Lean Six Sigma Black Belt Certification

simplilearn

Project 1: Hotel Coopergates Revenue Decline

Learning Objectives

On completion of this project, you will be able to:

- Understand the Hotel Coopergates project background
- Analyze the various factors that led to the revenue loss at Hotel Coopergates
- Infer how the pilot run improved the hotel revenue

PEOPLE AND PROCESS

Pre-Define Phase

Hotel Coopergate: Sales Records

Revenue loss data of Hotel Coopergates, located at Tipiland, for past three years:

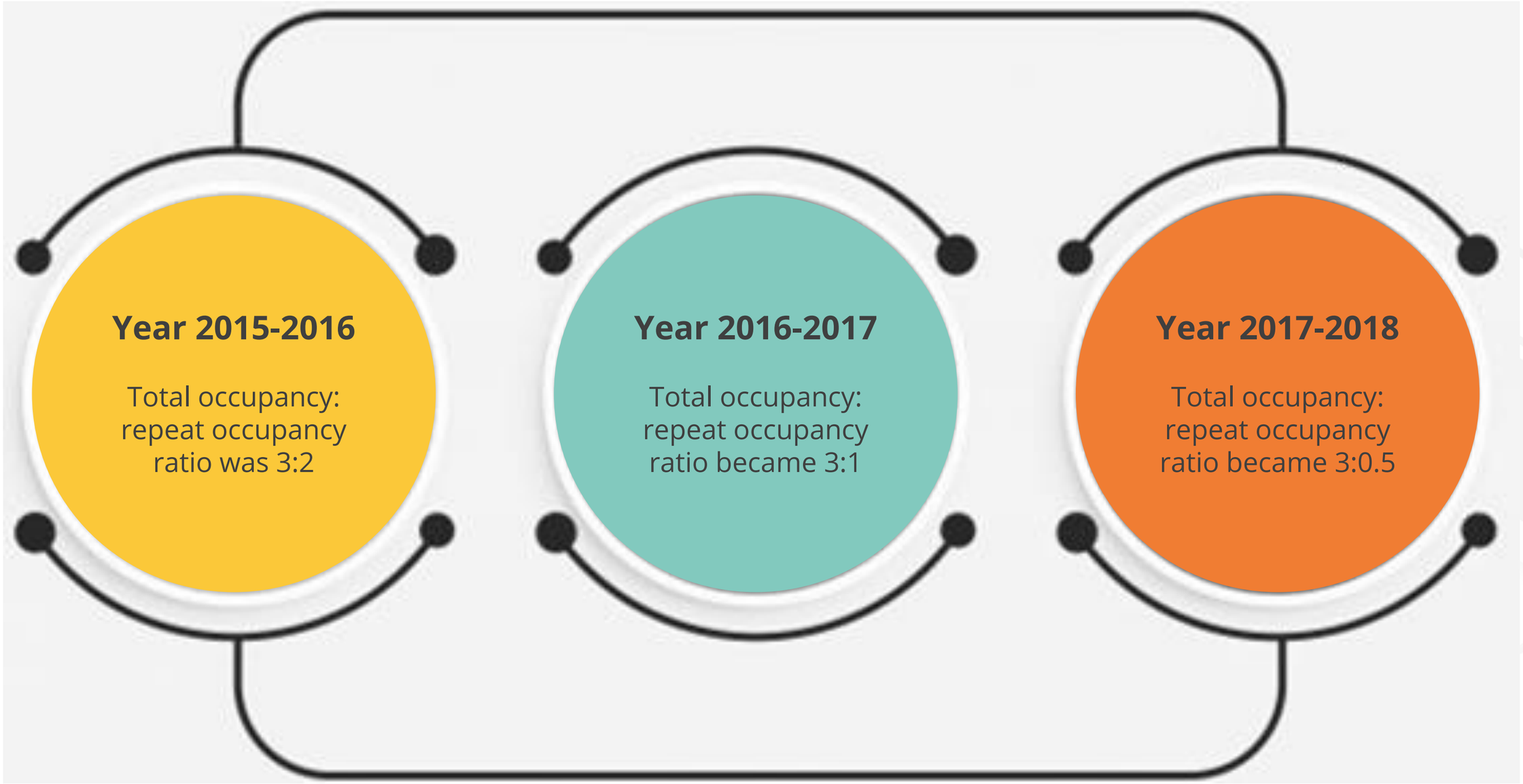
Sales Revenue in $			
Months	**2016**	**2017**	**2018**
January	15764	13399	11389
February	17401	14790	12572
March	16926	14387	12229
April	15038	12782	10865
May	14099	11984	10186
June	13933	11843	10067
July	16923	14385	12227
August	13957	11863	10084
September	14638	12442	10576
October	14345	12193	10364
November	14803	12583	10696
December	13975	11879	10097
Total Revenue	**181802**	**154530**	**131352**
Average Revenue	**15150.16**	**12877.5**	**10946**

Decoding the Case Study

The reports show that the percent of repeat sales have decreased steadily over the past three years under scrutiny. CEO deputes Mr. Bond, a black belt personnel to revive the business.

How would Mr. Bond solve the situation analyzing the data through DMAIC?

Occupancy Ratio



Lost Account/Lost Room Nights Reports

2016

Lost Accounts	Rooms
ABC Healthcare	62
3M	5
ALG Engineerings	7
Alpha N	59
ABJ Cements	32
Amek Foster Limited	10
Amenek Instruments	13
Atl	12
Avano Engineering	14
ACX Bank	151
Boni Auto	41
BND Industries	56
BBB Enterprise	715
Baile Paints	36
BHLL	7
Bilfin	42
CSX Bank	96
Chl Fertilizer	20
ChK Financial	30
MS General Insurance	9
Cidlla Limited	61
Dellta Comp	12
Dist Pay	41

2017

Lost Accounts	Rooms
3M	24
BC Housing	10
Akumen Healthcare	12
Alabama Cements	22
Alpha Enterprises	17
Aqualiff Systems	12
Amex Bank	15
BCG Auto	48
RR Paints	13
BoschRex	610
Capital One	10
Cilia Limited	109
Cognizant	10
Danie Entertainment	18
Dolo Bank	40
DNJ Housing Corporation	13
DHEB Life Insurance	17
Dr. Messi'S	6
Dr. Messy's Laboratories	19
DSMN Pharmaceutical	10
DuPont	17
Ericsson	292
Exile Life	13
Fruito Limited	15
GE Elecix	25
Glenmark	9
Godfrey Phillips	10
Refoils and Solvent	9
Greaves Fabs	10
Hanwha Chems	11
IDJI Bank	88
IBM	385

2018

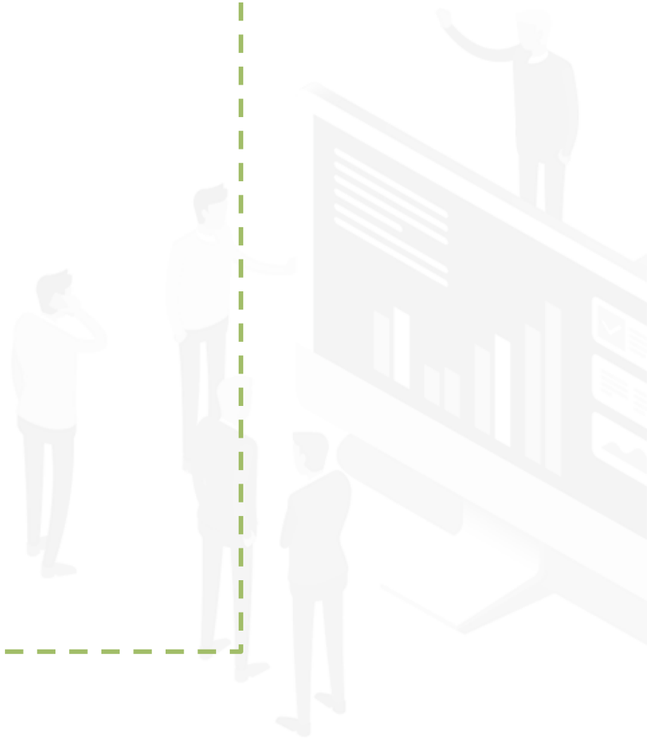
Lost Accounts	Rooms
ABB	30
Abbolt	19
Agility Creations	15
Alpha M:	49
MH Cements	50
B and N Auto	162
BBB Enterprises	1516
Being Paints	43
Bhareign Paints	16
Bilfinge Technologies	49
Bob Pure	37
Cairin Energy	69
Capital One	18
CB Ventilators	18
Celanose Chems	30
General Insurance BITs	12
Cipala Limited	21
Cognizant	31
CLI Pumps	12
Paul and Sons	66
DKLL	71
Direct Tax Reons	40
Dr. Messy's Laboratories	58
LuPont	27
Futide Life	13

No Booking: Reasons

SSBB collects the Voice of Customers (VOC) from lost accounts by connecting with the respective bookers through interview methods and feedbacks.

Following were the reasons for *no bookings* from the lost accounts data:

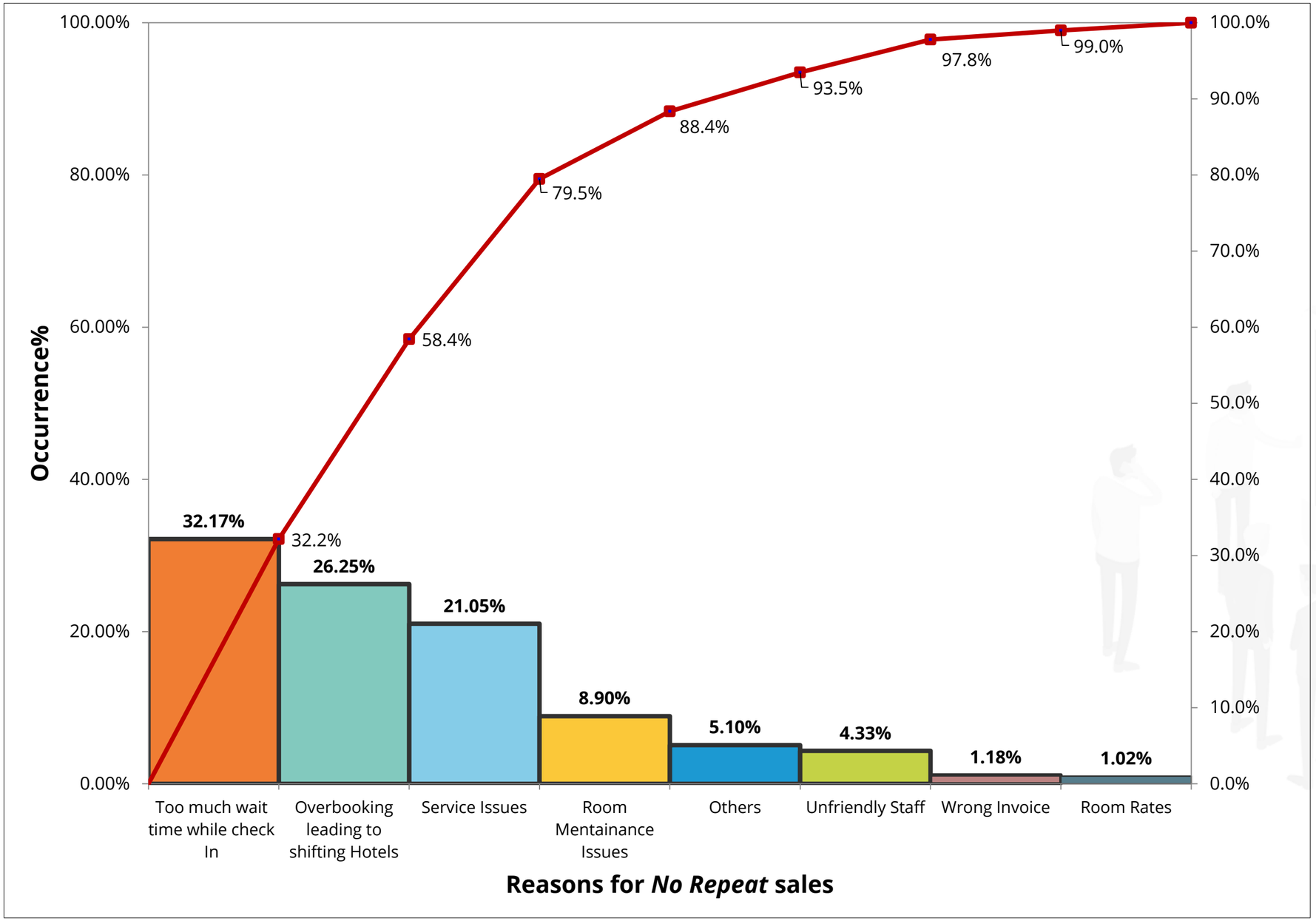
- Longer wait time for check-ins
- Overbooking issues, leading to guests moving to other hotels
- Service issues
- Room maintenance issues
- Unfriendly staff
- Wrong invoice
- Room rates
- Others



No-Booking Reasons: Percentages

Lost account VOC	
Too much wait time while check-in	32.17%
Overbooking leading to shifting hotels	26.25%
Service issues	21.05%
Room maintenance issues	8.90%
Unfriendly staff	4.33%
Wrong invoice	1.18%
Room rates	1.02%
Others	5.10%

Pareto For Lost Accounts



What Should be the Next Step?

Level 2:

What should be Mr. Bond’s analysis?

What should he do next?

PEOPLE AND PROCESS

Define Phase

Project Charter

Problem Statement

- The hotel is steadily losing revenue by 15% every year due to decrease in the repeat sales by 50% yearly even after spending 7% of the total budget revenue earned on BTL activities, online promotions, PR Parties, and travel planner entertainment.
- This has reduced the **Gross Operating Process** from rom 32% in 2014 to-8% in 2017, resulting in a threat to the services and quality of the hotel, which may lead to loss of **Star Category**.

Improving upon the hotel services by 10 folds in next 12 months by reducing:

- The average check-in time from 12 minutes to 4 minutes.
- The number of guests moving due to overbooking from an average of 11 per day to 3 per day which will improve Gross Operating Process by 8%-10%.
- The service issues by 30%.

Goal Statement

Project Charter

Business Case

- Improvement in hotel services will result in recovery from losses, which will break even the Gross Operating Process and bring stability in cash flow by 8% to 10% over next 12 months, revive the lost market share, increase profitability by 10% per annum from the subsequent year and regain brand value.
- If the loss in revenue is not arrested at this stage, further revenue loss will result in staff layover and decrease the hotel standards, which may lead to hotel shutdown or takeover by compset.

Scoping

- This project will be plugging out all the major glitches in guest services (Check-in duration, overbooking issues, and service issues) to make the stay **a delight**.
- The project will focus on retention of existing accounts and reviving of lost accounts.

Project Milestones

Few important milestones:

Define Phase: 2 months

Measure Phase: 1 month

Analyze Phase: 2 months

Improve Phase: 1 month

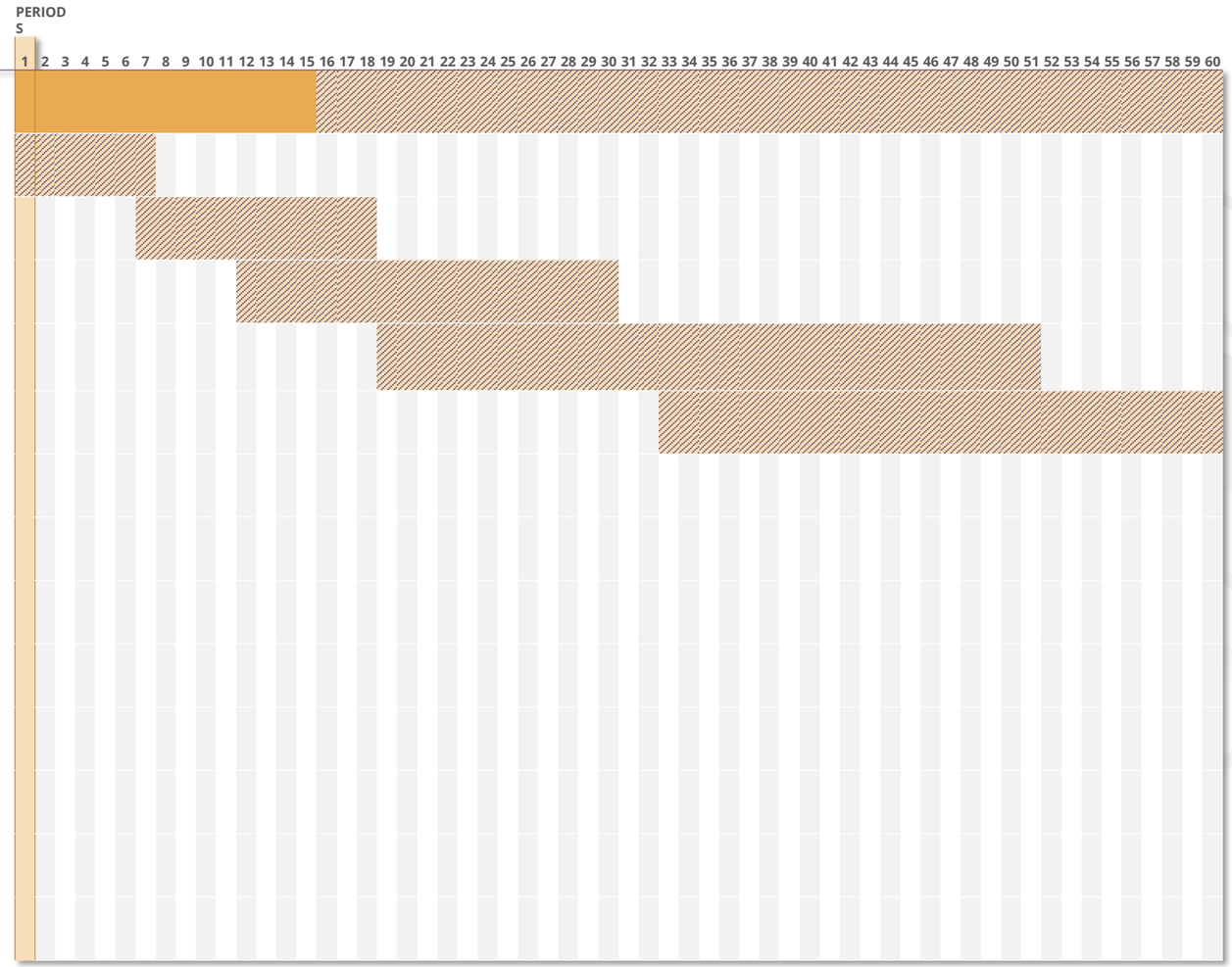
Control Phase: 1 month

Select a period to highlight at right. A legend describing the charting follows.

Period Highlight: 1

Plan Duration | Actual Start | % Complete | Actual (beyond plan) | % Complete (beyond plan)

ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
					25%
Define Phase	1	60 Days	1	60	
VOC Collection	1	7 Days	1	7	
Project Charter	7	5 Days	7	12	
Benchmarking	12	7 Days	12	19	
Quality Function Deployed	19	14 Days	19	33	
Cost Benefit Analysis	33	4 Days	33	37	
SIPOC	37	20 Days			
Measure Phase	61	30 Days			
Ishikawa	61	10 Days			
Pareto	71	5 Days			
Data Collection	76	10 Days			
Analyse Phase	90	30 Days			
Improve Phase	120	30 Days			
Control Phase	160	30 Days			



Cost Benefit Analysis

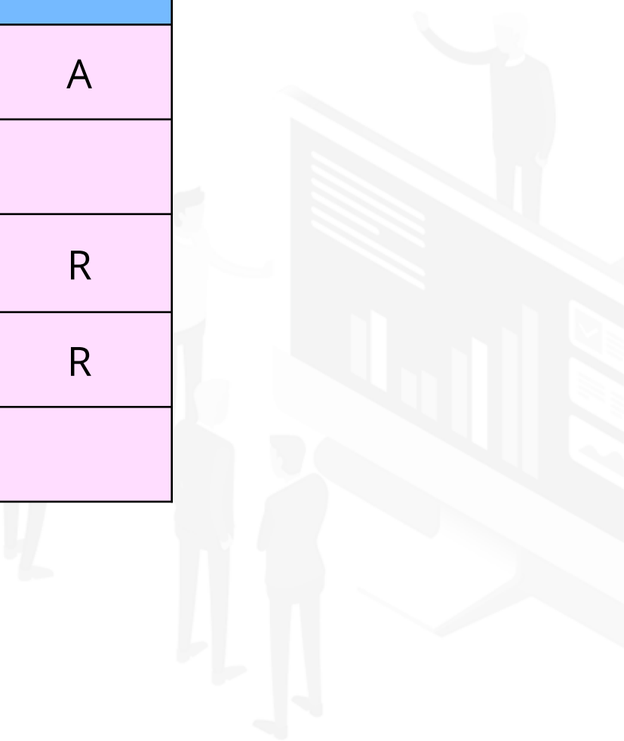
NPV and IRR				
Year	**Cost**	**Benefits**	**Net Benefits**	**Description**
			9.5%	Annual Discount Rates which management wants
0	-$4500	$0	-$4500	Initial Project Investment
1	-$1500	$2000	$500	Returns
2	-$500	$4000	$3500	Returns
3	$0	$7000	$7000	
Totals	**$6500**	**$13000**	**$5500**	
NPV			**$3842.22**	
IRR			**42%**	

