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A Smart Solution for Fuel Smuggling Problem: The Reality and Challenges, Case Study of the Southern Region of Libya.

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Abstract

The phenomenon of smuggling is a crime that threatens countries in general. It is considered as a challenge for all countries to overcome this problem. The danger increases when the goods of smuggling are one of the most important natural resources in the country, which is the smuggling of oil or one of the oil derivatives, among which is fuel in a remarkable way. Where the smuggling groups smuggle the fuel across the land borders of south Libya. Given the presence of this crime, we are trying to shed light on it by asking many questions and knowing the position of the Libyan legislator regarding it. Were the solutions that decided useful or not? This paper was written as a result of the suffering suffered by the people in the south of Libya as a result of this crisis. However, the crisis has described in general and provided the ideal solution that should be applied in all the countries. The solution was represented full system for the fuel distribution. The system is supported by monitoring sensors, indication sensors, and an artificial neural network system.

INTRODUCTION

Cross-border smuggling is not limited to the smuggling of drugs, weapons, antiquities, precious metals and illegal immigrants (Arslan & Balan, 2019; Dadpay, 2020). Moreover, it has commonly gone beyond to include fuel smuggling, which is witnessed in the most regions of Libya. Fuel is one of the most important commodities subsidized by the government, which incurs large losses, causes a drain on the national economy and effects on the local development of these areas border in cases of smuggling abroad. The problem is that the responsible authorities did not take any noticeable solutions in an effort to curb the phenomenon of fuel smuggling, which incurred large losses for the national economy. Through this research paper, we will seek the complete solution to address the problem of smuggling, with mentioning the reasons for spread of this phenomenon and ways to combat it.

Smuggling of subsidized fuels spreads in the Arab countries because they are oil countries par excellence, and this is done across their border areas, especially the borders, which are difficult to contain and control due to the vastness of their area (Andersen, 2020; Megerisi, 2017; Mezran & Varvelli, 2017). By smuggling fuel

through stages that pass from the smuggler in one country to the partner in the other country, which they collect the fuel from the fuel stations and then delivers it to the smuggler transporter until it reaches the distributor and sellers in their various forms.

Land smuggling is the most prevalent in southern Libya, and this type of smuggling is carried out through land borders, where before the year 2011, Some small quantities were evaded, and it was passing through illegal roads and ports, far from customs control. Currently, huge quantities evading and it passing on the legitimate roads and outlets, and the policy of bribery has spread as a normal and usual matter in the absence of the responsible agencies, whether security agencies or other agencies which responsible for distributing oil derivatives.

The method of distribution starts from the main company in Tripoli to the warehouse in the city of Sebha. From the warehouse to the filling stations, and from the filling stations to the citizens. But in the absence of government and sponsors, fuel stations are selling fuel to smugglers. The price of a liter is sold to smugglers at 1.5 Libyan dinars instead of the basic price of 15 piasters per liter (about Ten times of the base price). The station owner earned nearly 60,000 Libyan dinars per day instead of 6000 Libyan dinars. The storage tank cost from distribution company to the station is about 5200 Libyan dinars. Thus, the profit will be around 54800 Libyan dinars.

The owners of the stations totally forget that they are a means of communication between the warehouse and the citizens. At the same time, the officials in the warehouse are lenient in making decisions, and they receive bribes from the owners of the stations to speed up the reservations process. As well as, the Marketing companies are negotiating the fuel stations to share demands. This is a clear breakthrough in the system of the company that is responsible for marketing, which is headed by the National Oil Corporation. There are many things that are still mysterious to the citizens so far, how an ancient institution like this can not solve the problem of fuel smuggling.

This crisis has made the competition between the official economy and the hidden economy unfair, in a way that enables the hidden economy to attract the largest possible amount of resources, and therefore this flow of economic resources will continue with the purely economic resource.

The effect of this crisis has reached to the families, where the families has started store the fuel inside their home or carry quantity during travelling from place to another place. Thus, many families died due to this phenomenon.

The phenomenon of smuggling has also caused the failure and instability of economic policies, which causes distortion of the indicators of economic stability policies, and then inappropriate policies are put in place; As a result of the distortion of the existing information, the results are opposite to what is expected. Smuggling also contributes to the distortion of official unemployment rates. As a result of the bias of the received data. The presence of smuggling also affects monetary policy; This is because most of the transactions that take place during smuggling take place in cash, and therefore the increase in hidden economic activities leads to an increase in the demand for money, which in turn affects the amount of money used in the official economy.

