Dosen	: Irvanu Rahman, ST., MT., MPA
Format Ujian	: Kerja Kelompok
Waktu	: Selasa, 29 Oktober 2019
Level Kompetensi (Tertinggi)	: C5
Kompetensi Diuji (Tertinggi)	: Mampu untuk mengidentifikasi, mendefinisikan, menyusun, memilih/memprioritaskan, dan mengaitkan akar masalah dengan solusi terbaik dari beragam alternatif dalam proyek peningkatan kualitas berkesinambungan serta memetakan resiko solusi yang dipilih dalam penyelesaian masalah kualitas
Expected Learning Outcomes (ELO)	: D, E, F, G, dan H

D. Kemampuan menerapkan siklus PDCA ke dalam pendekatan Six Sigma beserta alat – alat bantu untuk penigkatan kualitas (C3)
E. Kemampuan menggunakan kemampuan menggunakan alat – alat peningkatan kualitas dalam studi kasus peningkatan kualitas (C3)
F. Kemampuan menggunakan konsep peningkatan kualitas berkesimbungan dalam sebuah kasus menggunakan pendekatan Six Sigma (C3)
G. Kemampuan menelaah data kuantitatif dan kualitatif untuk menemukan akar masalah dalam peningkatan kualitas (C4)
H. Kemampuan mengidentifikasi, mendefinisikan, menyusun, memilih/memprioritaskan, dan mengaitkan akar masalah dengan solusi terbaik dari beragam alternatif dalam proyek peningkatan kualitas berkesinambungan serta memetakan resiko solusi yang dipilih dalam penyelesaian masalah kualitas (C5)

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DECLINING QUALITY SERVICE IN GEMINI ENTERPRISE

Gemini Enterprise specializes in selling and delivering customized computer systems to individual users, small businesses, and large corporations. Most sales are made by Telephone Sales Consultants (TSCs) in the Des Moines call center, but more experienced individual and corporate customers buy direct from the Gemini web site.

The good news at Gemini is that sales are increasing 30% this year. The bad news is that a recent survey revealed a sharp drop in customer satisfaction. That's why a Black Belt and Six Sigma team have been meeting every Thursday afternoon for the past month.

The team started with a problem statement that "customers are unhappy with Gemini's service." Once they gathered more information, they were able to refine this problem as "*New customers and small businesses complain that their orders are incomplete, inaccurate, and different from what they ordered*." The goal was to increase customer satisfaction around these issues, and their Champion told them to focus their attention on the sales process in Des Moines.

The team put together at an early meeting outlined the basic process in seven steps:
1. Customers place orders with the TSCs at the call center. – (25 mins per customer)
2. TSCs send billing information to Accounting and Accounting forwards customer order information to the Order Verification Dept. (OVD). – (30 mins for 3 placed orders)
3. OVD verifies the order and sends it to Order & Pick (O & P). – (6 mins per order)
4. O & P picks the parts and components and sends them to Assembly. – (45 mins per order)
5. Assembly assembles the orders and sends them to Shipping. – (240 mins per order)
6. Shipping sends the filled orders to Customers. (One-day service delivery)
7. Orders with wrong or missing components are corrected in the Returned Materials Area (RMA).

The team, with the help of their Champion, quickly decided they needed to limit the scope of its study to the first three steps of the process, because that seemed manageable. Those three steps describe the "sales" portion of the process: salespeople (TSCs) take the customer orders over the phone and send the information on to OVD clerks, who check every phone order for systems compatibility and completeness. When the OVD clerks find a problem, they contact the TSC or the customer, or they check a database used by the TSCs, called "Jimmy Gemini." Sometimes they check the information in the Gemini Web site, which has all the latest information on it, often before "Jimmy Gemini" does.

Delving into the history of this process, the team discovered several interesting facts. For example, salespeople receive a bonus on the volume of business they handle. When sales grew at a faster pace than expected in the third quarter, management moved some of the order verifiers from OVD into direct phone sales jobs. Those who made the transition into sales say they like the bonuses and they don't miss the often tedious and time-consuming work of checking every order.

When the team moved into the Measure stage of its improvement process, it discovered there was already plenty of data recorded in the automatic call directing equipment used by the TSCs. The team collected one-year data on sales, number of orders received, and how many returns were authorized, as shown below.

Month	Total Sales	Order Count	Returned materials authorizations (RMAs) Count	Distribution of RMAs in Details						
				Incompatible internal components	Incompatible external components	Internal components missing	External components missing	Defective packaging	Incorrect shipping method	Others
DEC	$ 3,419,532	756	359	38%	8%	3%	23%	10%	12%	6%
NOV	$ 3,568,812	784	432	40%	7%	5%	29%	7%	9%	3%
OCT	$ 3,294,299	764	361	26%	15%	9%	18%	15%	8%	9%
SEP	$ 3,199,099	969	278	33%	13%	8%	15%	14%	10%	7%
AUG	$ 2,969,272	993	581	29%	17%	3%	32%	9%	8%	2%
JUL	$ 2,496,605	951	675	30%	14%	22%	10%	12%	8%	4%
JUN	$ 2,359,981	765	462	25%	20%	11%	21%	16%	4%	3%
MAY	$ 2,341,695	832	365	29%	18%	4%	19%	23%	6%	1%
APR	$ 2,284,616	705	256	33%	7%	16%	23%	8%	10%	3%
MAR	$ 1,906,967	841	471	42%	16%	15%	14%	3%	2%	8%
FEB	$ 2,241,443	882	574	22%	19%	16%	23%	18%	1%	1%
JAN	$ 2,111,429	879	377	28%	15%	23%	14%	8%	5%	7%