Six Sigma Team Formation

Six Sigma team members		
Six Sigma Black Belt	Mr.Jeremy Bonds	Project Leader
Process Owner	Mr. Graham Lords	Associate Vice President
Process Manager	Ms. Flora Dickson	Front Office Manager
Six Sigma Green Belt	Mr. James Knight	Front Office Executive
Guest Relationship	Ms. Christine Dawson	Guest Relationship Executive

RACI Model

Team Members	Define	Measure	Analyze	Improve	Control
Black belt	R/A	A	R/A	A	A
Green belt	R	R		R	
Guest relationship executive	C	C	C	C	R
Process manager	C	C	C	A	R
Financial representative			I		

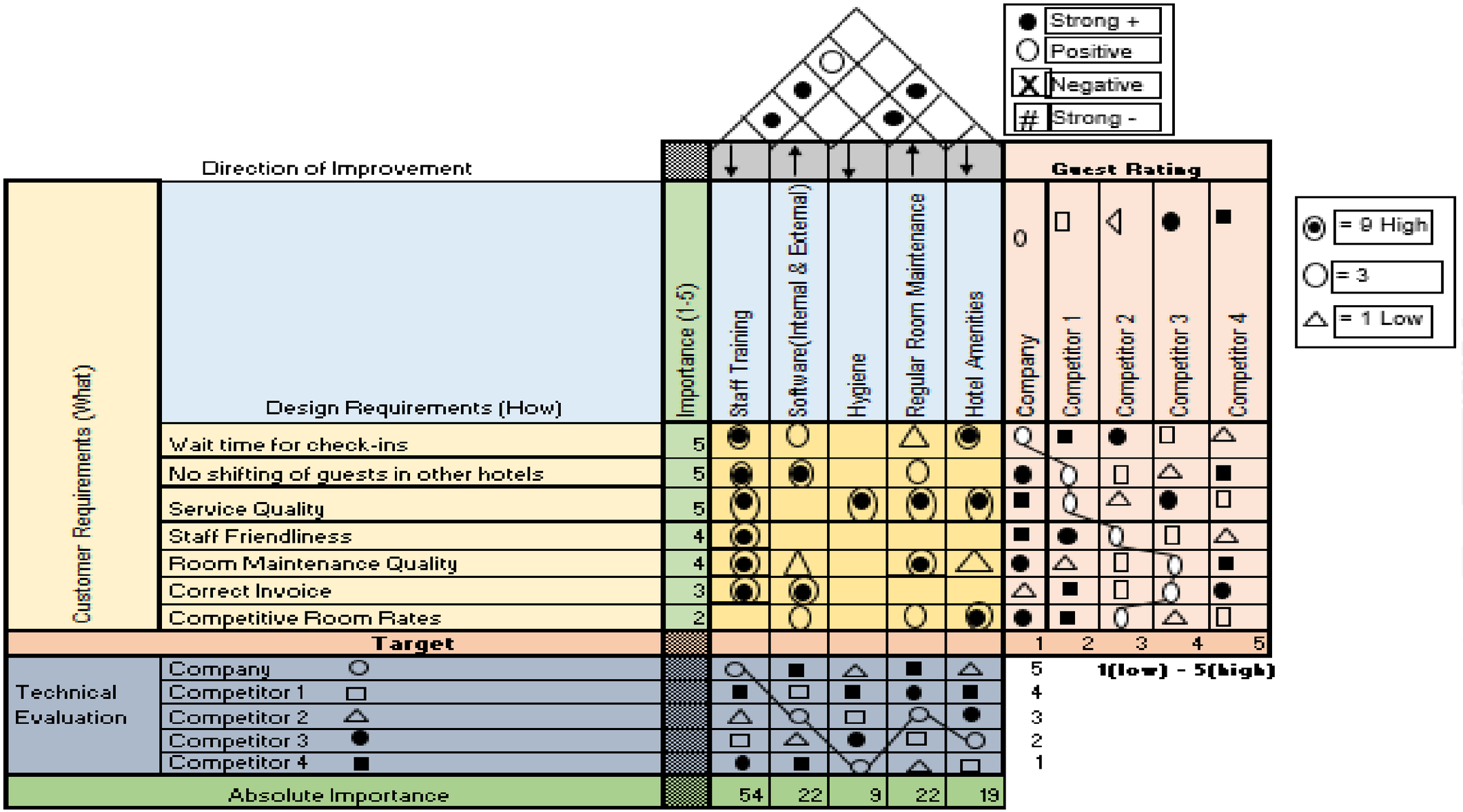


VOC Analysis

Guest rating						
Attributes	**Importance**	**Coopergates**	**Comp 1**	**Comp 2**	**Comp 3**	**Comp 4**
Wait time for check-ins	5	1	4	1	3	2
No shifting of guests in other hotels	5	2	3	4	1	1
Service quality	5	2	5	3	2	5
Staff friendliness	4	3	4	5	2	1
Room maintenance quality	4	4	3	2	1	5
Correct invoice	3	4	3	1	5	2
Competitive room rates	2	3	5	4	1	2

So, what should Mr. Bond do next?

Quality Function Deployed: House of Quality



Industry Standards for Service Improvement

For service improvement

- In-house/outside guest calls to be answered within 3 rings
- In-house guest request to be attended within 10 minutes

Competitive Benchmarking

Occupancy Rate = (No. of rooms sold/No. of rooms available) * 100

Occupancy rates year-wise	Hotel Coopergates	Hotel 1	Hotel 2	Industry average
2014	62.20%	74.60%	75.30%	67.70%
2015	57.70%	75.10%	75.80%	69.64%
2016	51.30%	75.80%	75.60%	68.26%
2017	43.50%	76.30%	75.90%	68.67%
Average Occupancy	**53.68%**	**75.45%**	**75.65%**	**68.57%**

- Competitive benchmark(Best in class) : Occupancy rate 75.65%
- Competitive benchmark(Industry average) : 68.57%

Target : To attain 68.57% occupancy for Hotel Coopergates in 18 months

Competitive Benchmarking (Contd.)

ADR (In $) = (Net room revenue/No. of rooms sold)

ADR in $ for last four quarters	Hotel Coopergates	Hotel A	Hotel B	Hotel C	Industry average
2017 Ist Quarter	$47.15	$365.97	$339.77	$322.43	$153.91
2017 IInd Quarter	$43.27	$366.51	$338.02	$322.76	$153.68
2017 IIIrd Quarter	$41.76	$365.91	$340	$321.98	$152.65
2017 IVth Quarter	$39.43	$367.01	$340.05	$322.93	$154.00
2017 Average	**$42.90**	**$366.35**	**$339.46**	**$322.53**	**$153.56**

- Competitive benchmark(Best in class): ADR(Yearly): $366.35
- Industry average: ADR(Yearly): $153.56

Target : To attain yearly ADR of $ 153.56 in next 18 months

SIPOC

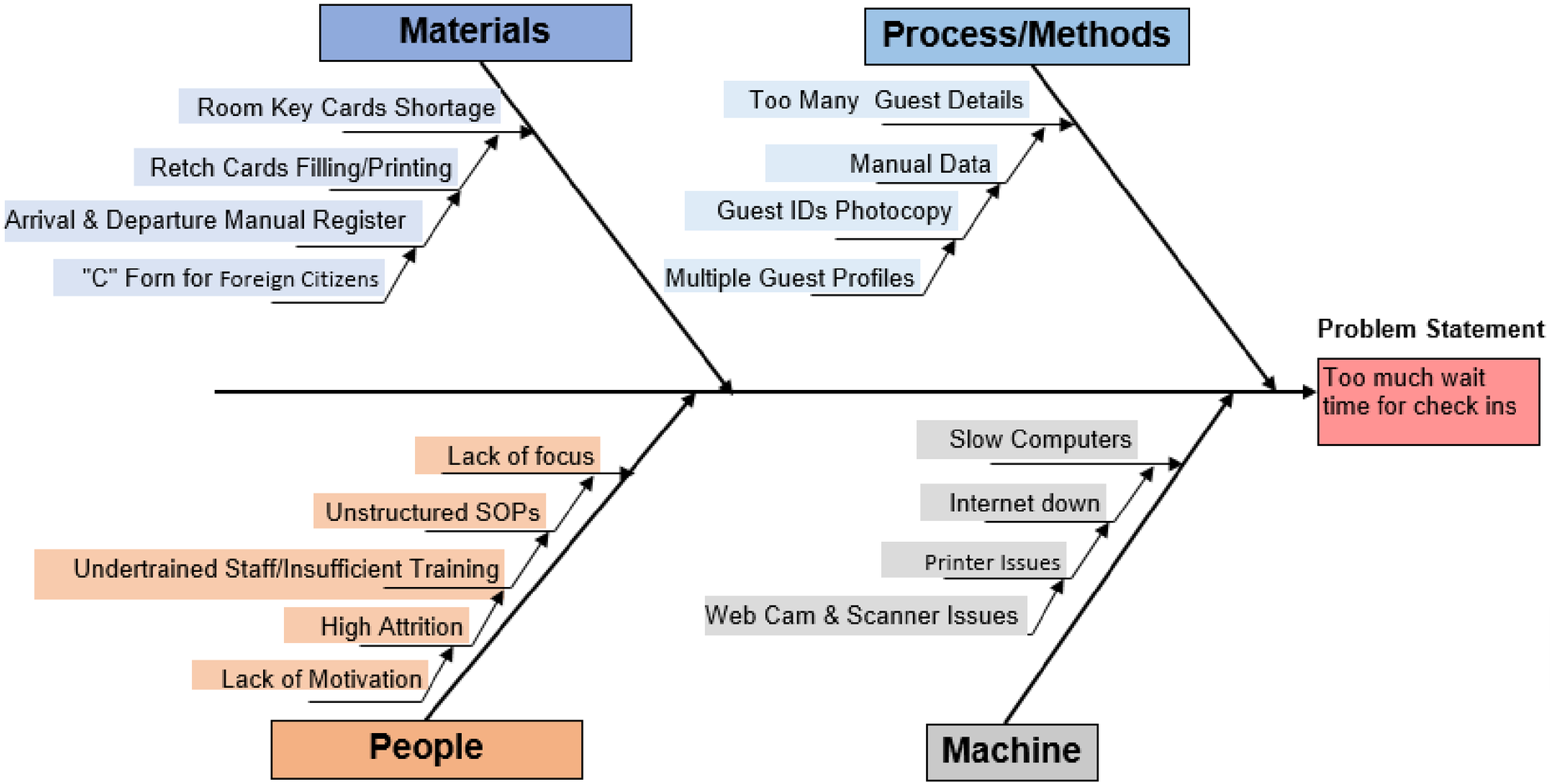
SIPOC deals with the entire process of guest arrival at the hotel reception to the guest check-in into the allotted room