BACKGROUND

There are different studies have been published about the the fuel smuggling around all the world (Birol, 2012; Joshaghani et al., 2021; Kheiravar & Lawell, 2020; J. E. Rentschler & Hosoe, 2017; J. Rentschler & Hosoe, 2022; Subsidies, n.d.) (Wahab, 2006). But the only study that has been published in Libya about this problem was by (Alwadani, 2020) . This work presented about the crime of fuel smuggling in the Libyan law. This study has showed the sanctions that decided by the law whether they were sufficient to establish a real deterrent or not. Likewise, the issue was presented to an international mediator and the decisions taken by the United Nations in order to curb the phenomenon of smuggling.

Some neighbourhood countries also have published about the fuel smuggling by (Hanlon & Herbert, 2015). This study was not deeply focused on this problem. Where this study only has shown that the fuel price differential between Algerai and Morroco has fueled a thriving, though illicit, cross-border trade in subsidized products, prompting an Algerian customs official to remark that “Algeria now feeds the whole region.”

Also, (Ahmed Rashad, 2021) has presented about the smuggling of fuel and methods of combating it for the development of the border areas, the mobile division of the regional directorate of customs, the wilaya of Tebessa. Where in this study has showed the various methods and methods used to combat this phenomenon by the mobile brigade of the Algerian customs of the state of Tebessa.

CURRENT SOLUTION HAS CONDUCTED BY GOVERNMENT

The government and the responsible companies decided to feed the area by 2000000 liters per day. Thus, the fuel smuggling amount has increased and this solution consider as clear waste of public money.

GENERAL OPINIONS

Most people think that raise fuel subsidies is a viable solution to this problem. This opinion is a point of view and must be considered. But the main problem is not about to raise fuel subsidies or not. The main problem is how the government ensure that this important commodity which it is depends on the security of countries impossible fall under the control of criminals? This paper presents a model solution for the countries, regardless of whether subsidies is raised or not. Because fuel must be stay under government control.

IDEAL SOLUTION

With personal diligence, an integrated project was figure out to solve this crisis by changing all system into artificial intelligence system and preventing any drop of fuel that comes out from the warehouse or stations to the smugglers. The project is as follows:

1. Providing the stations with pumps that can operate with the artificial intelligence system. The citizen can only fill up with the card of his car.
2. The established system does not accept duplication of any card for any vehicle. There will be one card for each vehicle.
3. The possibility of controlling the number of filling times for each citizen through the control system from the main control room.
4. All stations are connected to the main control room.
5. These pumps will not accept any card that was used in another station before the quantity allocated to each citizen has passed.
6. Each pump is equipped with a monitoring camera that can be viewed at any moment from the main control room. In other words, the station can be monitoring from the main control room.
7. The system has the ability to know the remainder of each station without visiting the station.
8. Establishing a main control room whose function is to monitor the commercial stations, enter data and extract cards for filling.

PROJECT APPLICATION (CASE STUDY SEBHA CITY)

1. Establish a General Control Room.

This room is able to control and monitor all the process (starts from the beginning of the transportation until the citizen fill it is car. Each truck should have location sensor and level indication sensor connected directly with the control room. Any change in the tank level will directly appear in the control room. Also, those sensors can be extended and connected to the main storage in the country.



Figure 1. Transportations truck supported by location sensor and level indication sensor.

2. Platform Scanner or Special Sticker for Each Car

This is the first stage of car filtration as shown in the figure 2, for example the reader can recognize the car by it is platform or special sticker for each car if the car has filled the fuel from another station or not. If the car has not filled since the allowed time from the control room, so the gate will open and let the car to get in the station.



Figure 2. Show the Platform scan for each car (contacted company).

3. Card Issue for Each Car in The City

This point considers as the second stage of the car filtration. No one can fill his/her car without this card. Each citizen has to issue especial card for each car. The system (control room) will include all the information about the cars. In additional, the card could be directly connected with the his/her bank account.

4. Install New Fuel Pumps Supported by Artificial Intelligence System

Those pumps are supported by cameras connected directly to the control room. Also, the pumps cannot work without any the card. Thus, the control room can control the filling amount and the period for each citizen. The main parts for pump shown in the figure 3.

