Development of Sustainable Supply Chain Model for Biodiesel Manufacturing from Used Cooking Oil in Bangalore City.

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Introduction

Bengaluru being the IT capital and Pub capital of India is growing in the means of population, which is directly impacting the growth of various food ventures day-by-day. This increasing number in food ventures are generating a large amount of used oil and used unusable oil. The used oil generated in the kitchens of all these food ventures are either been dumped into garbage through BBMP or are been passed into the sewage system of the city. This may create problem in future to the environment and society.

To overcome the problems of disposal of this used cooking oil, best methodology can be applied to utilize this used cooking oil to generate biodiesel out of it.

Bengaluru will be the great source for non-edible cooking oil and its generation for biodiesel. But the challenge here lies with the collection of used cooking oil from various sources spread across Bengaluru city. This report totally focuses on the various sources, availability, variations and frequency of disposal of used cooking oil. This report will also focus on various methodologies of collection of used cooking oil throughout Bengaluru. On the other hand, also will be considered as important aspect for this procedure.

Objectives

1. To ascertain the availability of waste cooking oil in Organized units in South Bangalore city.

2. To forecast the quantity of waste cooking oil generated from this region.

3. To identify an effective method of collecting waste cooking oil for production of Biodiesel.
4. To develop a sustainable Supply Chain Model of biodiesel manufacturing in Bangalore.

**Problem Definition**

Bio-diesel is an alternative fuel for fossil diesel, can meet the rising energy demand and also reduce environment pollution. The cost of bio-diesel mainly depends on input cost. If the input cost is less, cost effective production of bio-diesel is possible. Production of bio-diesel from used cooking oil serves this purpose. In addition to this it has an indirect benefit of environmental protection as it results in conversion of waste into environmental friendly fuel. In this study we have tried to identify the amount of used cooking oil that has been generated in all the organised outlets and few unorganised outlets viz hotels, restaurants, bars, pubs, food industries etc. in Bengaluru city.

Bengaluru being a vast city, we focused on the northern and western parts of the city by setting a boundary line and covered some major areas. The survey analyses the used cooking oil generated in these areas.

**Design/Implementation.**

**A. Data Collection:**

**Primary Data:** The study relies majorly on primary data which has been collected through a structured questionnaire. Structured questionnaire had been administered to the administrative staff of the Organized units and owners of the Unorganized units for collecting relevant data required for achieving objectives of the study.

**Secondary Data:** The secondary data has been collected from the published sources such as newspapers, magazines, Govt Publications and other related websites.

**B. Sampling:**

A stratified random sampling has been followed to get samples from both organized and unorganized units operative in South Bengaluru city. The major focus is relied on Organized units. The samples have been drawn from different locations in North Bengaluru which include Koramangla, JP Nagar, BTM Layout and Jaynagar.

**LIMITATIONS OF THE STUDY :**

- Scope of the project was confined to very few areas of Bengaluru city due to time and budget constraints.
- Many unorganized and organized units had lack of information about quantity of used cooking oil which they disposed.
- Study focuses on mainly organized units due to inadequate response from unorganized units.
• There is a low rate of response observed by the owners of the Organised and Unorganised units to deliver the information about their waste cooking oil generation.

Observations

• Every specific area/ward has countable number of Organised units out of which many are unaware of benefits one can follow by selling the used cooking oil for the production of bio-diesel.
• Lack of awareness of reusing used cooking oil again and again exist in handsome amount.
• Many grease producing industries are also procuring used cooking oil from many units.
• It has been also observed that motor vehicle washing centres also purchase this used cooking oil for washing the vehicles.
• Deliberate disposal of used cooking oil in both Organized and Unorganized units is being practiced. The disposal here is either through their Sewage system or into the garbage.
• A well-established communication network should be developed for the procurement of used cooking oil from the organised and unorganised units.

Results

![Mode of Disposal Maintained By Hotels]

Conclusion

• It is found from the study that there is an ample scope for enhancing the collection of used cooking oil for production of biodiesel.
• Educating the organised units, proper government regulations for collection and disposal of used cooking oil would definitely result in enhancing the production of biodiesel.

• BBMP involvement in collection of used cooking oil may play a proactive role as it is present in each and every ward of Bengaluru City.

Scope for further Work

Since our study was confined to cover organized sectors of used cooking oil generation located in the southern region of Bangalore such as Koramangala, JP Nagar, Jayanagar, BTM Layout, Electronic City. It may not reflect the true potential of used cooking oil generation in south part of Bangalore city. Hence there is adequate scope for extending the study to cover the entire Koramangala region which represents the southern part of Bangalore and seasonal variation in generation of used cooking oils from organized units in Koramangala region. Once our study was confined to cover organized sectors of used cooking oil generation location southern region of Bangalore.

What’s New

• To forecast the amount of non-edible oil generated from these units.

• To focus on one particular region of South Bangalore to get the cluster of data.

• To forecast the Supply chain of Used Cooking Oil of Koramangala Region.

• Using the Statistical Analysis through SPPS Software to examine the nature of the Data.