S	I	P	O	C
Suppliers	Inputs	Process	Outputs	Customers
Provider	Input requirements and measures	Start:	Output requirements and measures	Receiver
Hotel front desk Bell boy	Booking confirmation Room keys C form Arrival/Departure manual register Guests' details Guests' ID proofs Reg cards	Guests' arrival at the hotel reception High-level process description: Greet the customer Check for the room booking Ask for guest details Fill the Reg. Card Fill the Arrival/Departure manual register Photocopy the guests' id proofs Fill in **C Form** for foreign guests Allocate room to the guest Take guests' signatures in the register Hand over the room keys to the guests Greet the customer for pleasant stay End: Assign bell boy to escort the guest to the respective room and reach their luggage	Allocated room Guests' signature Guests' information Guests' feedbacks Guests' complaints	Guests

PEOPLE AND PROCESS

Measure Phase

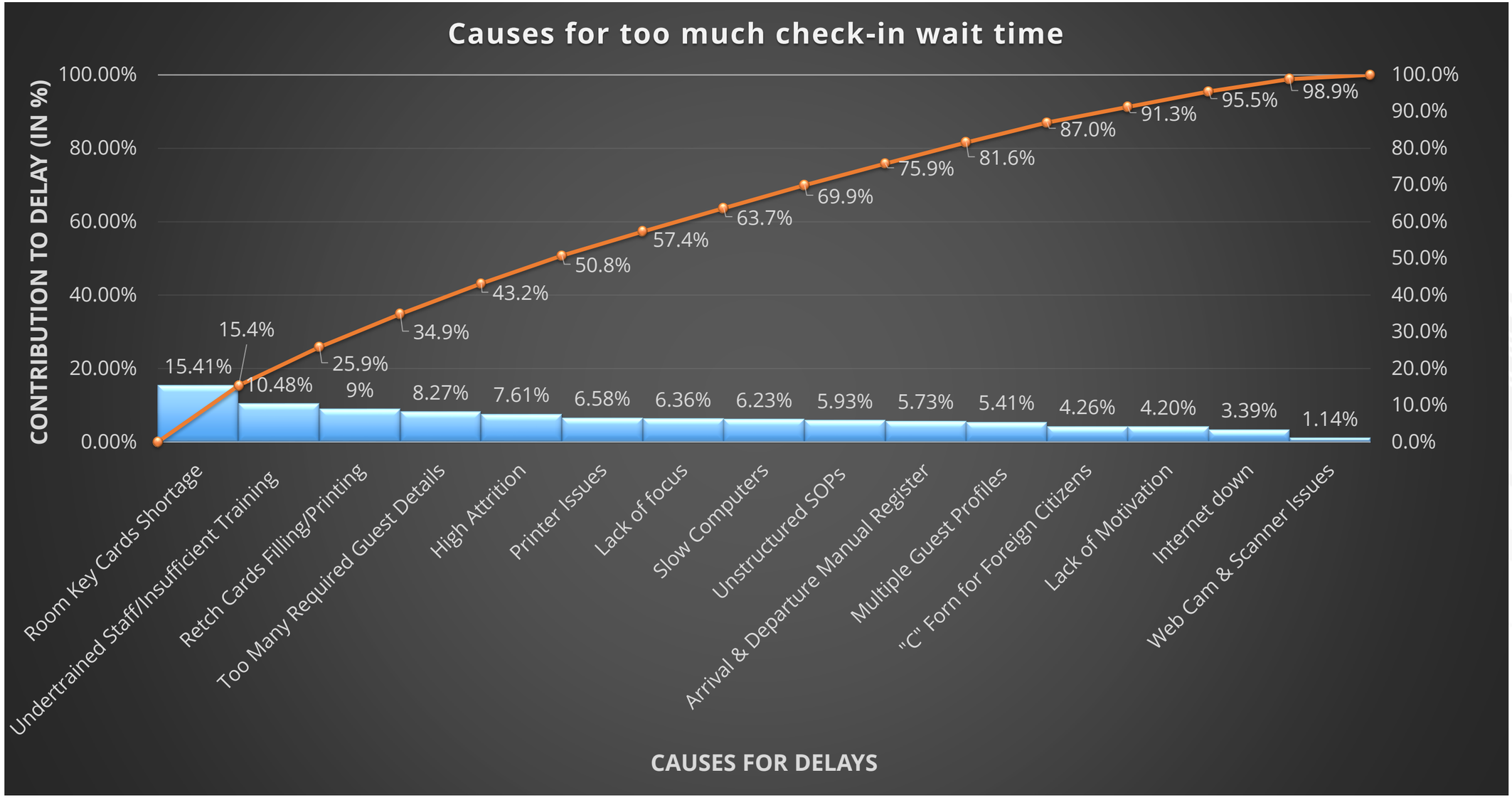
Ishikawa Model



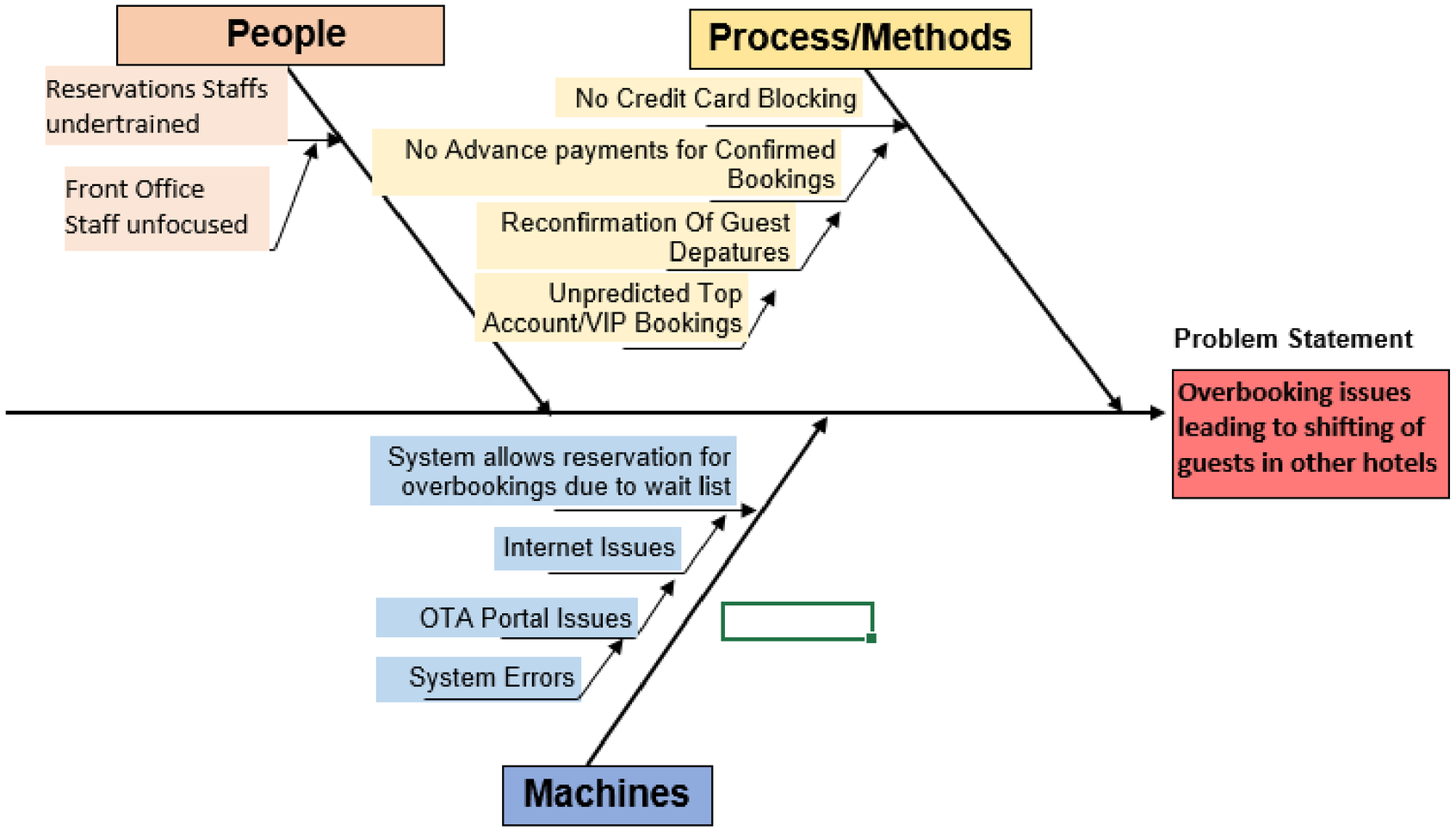
Causes for Delay in Check-in Time

Potential causes	Contribution to delay (in %)
Room key cards shortage	15.41%
Reg cards filling/printing	9%
Arrival and departure manual register	5.73%
C form for foreign citizens	4.26%
Too many required guest details	8.27%
Multiple guest profiles	5.41%
Slow computers	6.23%
Internet down	3.39%
Printer issues	6.58%
Web cam and scanner issues	1.14%
Lack of focus	6.36%
Unstructured sops	5.93%
Undertrained staff/insufficient training	10.48%
High attrition	7.61%
Lack of motivation	4.20%