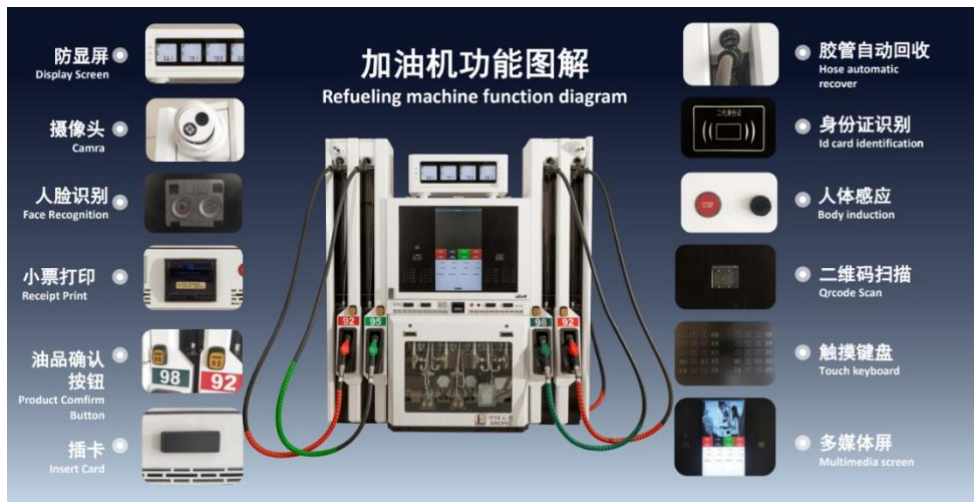


Figure 3. The main parts for the pump (contacted company).

CYCLE OF THE FILLING

The car will enter the sensor refilling passage, where the scan device will grab the license plate. If the car is applicable to fill, the car will move to the second stage which is card typically. Figure 4 shows the full cycle for cars filling.

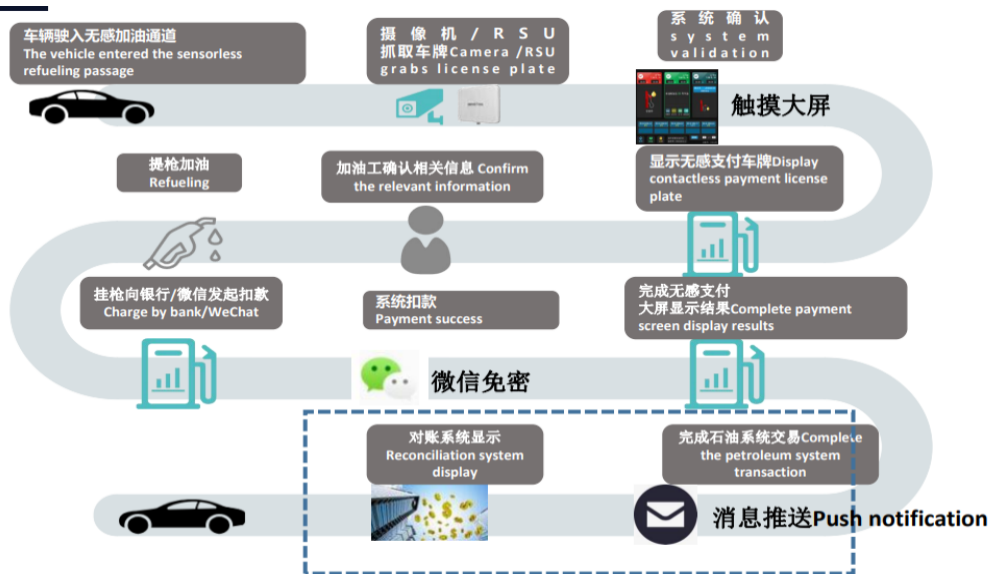


Figure 4. Shows the full cycle for cars filling (contacted company).

CONCLUSION

This paper has provided a smart solution for fuel smuggling problem. This system should be applying for each country to ensure on their lordship. The idea has been proposed to specialize company and they are ready to applied it in any place in the world. As well as, this paper has written due to suffering of citizens a very bad period and we totally know the danger that could be faced by the writer in narrating this solution and this truth. In any case, the warning is a scientific and moral duty for all mankind to implement this solution in the order to avoid falling into what we have fallen in. Some important information has been hidden based on policy project requirements.

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