1.	**Title of the project** **DEVELOPMENT OF SUPPLY CHAIN MODEL FOR BIO-DIESEL MANUFACTURING FROM USED COOKING OIL IN BENGALURU**
2.	**Name of the College & Department** **College:** Ramaiah Institute of Technology, Bengaluru **Department:** Management Studies
3.	**Name of the Students & Guide** **Name of Team Members:** Name: A V THRINETHRA Email id: avthrinethra@gmail.com Mobile No: 9482019380 Name: ABHIJIT A TALAWAR Email id: abhiajit84@gmail.com Mobile No.: 9740136220 Name: ALIPTHA RAVEESH Email id: aliptharaveesha@gmail.com Mobile No.: 8867747813 Name: NAGESH T B Email id: nageshnags1999@gmail.com Mobile No.: 9535259287 **Name of project guide:** Name: Dr. Y M Satish Email id: drsatish575@gmail.com Contact No.: 9980017418
4.	**Keywords** • Used cooking oil collection • Waste oil management • Recycling used cooking oil • Sustainable supply chain • Waste-to-energy conversion • Biodiesel production • Upcycling food waste • Circular economy • Logistics and transportation • Oil storage and handling • Supplier selection and evaluation • Distribution network optimization • Stakeholder engagement and collaboration

5.	**Introduction / background- about 20 lines** The development of a supply chain model for bio-diesel production using used cooking oil is a ground-breaking project at the intersection of sustainability, renewable energy, and waste management. This innovative endeavour aims to revolutionize the way we produce and utilize bio-diesel, a cleaner alternative to conventional diesel fuel. By harnessing the vast potential of used cooking oil, which is otherwise considered a waste product, this project seeks to create a closed-loop system that transforms waste into a valuable resource. The supply chain model will encompass efficient collection methods, advanced processing techniques, real-time monitoring, and optimization, as well as collaboration with stakeholders across the entire value chain. Through this project, we aspire to create a sustainable and cost-effective supply chain that not only reduces our dependence on fossil fuels but also mitigates environmental impact by repurposing waste into a valuable biofuel resource. Furthermore, this initiative aims to foster innovation in packaging, distribution, and by-product utilization. By advocating for supportive policies, educating consumers, and collaborating with industry experts, this project seeks to drive market development and pave the way for a greener and more sustainable future.
6.	**Objectives** • To ascertain the availability of Waste Cooking Oil in organized establishments in North Bengaluru. • To forecast the quantity of waste cooking oil generated from this region. • To analyze the Organized units' perception about conversion of used cooking oil into bio-diesel. • To determine a suitable method for collecting and distribution of used cooking oil for biodiesel production.
7.	**Methodology (about 30 lines) (materials, methods, details of work carried out, including drawings, diagrams etc).** • Location of Study: The study involves a survey on used cooking oil generated from organized establishments in the North Region of Bengaluru city. • List of biodiesel plants in Bengaluru 1. Go green fuel 2. Eco Green Fuels Pvt. Ltd 3. Biofuel model production unit 4. Nitin TATA (Jyothi bio fuels) 5. Karnataka state bio-fuel development board 6. Crystalline Biofuels 7. Greenshift Biofuels pvt ltd 8. Sara Biofuels 9. Dadha Bio-fuels pvt ltd 10. SLD bio fuels 11. Nature Biofuel Energy 12. Sri bio energies

- Experts Advise

The team had an enriching discussion with Dr. Dayananda G N (*first from the right in the above figure*), Manager for **Karnataka State Bioenergy Development Board**, and gained insights on the subject.

- Visit to the Biodiesel production unit

The team visited the Biodiesel production unit at the University of Agricultural Sciences, GKVK, Bengaluru to gain insights on the biodiesel manufacturing process.