Causes for Delay in Check-in Time: Pareto Chart



Cause and Effect Analysis

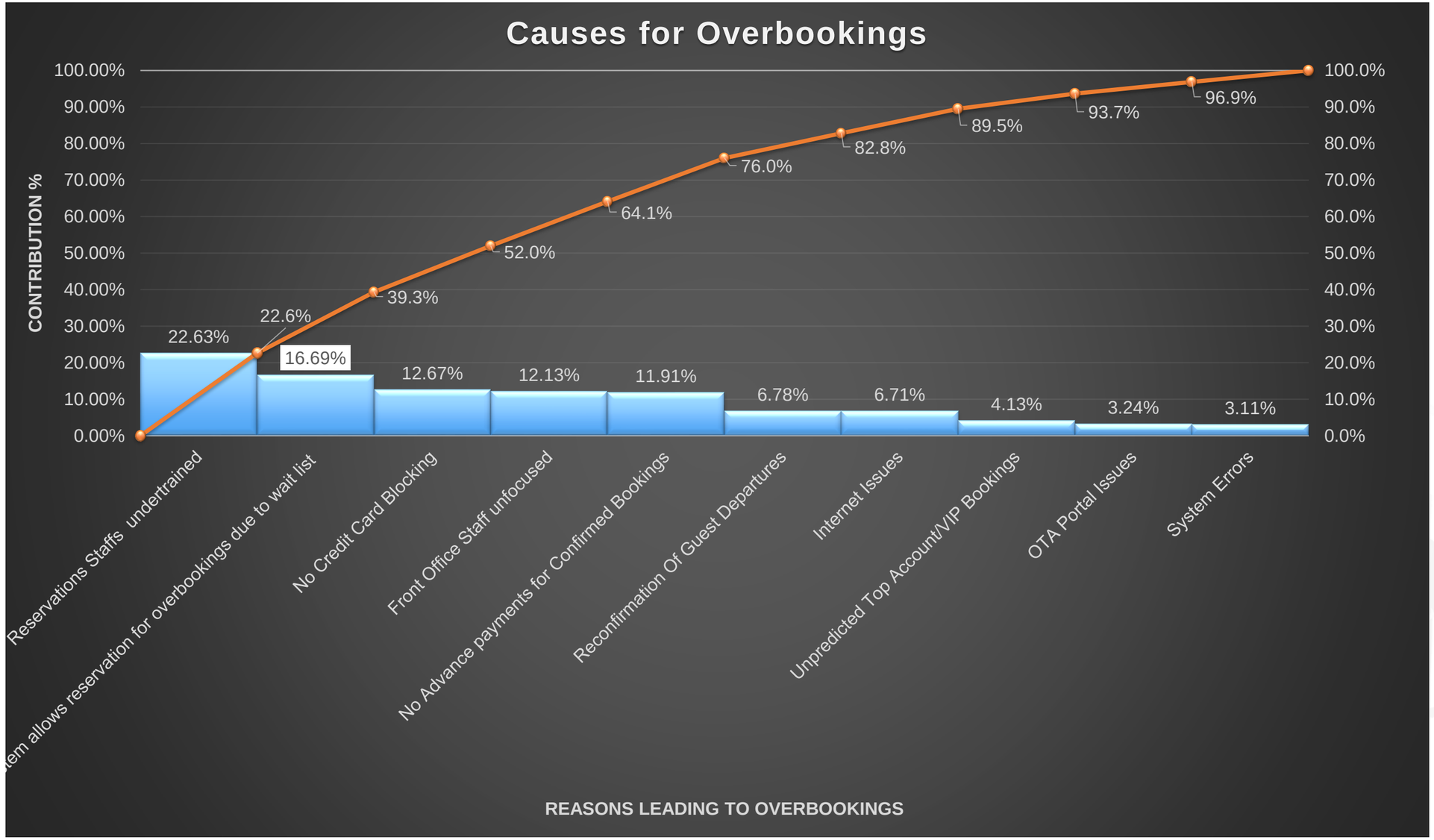


Causes of Overbookings

Causes for overbooking issues leading to shifting of guests in other hotels:

Causes for Overbooking Issues	Contribution in %
Reservations Staffs undertrained	22.63%
Front Office Staff unfocused	12.13%
No Credit Card Blocking	12.67%
No Advance payments for Confirmed Bookings	11.91%
Reconfirmation Of Guest Departures	6.78%
Unpredicted Top Account/VIP Bookings	4.13%
System allows reservation for overbookings due to wait list	16.69%
Internet Issues	6.71%
OTA Portal Issues	3.24%
System Errors	3.11%

Causes of Overbookings: Pareto Chart



What Should be the Next Step?

Level 3:

Which parameters should Mr. Bond focus on?

What should he do next?

Potential Xs

X1: Room key cards shortage

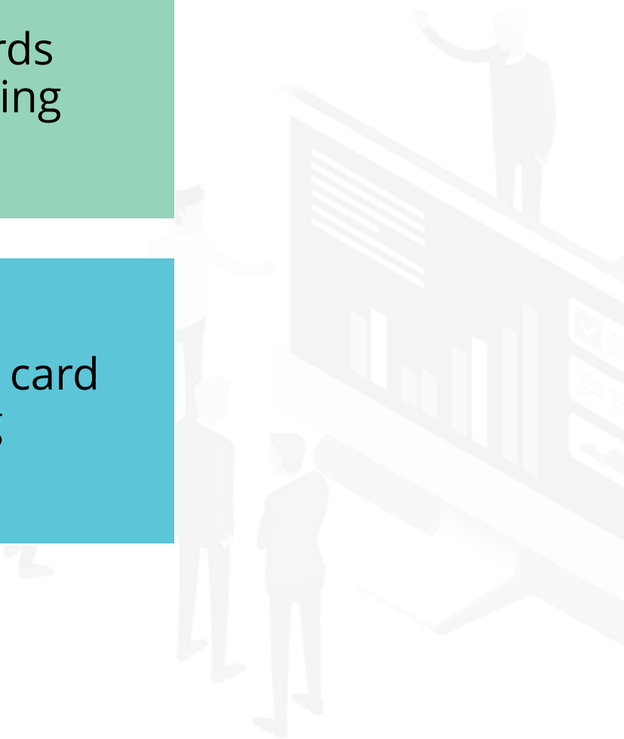
X2: Undertrained/ insufficient staff

X3: Reg cards filling/printing

X4: Reservations staff undertrained

X5: System allows reservation for overbookings due to wait list

X6: No credit card blocking



Affinity Diagram

- Room key cards shortage
- No credit card blocking

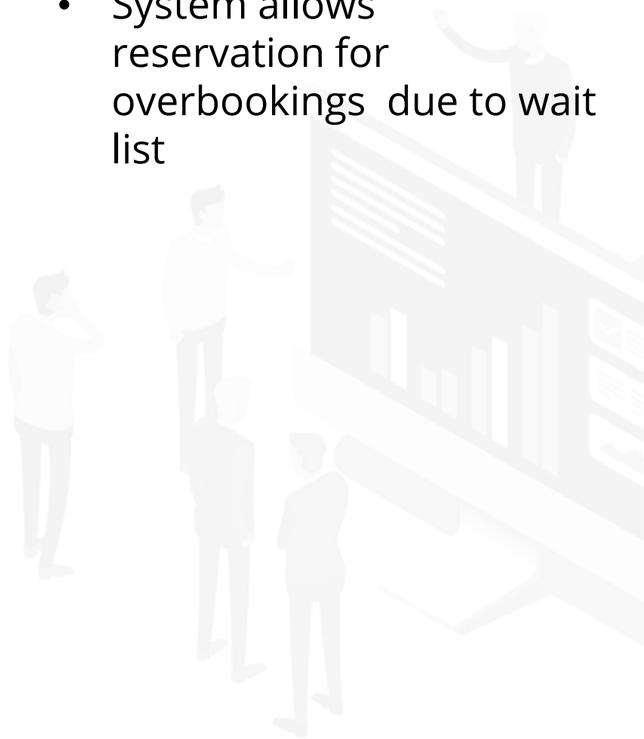
SOPs

Systems

- Reg cards filling/printing
- System allows reservation for overbookings due to wait list

