Problem Solving (A3) Report

1. Identify a Problem	PLAN

- What is the standard?
  The only current way to obtain fuel nowadays is by traveling to places like gas stations which often consists of a small crowded with long lines in order to use an exposed gas pump touched by everybody.
- Does it reflect the customer's point of view?
  Yes, as they are the ones being affected when filling their tanks
- Is understood by those doing the job?
  Yes, as they are the ones selling the fuel.
- Are we meeting the standard?
  In all of Puerto Rico
- What is the GAP?
  What we hope to achieve is to minimize the contact and waiting time when refilling the gas tanks of a customer's vehicle when going to the gas station.
- Gather facts as known from Gemba– Who, What, When, Where?
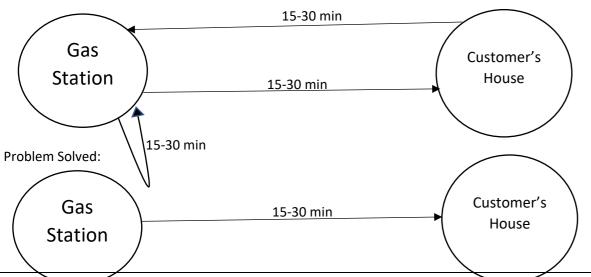 What we know so far when going to the workplace:
  - Those who are affected are the customers and employees as they are being exposed to each other during the process of purchasing fuel.
  - Filling a gas tank can take at least 45 minutes between going to the gas station and filling the tank.
  - On national emergencies, such as natural disasters and war times, gas stations are always full sometimes leaving those in line without fuel.
  - Not everyone has enough gas to go to a gas station as they live far away in rural areas.
- How important is it to solve this problem?
  By solving this problem, everyone can have fuel in less time with minimal contact from the outside world.
- What did you do to contain the problem?
  Develop an app where customers can order fuel tanks with an option of whether an employee should fill the tank.

Current Situation:

Problem Solved:

4. Propose & Implement Countermeasures	PLAN/DO

- What countermeasures are most likely to eliminate the Root Cause?
  - Countermeasure 1: Implement a function where gas station employees deliver gas to the customer's house.
  - Countermeasure 2: Implement a function where you can prepay the gas and other products.
  - Countermeasure 3: Have employees wait on the station before the customer arrives.
- Which countermeasures are most feasible and effective; likely to cause the least impact; what is the cost, difficulty?
  The most cost-efficient countermeasure is the #2 as there would be an investment just in the app development while countermeasure #1 requires a larger budget and countermeasure #3 does not minimize interaction with the outside world.
- Can I select the countermeasures that will achieve my targets?
  The countermeasures is a combination of #1 and #2 as gas station companies have enough budget to invest in portable gas stations and app development in order to minimize contact between their employees and the customers.

2. Set the Target — PLAN

- What are your intermediate targets (milestones) and when do you expect to achieve them?
  - Minimize time when purchasing and filling gas tank to around 15-30 min
  - Minimize interaction between customer and employee
  - Facilitate fuel purchase for those who live far from gas stations.

5. Check/Evaluate — CHECK

- Was the target achieved?
  Yes, because with these countermeasures we minimize the time and interactions with the outside world.
- Can I verify that the Root Cause was eliminated (can I turn it off & on?)?
  With the use of the app, the Root Cause (the time spent on the gas station and the exposure to the outside world) is addressed.

3. Analyze the Causes — PLAN

- Why does this problem occur?
  The main source of the problem is the lack of portable gas tanks and or portable gas pumps for it to be enough to fill a vehicle.
- Do potential causes map to the known facts?
  Yes, as the lack of pumps is what causes the long waiting time
- What are some reasonable assumptions to make about potential causes (where should we look first)?
  - The cost of extra canisters and pumps is too expensive.
  - There are no vehicles that can transport additional gas pumps and canisters
- Can we gather more facts to help determine Root Cause?
  - By visiting the gas station, we can see that there is a heavy demand for gas and so with the amount of people buying gas, the lines take too much time.
  - People also go to gas stations to buy other things such as ice and snacks, which take up parking space.
  - People take too much time at the cash register when paying for the fuel.
- Can we explain the cause and effect relationship plausibly?
  -People go to buy other products which takes them too much time to choose which in turn causes the cash register line to be long which, in turn, causes the line of the gas station to be too long.

6. Act and/or Standardize — ACT

- How will we ensure the process continues to work (stays solved)?
  By constantly updating the app by adding new features and other new products and services and encouraging people to partake in this solution by explaining the benefits like faster ordering and the possibility of staying home.
- What have we learned?
  By planning and offering delivery services we can minimize the time spent and interactions on the outside world.
- Where else can we apply this learning?
  When buying dinner, buying groceries, going shopping and overall, our daily lives.

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