Comparison

Visual Management

Every day an appointment listing report, refers to Figure 10, for each stylist and manicurist will be placed on a wall board in front of every station. This way, every employee will be able to keep track of arriving time and services of his customers for that specific day.



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Appointment Listing Summary Report

Appointments for Saturday, April 14, 2012

Report For: Wilfredo Menendez

Wilfredo Menendez

Date	Time	Client	Service Code	Description	Length	Resource
Sat Apr 14, 2012	9:00 AM		BBO	Brazilian Blow Out	0:10	N/A
Sat Apr 14, 2012	9:10 AM		BBO	Brazilian Blow Out	0:40	N/A
Sat Apr 14, 2012	9:50 AM		BBO	Brazilian Blow Out	0:15	N/A
Sat Apr 14, 2012	10:05 AM		BBO	Brazilian Blow Out	0:40	N/A
Sat Apr 14, 2012	11:00 AM		CUT-LL	Cut Ladies Long	0:15	N/A
Sat Apr 14, 2012	11:15 AM		MKUP	MakeUp	0:45	N/A
Sat Apr 14, 2012	12:00 PM		C-RET	Color Retouch	0:05	N/A
Sat Apr 14, 2012	12:05 PM		C-RET	Color Retouch	0:10	N/A
Sat Apr 14, 2012	12:15 PM		CUT-MEN	Cut Male	0:30	N/A
Sat Apr 14, 2012	12:55 PM		C-RET	Color Retouch	0:05	N/A
Sat Apr 14, 2012	1:15 PM		BM	Blower Medium	0:30	N/A
Sat Apr 14, 2012	2:00 PM		C-RET	Color Retouch	0:05	N/A
Sat Apr 14, 2012	2:05 PM		C-RET	Color Retouch	0:10	N/A
Sat Apr 14, 2012	2:55 PM		C-RET	Color Retouch	0:05	N/A
Sat Apr 14, 2012	3:00 PM		CUT-LM	Cut Ladies Medium	0:15	N/A
Sat Apr 14, 2012	3:15 PM		CUT-LM	Cut Ladies Medium	0:30	N/A

Figure 10
Insight Software Appointment Report

Currently, the area doesn't have a clock for the employee to monitor his time. Therefore, a digital wall clock will be placed in the area to make sure the employees can monitor and track their schedules.

Five S Tools

The 5S Process, is a structured program to systematically achieve total organization, cleanliness, and standardization in the workplace. A well-organized workplace results in a safer, more efficient, and more productive operation. It boosts the morale of the workers, promoting a sense of pride in their work and ownership of their responsibilities.

5S was invented in Japan, and stands for five (5) Japanese words that start with the letter 'S': Seiri, Seiton, Seiso, Seiketsu, and Shitsuke. Table 4 shows what these individual words mean. An equivalent set of five 'S' words in English have likewise been adopted by many, to preserve the 5S acronym in English usage as shown in Table 6. These are: Sort, Set (in place), Shine, Standardize, and Sustain. Some purists do not agree with these English words - they argue that these words have lost the essence of the original 5 Japanese words.

Table 6
Meaning of the 5S Words

Japanese Term	English Equivalent	Meaning in Japanese Context
Seiri	Tidiness	Throw away all rubbish and unrelated materials in the workplace
Seiton	Orderliness	Set everything in proper place for quick retrieval and storage
Seiso	Cleanliness	Clean the workplace; everyone should be a janitor
Seiketsu	Standardization	Standardize the way of maintaining cleanliness
Shitsuke	Discipline	Practice 'Five S' daily - make it a way of life; this also means 'commitment'

5S was performed on the front desk reception at Willy's Salon. Figures 11 & 12 show how it was before the 5S and how it looks now. At the beginning, the front desk had nothing on the counter but the appointment book. The cash drawer was inside the right cabinet.

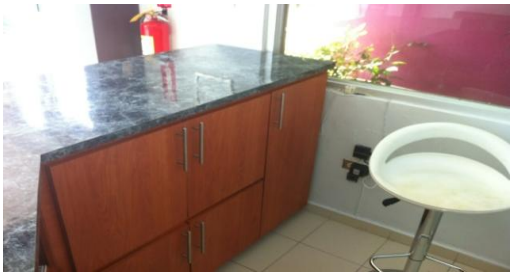

Figure 11
Front Desk View-Beginning of Project

After the 5S, a new POS was placed at the right side of the counter, a new makeup display in the middle of the counter where the customers have to stand while talking to the receptionist.

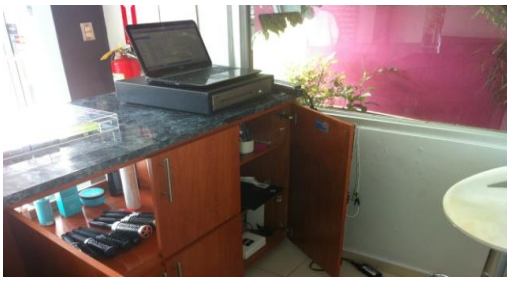

Figure 12
Front Desk View-Now

Retail products were organized and placed in the display window under the counter and retail & supply materials were placed in the right cabinet where the cash drawer used to be.

- Seiri: Old cash drawer inside the right cabinet and the appointment book were throne away.

- Seiton: New POS system placed on the front desk to replace the appointment book and old cash drawer. Also, some decoration and retail products were placed over the counter for more exposure. Office and retail supplies were placed in the right cabinet close to the new POS system.
- Seiso: Front desk are was cleaned and organized by the receptionist.
- Seiketsu: Figure 12 will be used as reference to keep items in place.
- Shitsuke: Every morning the receptionist has to make sure the front desk area is clean and organized as stated.

Control Phase

Because *Insight Salon & SPA* software doesn't have a report to measure the time an employee spends with the customer, the salon owner will measure it with a digital timer for those employees running behind schedule based on the new standard times.

Those employees not meeting the standard times will be couched by the owner in new techniques and procedures in order to meet the standards.

The report to measure the time spent with a customer during a service was already requested to the software manufacturer as an improvement for the next software update. In the meantime, a timer measurement mentioned above.

CONCLUSION

After standardizing the services time and implementing *Insight Salon & SPA* software, the customers are served as scheduled and no delays has occurred yet due to appointments made by the receptionist based on his service time knowledge.

As a result, the customer waiting more than 30 minutes decreased by 100%. The people waiting within the range of 15<30 minutes decrease by 13% and those within range of 0<15 minutes increased by 92%.

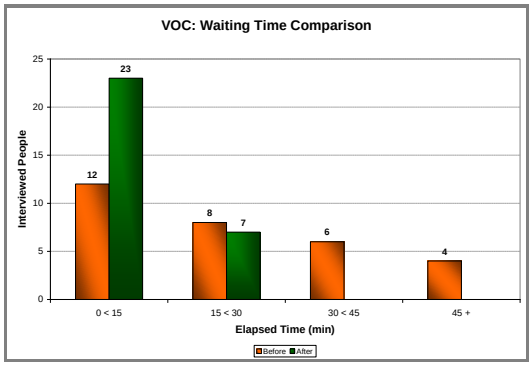

Figure 13
Waiting Time Comparison

Employees feel more comfortable with this new process because they are able to see their schedule right in front of them all the time and manage their time more efficiently.

Next steps will be to manage the inventory and payroll through *Insight Salon & SPA* software.

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[2] http://reyadel.wordpress.com/2008/11/17/