Training

- Reservations staff undertrained
- Undertrained/insufficient staff



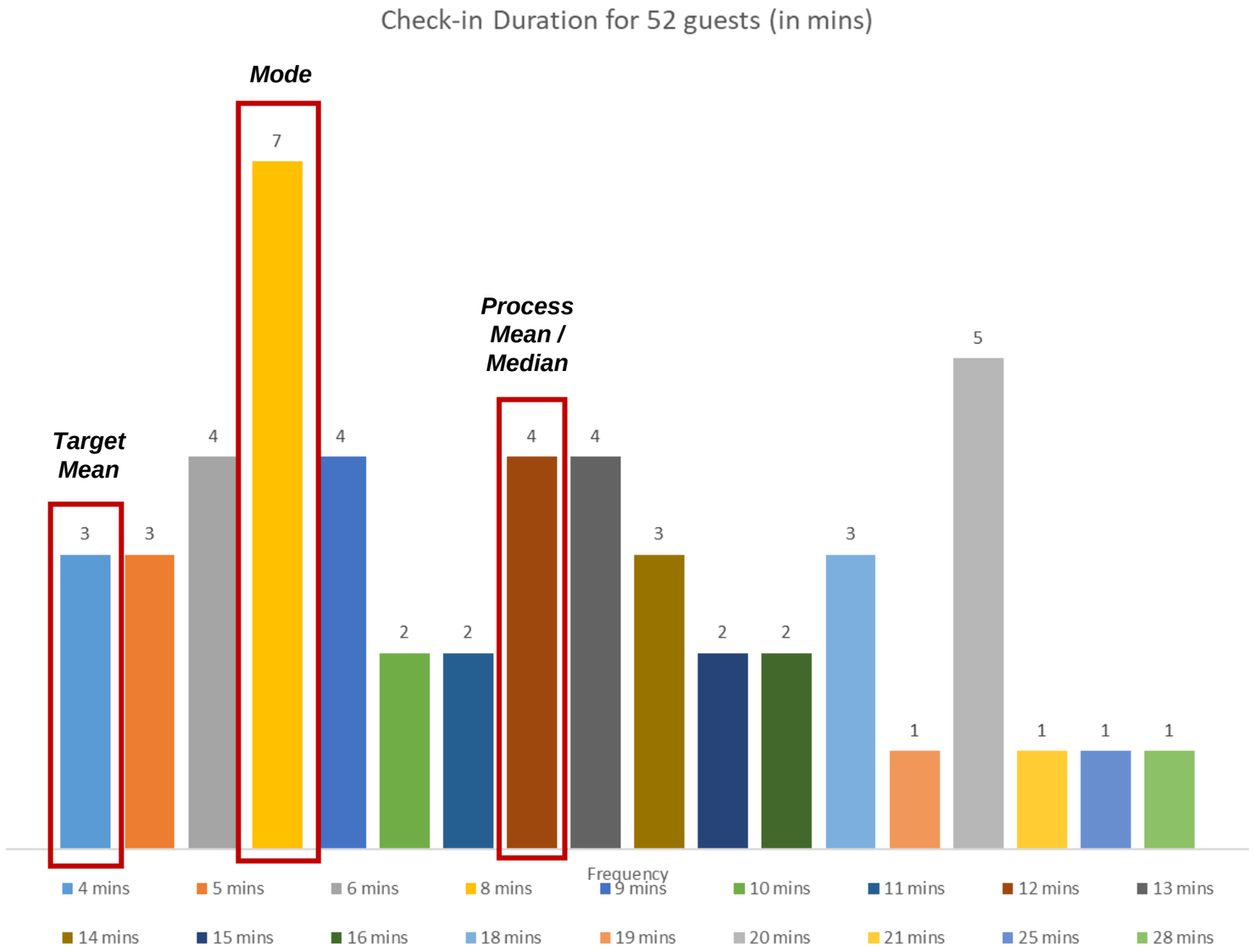
Guest Check-in Duration

52 samples

Title	First name	Last name	Arrival time	Check-in time	Check-in duration
Mr.	Roger	Gates	11:03	11:28	0:25
Ms.	Jenefer	Lweis	10:42	10:48	0:06
Ms.	Gabrielle	Edens	13:03	13:17	0:14
Mr.	Diego	Jonas	12:51	13:07	0:16
Mr.	Adam	Smith	9:43	10:01	0:18
Ms.	Jully	Miller	10:50	11:09	0:19
Mr.	Roger	Brown	8:52	9:05	0:13
Mr.	David	Wilson	6:31	6:41	0:10
Mr.	Lewis	Davis	8:36	8:49	0:13
Mr.	Rajan	Sahay	18:17	18:29	0:12
Ms.	Rima	Jones	18:17	18:35	0:18
Mr.	Sam	Paul	14:19	14:31	0:12
Ms.	Rose	Williams	12:03	12:11	0:08
Mr.	Samuel	Dias	11:17	11:29	0:12
Mr.	Jack	Woods	16:09	16:18	0:09
Ms.	Wendy	Taylor	14:21	14:35	0:14
Ms.	Cathy	Moore	14:21	14:42	0:21
Ms.	Edna	Hill	14:21	14:49	0:28
Mr.	Jay	Bennett	19:26	19:31	0:05
Mr.	Simon	Cooper	10:05	10:09	0:04
Mr.	Patty	Cox	15:51	16:07	0:16
Ms.	Stefanie	Patterson	8:03	8:09	0:06
Mr.	Devin	Bailey	22:31	22:39	0:08
Mr.	Marco	Jackson	20:18	20:29	0:11
Mr.	Antonio	Coleman	6:47	7:00	0:13
Ms.	Tamsin	Long	12:19	12:39	0:20

Title	First name	Last name	Arrival time	Check-in time	Check-in duration
Mr.	Collin	Powell	10:06	10:10	0:04
Mr.	Joel	Knight	15:19	15:27	0:08
Mr.	Andy	Jones	10:14	10:19	0:05
Ms.	Dia	Ray	14:11	14:26	0:15
Mr.	Rajan	Narayan	16:51	16:59	0:08
Ms.	Florance	Flower	7:08	7:23	0:15
Mr.	Michael	James	13:19	13:28	0:09
Mr.	Robert	Bruce	11:10	11:15	0:05
Ms.	Anjee	Pears	19:13	19:21	0:08
Mr.	Roger	Rege	14:59	15:07	0:08
Mr.	Sunil	Chhaddha	16:18	16:27	0:09
Mr.	Farukh	Shaikh	15:41	15:59	0:18
Ms.	Fiona	Cook	12:09	12:19	0:10
Mr.	John	Rendel	5:09	5:29	0:20
Mr.	Kekke	Pees	13:47	13:53	0:06
Mr.	Peter	Anderson	15:19	15:28	0:09
Mr.	Ojus	Muskatwala	12:16	12:36	0:20
Ms.	Tilly	Brown	9:17	9:21	0:04
Ms.	Jane	Lopez	8:43	8:55	0:12
Mr.	Raj	Malhotra	19:14	19:18	0:04
Mr.	Pete	Rendel	14:19	14:39	0:20
Mr.	Ronan	Green	15:43	15:54	0:11
Mr.	John	Young	19:13	19:27	0:14
Ms.	Janet	Ward	7:04	7:17	0:13
Ms.	Sarah	Nelson	14:12	14:18	0:06
Mr.	Richard	Perez	19:19	19:39	0:20

Data Analysis



Measures of Central Tendency:

Mean = 12 Minutes
Median = 12 Minutes
Mode = 8 Minutes

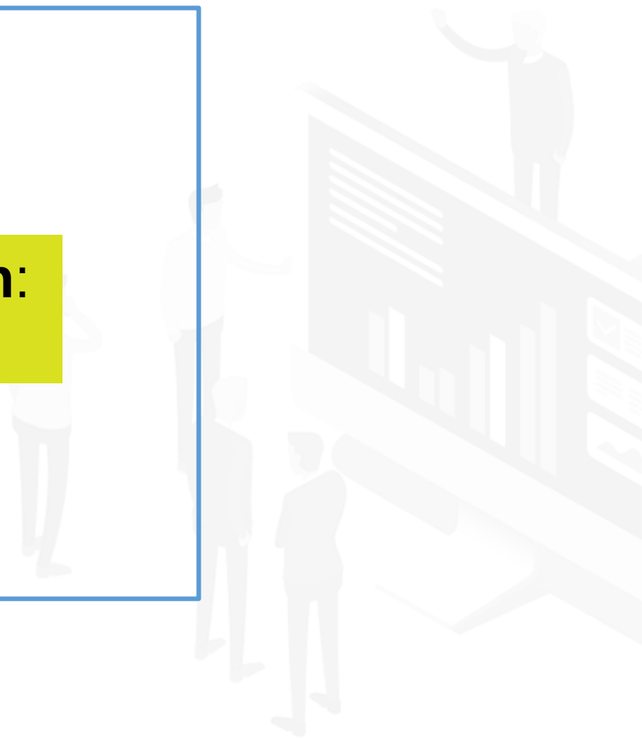
Target Mean = 4 minutes

Data Analysis (Contd.)