It is also known that the RMA value for each type as follow:

RMA Cost Per Unit by Major Type				
Components Incompatibility	Missing components	Defective packaging	Incorrect shipping method	Others
$2,785	$1786	$1438	$1,250	$1685

While gathering data, the team also found out the following:

- The TSCs don't always verify all customer shipping data or systems compatibility because it takes too long, and they think Order Verification clerks will make any corrections needed.
- There are different inventory data between website and Jimmy Gemini
- In Order Verification, orders tend to pile up, and OV clerks do not always verify them in the order they arrive, preferring sometimes to do the ones that can be verified quickly, leaving the tougher ones for later.
- There are several interviewed OVD staffs have insufficient knowledge on the products whilst working on the Sales department during regular job rotation
- The company runs deficit budget, making it difficult to spend for developing its staffs' competences
- During peak circumstances, both OVD and Assembly staff are overwhelmed by increasing orders
- When they do check orders, OV clerks often go to the web site, where they find more current information than in Jimmy Gemini as the website is updated daily and the other one once in a month

After establishing the current baseline and identifying the cause of problems, your team move to improvement stage at which several options to better the process developed.

- Option 1 – Install ERP Inventory Management
  This alternative will centralize the inventory and customer order data, so the company will have single data platform among website and Jimmy Gemini. If your team choose this option:
  - the enterprise will financially suffer through the year due to high installation cost during budget deficit circumstances, the company definitely cannot choose Option-3, and can only run Option-2 simultaneously starting in August to ensure company's financial stability.
  - The estimated cost of implementation for this option is roughly $ 35.000 per month
  - the system starts working in March next year and operates at 25% capacity. This assumes projected RMAs from missing component (internal and external) can be reduced by 30% at that month. For the coming periods, the system will work as shown in the table below:

Month	APR	MAY	JUN	JUL – DEC
ERP Inventory System Capacity	30%	48%	65%	100%
Total AROs reduction from Missing component	35%	42%	53%	65%

- Option 2 – Process Improvement Initiatives

  This alternative focus on grouping the Accounting, OVD, and O&P into one department. This option could help company's process by saving 45% of total time from those three departments, reducing incompatibility issues and defective packaging by 30% and 46% respectively. This alternative is considered as a quick win as its low-effort improvement category, so it can be applied at any time, but the earliest activities is kicking-off in March next year. The estimated cost of implementation for this option is roughly $ 15.000 per month

- Option 3 – Increasing Sales Commission

  This alternative focus on increasing sales incentives for its workforce, hence increasing the monthly product sold by 35% without any effect on reducing RMA. This option vote in favor of Champion's credibility towards Gemini's business partners and can be applied starting January next year. The estimated increase of wage is around $ 5.250 per person per month for 125 TSCs.

If no counter measure is taken, the projection of sales, received orders, and authorized returned order will be (as shown in the data below):

Month	Projected Total Sales	Projected order Sales[1]	Projected RMA Count	Projected RMA per Type						
				Incompatible internal components	Incompatible external components	Internal components missing	External components missing	Defective packaging	Incorrect shipping method	Others
JAN	$16,138,743.62	3.568	33.80%	24%	17%	12%	17%	19%	7%	4%
FEB	$15,977,716.99	3.510	34.91%	33%	7%	21%	15%	16%	3%	5%
MAR	$14,798,474.04	3.432	27.98%	28%	13%	22%	18%	5%	8%	6%
APR	$15,203,148.50	4.605	29.05%	21%	14%	16%	12%	20%	9%	8%
MAY	$16,912,590.57	5.656	25.16%	29%	17%	3%	32%	9%	8%	2%
JUN	$7,064,525.82	2.691	32.89%	23%	16%	22%	15%	12%	8%	4%
JUL	$20,311,261.31	6.854	31.10%	17%	20%	19%	21%	16%	4%	3%
AUG	$12,893,395.19	4.581	27.81%	30%	18%	4%	19%	22%	6%	1%
SEP	$18,390,348.65	5.675	27.94%	32%	7%	16%	23%	9%	10%	3%
OCT	$16,920,080.56	7.462	38.44%	45%	16%	15%	14%	0%	2%	8%
NOV	$14,612,581.92	5.750	28.39%	29%	19%	10%	22%	18%	1%	1%
DEC	$11,914,320.64	4.960	20.76%	31%	15%	20%	14%	8%	5%	7%

CASE INSTRUCTION:

Your team is the Gemini Enterprise and you are tasked to recommend solution that betters the overall quality system in Gemini Enterprise. Here are some guidelines:

- What is the problem faced by Gemini? What are the critical quality measures?
- How the quality is delivered from the end-to-end perspective of process flows?
- How was the performance of those indicators overtime?
- Does your team note any pattern, so you would have a hypothesis towards the cause of declining quality in the products offered?
- How much improvement is feasible to do after knowling the process baseline?
- Which option that gives highest impact on overall quality system?

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[1] Multiply this order sales with the last digit of your group coordinator's student number. If it's zero (0), then use the second last digit.