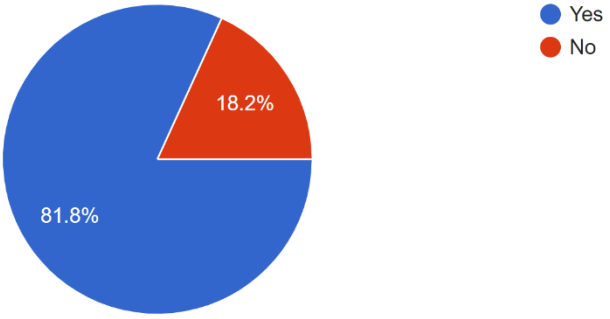
- Sampling:

This study comprised of questionnaire survey on collection of Waste Cooking Oil and analysis of the data. The study relies mainly on primary data collected by administering structured questionnaire to organized establishments such as hotels and restaurants.

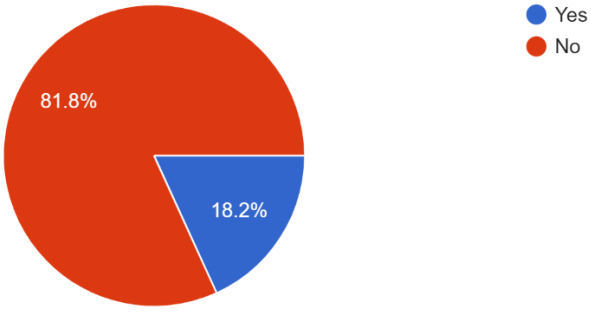
8.

Results and Conclusions (about 20 lines with specific reference to work carried out).

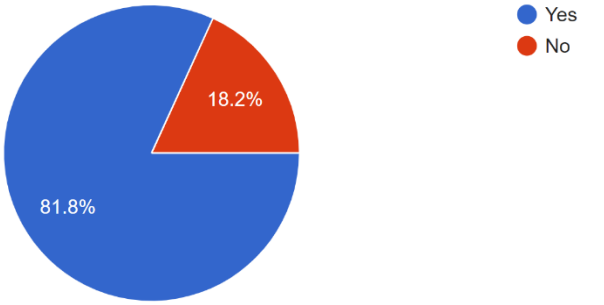
- **From the survey results we understand that most of the restaurants are giving the Used Cooking Oil to their own UCO collection centres, who further sell it to soap manufacturing industries.**
- **Almost 80% of the respondents are aware of Used Cooking Oil collection centres**



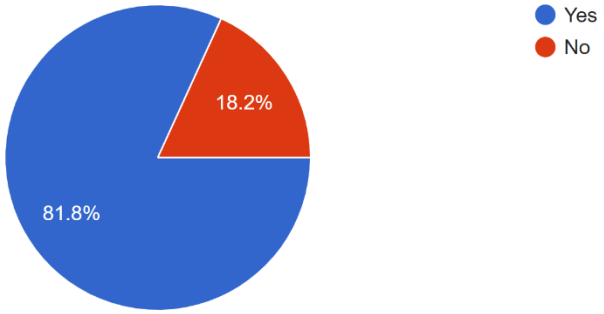
- **Almost 80% of the respondents are aware of Bio-diesel production from Used Cooking Oil**



- **Almost 80% of the respondents are aware of harmful effects of reusing Used Cooking Oil**



- **Almost 80% of the respondents are willing to give Used Cooking Oil to a collection centre for the purpose of producing biofuel.**



9. **What is the innovation in the project?**

- Sustainable packaging and distribution: Innovate in packaging materials and distribution methods to minimize environmental impact. Explore options such as eco-friendly packaging, electric or hybrid vehicles for transportation, and optimized routing algorithms to reduce carbon emissions.
- Collaboration and partnerships: Foster collaborations with stakeholders across the supply chain, including restaurants, food processing companies, logistics providers, and bio-diesel producers. By building strong partnerships, you can optimize processes, share resources, and create a more sustainable and cost-effective supply chain.

10. **Scope for future work**

- An estimate of quantity of Waste Cooking Oil generated in North Bengaluru will be obtained.
- The collected data will be analyzed using JMP software and appropriate predictions are made for generation of waste cooking oil.
- Projection of Waste Cooking Oil for future period.
- Supply chain model development for Used Cooking Oil (UCO) in Northern Bengaluru - Collection, aggregation and supply to biodiesel industry - entire value chain of biodiesel to be developed.
- Financial model for UCO operation.
- Provide inputs to Government for policy making on Waste Cooking Oil generation and collection.