Measures of dispersion

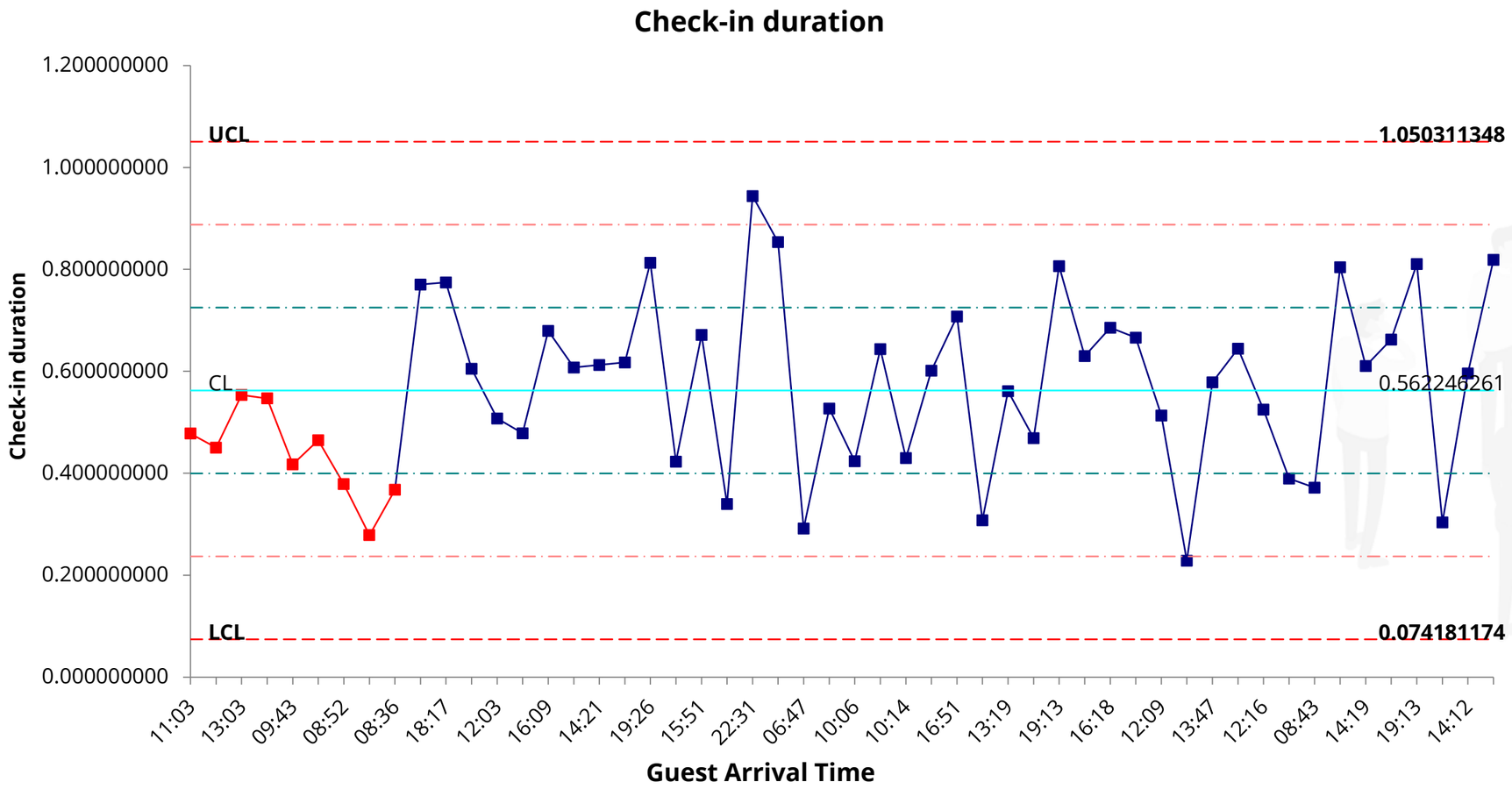
Range:
24 minutes

Standard Deviation:
5 minutes



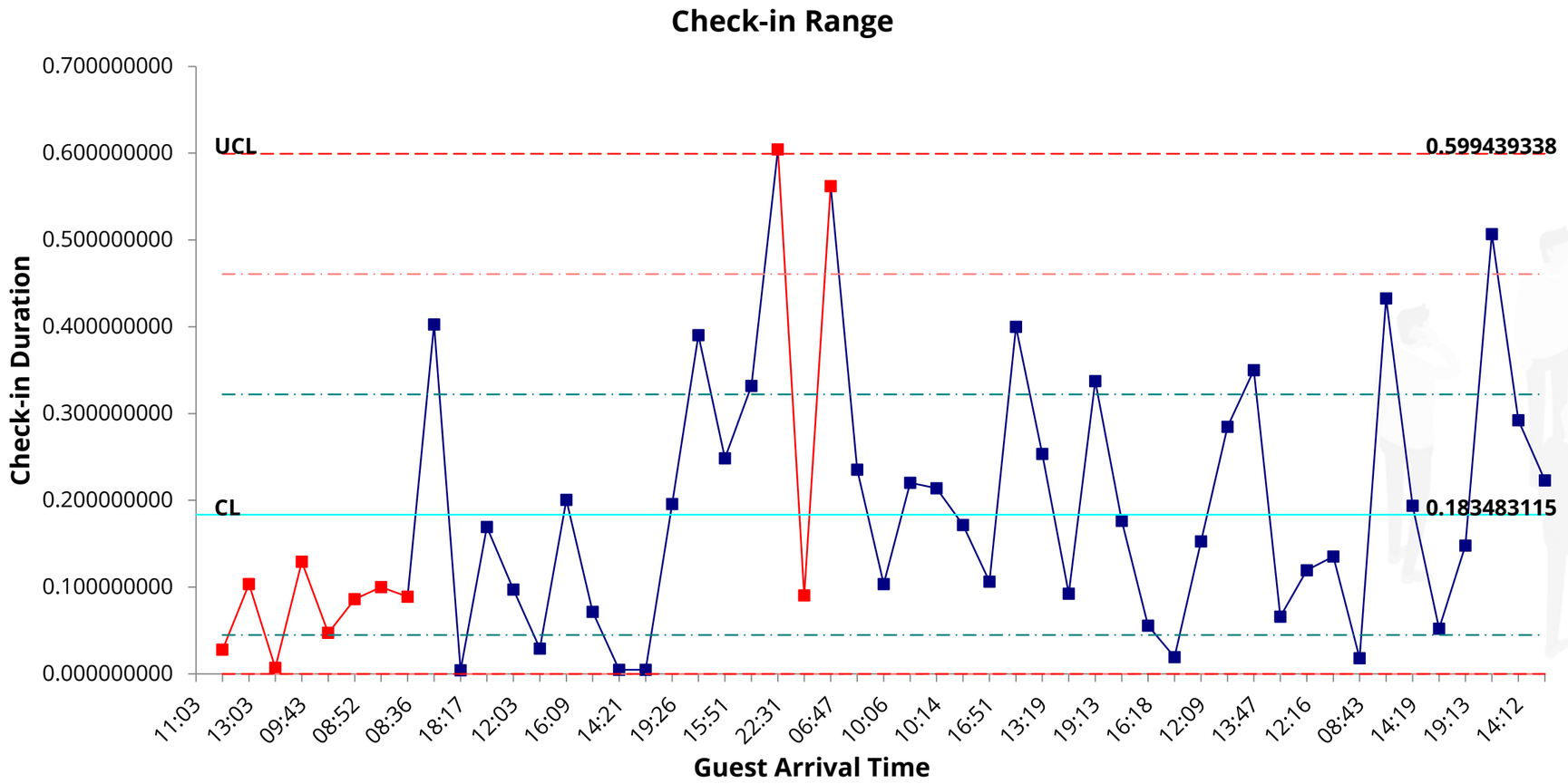
Process Stability Check

X-Chart



Process Stability Check (Contd.)

R-Chart



What Should be the Next Step?

What should Mr. Bond conclude about process stability?

Process Stability Analysis

Current Observation

- Actual mean check-in duration is 8 minutes more than target mean check-in duration
- Large variation into the process is observed
- XMR chart also shows **out of control** situations in check-in duration data

- ✓ Mean check-in duration has to be reduced to 6 minutes
- ✓ Variation into the process needs to be reduced by 50%
- ✓ Process capabilities to be established after stabilizing the check-in process

Plan of Actions

PEOPLE AND PROCESS

Analyze Phase

What Should be the Next Step?

Level 4:

What should Mr. Bond do to stabilize the process?

How should he move further?

KPOV Vs KPIV

KPOVs	KPIVs
Check-in duration within 6 minutes	✓ Modify check-in/check-out SOPs ✓ Introducing automations ✓ Install new computer peripherals: printers; webcams ✓ Training the front office staff
Shifting of guests to other hotels due to overbooking	✓ Modify sales SOPs ✓ Training sales staff ✓ Daily online sales report check from backend ✓ System automation to stop reservations for the day once 10% of wait list reservations is attained
Service quality improvements	✓ Modify service SOPs ✓ Reinforce c-sat scores ✓ Regular complaint analysis

Guest Registration Card Modifications

Current guest registration card:
First Name:
Last Name:
Cell Number:
Email ID:
Date Of Birth:
Anniversary Date:
Country:
Address:
Arrival Date:
Arrival Time:
Departure Date:
Expected Departure Time:
Purpose of Visit:
Walk In/Pre Booked Guest:
Room Rate:
Room Number:
Room Type:
Method of Payment:
Billing Instructions:

New guest registration card:
First Name:
Last Name:
Arrival Date:
Arrival Time:
Departure Date:
Expected Departure Time:
Room Rate:
Room Number:
Room Type:
Method of Payment:
Billing Instructions:
Guest Signature:
Date:
Front Desk Verifier's Signature:

Automate guest information from booking page; prepare reg card pre arrival except: arrival date, arrival time, departure date and expected departure time etc.

Five-Step Registration Process

Greeting guests	Minimize wait time/make guest feel welcome
Confirming the info. on reg card	Reg card serves as the record of guest's stay
Securing a form of payment	Authorize (validate) the card at the time of registration
Room assignment	Accommodate guest preference for room types (location, view, bed type, and amenities)
Issuing keys	Control issue of guest room keys for guest safety

SOP - Group Check-in

Preparation before group arrival	
➢ Always designate a group coordinator from the front desk prior to arrival.	➢ Insert key cards into key card jacket and place on the tray along with rooming list.
➢ Liaise constantly with the sales group coordinator for information.	➢ Choose an appropriate group check-in area according to the following: ▪ Size of the Group ▪ Block/wing the group is staying in ▪ Transport to the hotel ▪ Time of check-in
➢ Check that arrival registration cards have been prepared for the group along with the rooming list for signature.	➢ Guest registration card along with keys should be kept in alphabetical order.
➢ Check if all the relevant correspondence has been read and briefed, during the staff briefing, on the day of group check-in.	➢ Sufficient stationary/pens must be kept ready for guests to sign their registration cards.
➢ Check group billing instructions and cross check the billing instructions entered on the property management software.	➢ Welcome drinks and cold towels should be prepared so they may be served on arrival. And accurate number of drinks to be pre-ordered so that the room service supervisor is aware of this requirement.
➢ Once priority group rooms have been allocated, cut rooms keys for arrival.	➢ The bell desk/concierge must be kept informed of the group arrival time and the following needs should be coordinated: ▪ Luggage tags are ready ▪ Luggage delivery plan is organized
➢ If group is arriving at one time then all rooms must be allocated and all keys cut. The number of keys per room must match with the occupancy of the room.	➢ Duty roster has to be prepared taking into consideration the group's size and arrival time.

SOP - Bell Desk

Escorting guests to their rooms

- Present yourself to the guest with a genuine smile
- Always offer guest to carry his/her bags
- Always try to walk to the right of the guest while directing them to their room
- Walk a short step ahead of the guest maintaining a distance of 2 feet from him/her
- Smile warmly and maintain eye contact when conversing with the guest
- On the way, briefly explain the hotel features and facilities which the guest needs to know (e.g. breakfast room, restaurant timings, pool area, spa access, complimentary hi-tea, city drop, boat ride etc.)
- Walk professionally without making any noise
- Assist the guest in calling the lift by pressing the button to get the lift for the guest
- When the lift door opens, show an open palm gesture.
- Explain how to use the room key to activate the elevator
- Once the lift arrives at the floor, let the guest out first and then direct the guest towards their room as above
- upon reaching the room, open the door for the guest
- Demonstrate the usage of room key
- Open the door and let the guest in the room
- Ask guest permission to enter the room and ask if they wish to have an explanation of the room
- If the answer is yes, show the room and explain e.g. TV use, mini bar, air-conditioning, lightning etc.
- Offer further assistance, if required or asked by the guest

SOP – Check-out

Tabs to be kept at the reception counter for guest feedback

- Pre-prepared billing as per billing instructions on the reservation
- Appropriate charges to be added, and a copy of the info-invoice to be provided to the guest for verification
- Method of payment has to be verified and processed discretely
- If there is any dispute on mini bar charges, then as per hotel policy appropriate steps should be carried out. **Example**: Waiving off the disputed charges etc.
- Ensure keys remain operative to access special configured printer for final invoice
- Two copies of invoices has to be generated and the guest signature has to be taken on both copies
- Handover one copy to guest neatly folded in an envelope
- Check-out process has to be completed in less than 4 minutes
- Offer further assistance with luggage, directions, or transportation
- Ensure guest fills up the hotel feedback form through tab during the check-out process
- Ensure to speak last, offer thanks and an invitation to return with a smile

Guest Feedback

Guest should fill the feedback survey while checking out at the hotel reception.

Tabs to be kept at the reception counter for guest feedback	
➢ Staff was well groomed, uniformed, name tag was present	Yes\No
➢ Staff did not eat, drink, smoke or chew gum	Yes\No
➢ Staff maintained focus while attending you, was not distracted	Yes\No
➢ Your waiting time while checking in has been for no longer than 6 minutes	Yes\No
➢ Staff spoke first and greeted you with a smile while welcoming you	Yes\No
➢ Billing was pre-prepared as per your billing instructions on the reservation	Yes\No
➢ Check-out process was completed in less than 4 minutes	Yes\No
➢ Staff offered further assistance with luggage, directions, or transportation	Yes\No

Ratings: 1: Not At All Likely; 5: Extremely Likely	**1 2 3 4 5**
➢ How would you like to rate your stay at Coopergates?	**1 2 3 4 5**
➢ How likely are you to visit us again?	**1 2 3 4 5**
➢ How likely are you to rate our services?	**1 2 3 4 5**
➢ How likely are you to recommend Coopergates to your friends and families?	**1 2 3 4 5**

Guest Feedback (Contd.)

Tabs to be kept at the reception counter for guest feedback	
➢ Did you have any complaints during your stay at Coopergates? If Yes :	Yes\No
▪ Was your complaint attended within 10 minutes?	Yes\No
▪ Are you satisfied with the resolution provided?	Yes\No
▪ Your complaint was regarding: Invoice	●
Services	●
Room	●
Hotel Amenities	●
Check-in/Check-out	●
Others	●

Sales Parameters

Sales

- Full payment
- Card blocking
  - Room on-hold without payment
  - Room to be released if payment/card details not received within 24 hours (guests to be informed by reservation desk)

Reservation status

- Confirmed reservation
- Confirmed reservation
- Wait list
- Cancel reservation

For repeat guests

- Loyalty programs for frequent visitors:
  - Platinum members
  - Gold members
  - Silver members

For full advance payments

One complementary buffet lunch/dinner

PEOPLE AND PROCESS

Improve Phase

Pilot Run

Execute pilot run for 3 weeks to test

- Percentage of SOP adherence
- Improvement over previous process
- Improvement w.r.t. competitive benchmarks set
- Impact on c-sat scores

Pilot Run (Contd.)

Pre-pilot

Title	First Name	Last Name	Check-in duration (In minutes)
Mr.	Roger	Gates	25
Ms.	Jenefer	Lweis	6
Ms.	Gabrielle	Edens	14
Mr.	Diego	Jonas	16
Mr.	Adam	Smith	18
Ms.	Jully	Miller	19
Mr.	Roger	Brown	13
Mr.	David	Wilson	10
Mr.	Lewis	White	13
Mr.	Rajan	Sahay	12
Ms.	Rima	Martin	18
Mr.	Sam	Garcia	12
Ms.	Rose	Williams	8
Mr.	Samuel	Dias	12
Mr.	Jack	Woods	9
Ms.	Wendy	Taylor	14
Ms.	Cathy	Harris	21
Ms.	Edna	Hill	28
Mr.	Jay	Martinez	5
Mr.	Simon	Cooper	4
Mr.	Patty	Cox	16
Ms.	Stefanie	Patterson	6
Mr.	Devin	Bailey	8
Mr.	Marco	Jackson	11
Mr.	Antonio	Coleman	13
Ms.	Tamsin	Long	20
Mr.	Collin	Powell	4
Mr.	Joel	Knight	8
Mr.	Andy	Martin	5
Ms.	Janet	Ward	13

Pilot

Title	First Name	Last Name	Check-in duration (In minutes)
Mr.	Andrew	Smith	10
Ms.	Sharon	Johnson	12
Ms.	Flavy	Williams	8
Mr.	Alexander	Martin	4
Mr.	Nicholas	Smith	6
Ms.	Lara	White	5
Mr.	Tyler	Brown	8
Mr.	John	Wilson	9
Mr.	Noah	White	8
Mr.	Brandon	Pandey	6
Ms.	Ria	Martin	13
Mr.	Nathan	Garcia	5
Ms.	Gail	Williams	9
Mr.	Justin	Dias	3
Mr.	Gabriel	Woods	7
Ms.	Jenefer	Taylor	8
Ms.	Ada	Harris	14
Ms.	Alecia	Hill	6
Mr.	Caleb	Martinez	4
Mr.	Thomas	Cooper	3
Mr.	Cameron	Cox	7
Ms.	Bambi	Patterson	8
Mr.	Jackson	Bailey	3
Mr.	Angel	Jackson	5
Mr.	Isaiah	Coleman	5
Ms.	Breana	Long	4
Mr.	Mason	Powell	7
Mr.	Luke	Knight	9
Mr.	Jason	Martin	10
Ms.	Carl	Ray	8

Pilot Run (Contd.)

01

Analysis of pre-pilot data with pilot for check-in duration

- **Null hypothesis**: Pre-pilot mean is similar to pilot mean
- **Alternate hypothesis**: Pre-pilot mean is dissimilar to pilot mean

02

Performed paired t-test - t-Test: Paired two sample for means		
	Variable 1	*Variable 2*
Mean	12.7	7.133333333
Variance	37.25172414	8.257471264
Observations	30	30
Pearson correlation	0.122291328	
Hypothesized mean difference	0	
df	29	
t Stat	4.749022992	
P(T<=t) one-tail	**2.54695E-05**	
t critical one-tail	1.699127027	
P(T<=t) two-tail	5.0939E-05	
t critical two-tail	2.045229642	

03

Inference

Null hypothesis is rejected since p-value < 0.05

Pilot Run (Contd.)

01

Analysis of pre-pilot data with pilot for check-in duration

- **Null hypothesis**: Pre-pilot c-sat mean is similar to pilot c-sat mean
- **Alternate hypothesis**: Pre-pilot c-sat mean is dissimilar to pilot c-sat mean

02

Performed F-test - F-Test Two-sample for variances

	Variable 1	Variable 2
Mean	54.975	90.55
Variance	1008.23	50.51026
Observations	40	40
df	39	39
F	19.9609	
P(F<=f) one-tail	**2.53E-16**	
F critical one-tail	1.704465	

03

Inference

Null hypothesis is rejected since p-value < 0.05

Pilot Run (Contd.)

Title	First name	Last name	Check-in duration (in minutes)	Target mean for check-in duration (in minutes)
Mr.	Andrew	Smith	10	6
Ms.	Sharon	Johnson	12	6
Ms.	Flavy	Williams	8	6
Mr.	Alexander	Martin	4	6
Mr.	Nicholas	Smith	6	6
Ms.	Lara	White	5	6
Mr.	Tyler	Brown	8	6
Mr.	John	Wilson	9	6
Mr.	Noah	White	8	6
Mr.	Brandon	Pandey	6	6
Ms.	Ria	Martin	13	6
Mr.	Nathan	Garcia	5	6
Ms.	Gail	Williams	9	6
Mr.	Justin	Dias	3	6
Mr.	Gabriel	Woods	7	6
Ms.	Jenefer	Taylor	8	6
Ms.	Ada	Harris	14	6
Ms.	Alecia	Hill	6	6
Mr.	Caleb	Martinez	4	6
Mr.	Thomas	Cooper	3	6
Mr.	Cameron	Cox	7	6
Ms.	Bambi	Patterson	8	6
Mr.	Jackson	Bailey	3	6
Mr.	Angel	Jackson	5	6
Mr.	Isaiah	Coleman	5	6
Ms.	Breana	Long	4	6
Mr.	Mason	Powell	7	6
Mr.	Luke	Knight	9	6
Mr.	Jason	Martin	10	6
Ms.	Carl	Ray	8	6

Pilot Run (Contd.)

Analysis of pilot data

- Pilot has improved check–in process bringing check-in mean down by 4.88 minutes
- Pilot has reduced variation in the check-in process by 52.95%
- C-sat scores have improved by 64.72%

Pilot Run (Contd.)

01

Analysis of pilot for check-in duration with target mean

- **Null hypothesis**: Pilot check-in mean is similar to target check-in mean
- **Alternate hypothesis**: Pilot check-in mean is dissimilar to target check-in mean

02

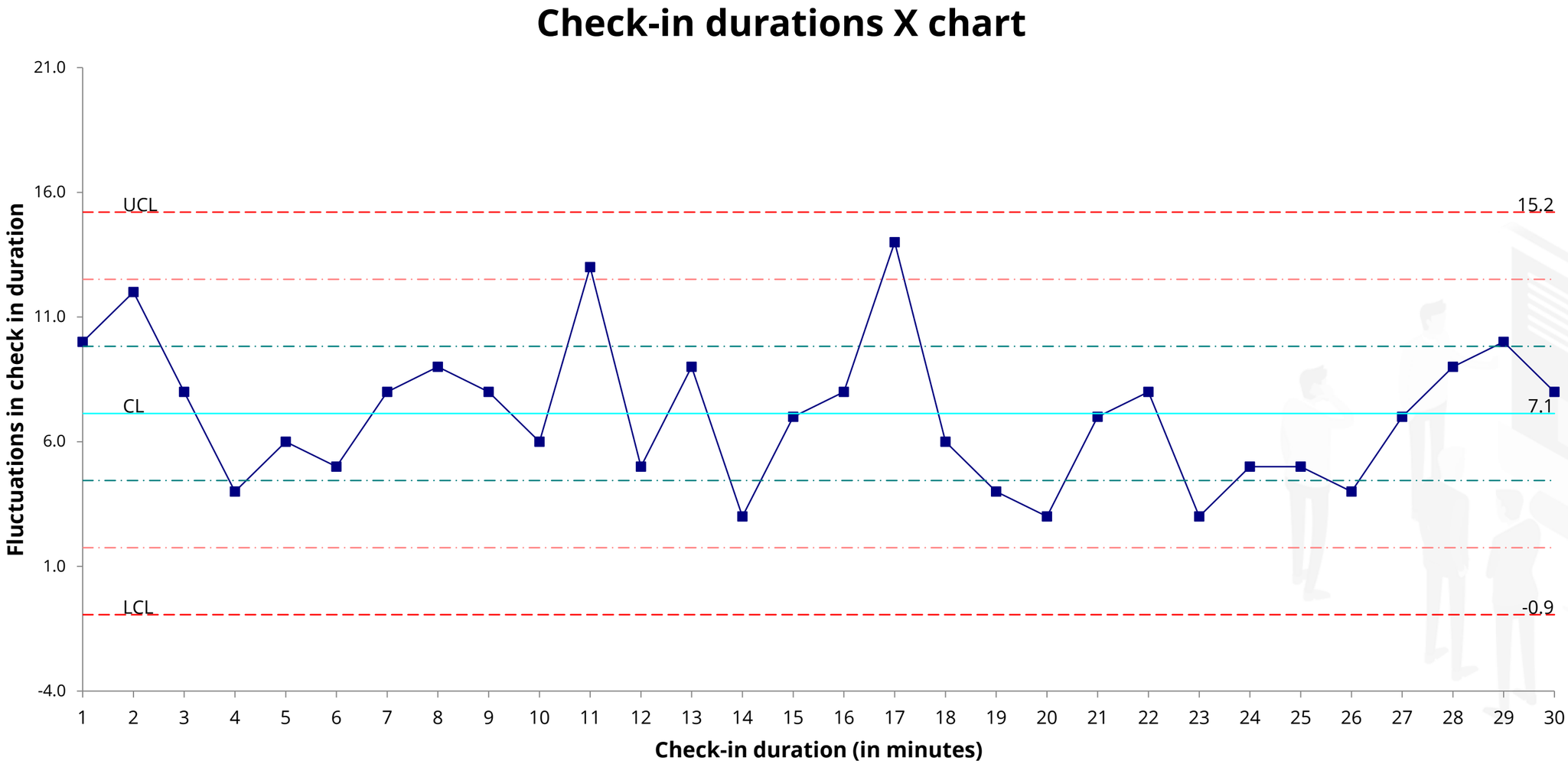
Performed Chi-square test	
Mean	15.26732008
P	**0.982818293**

03

Inference

Null hypothesis is accepted since p-value < 0.05

Statistical Process Control



Control Phase: Final Steps

A	B	C
Now process is stable and under control	Variations are observed due to the common causes	Implement the suggested changes and monitor the process

Summary

You should now be able to:

- Understand the Hotel Coopergates project background
- Analyze the various factors that led to the revenue loss at Hotel Coopergates
- Infer how the pilot run improved the hotel revenue