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A PURPOSED BUSINESS MODEL OF MANUFACTURE, MARKETING AND CONTINGENCY PLAN OF A GREEN SPECTRO BIO-DIESEL COMPANY AT DISTRICT SIALKOT, PUNJAB, PAKISTAN.

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Abstract: A piolet study of manufacture, marketing and contingency plan of a Green Spectro Bio-diesel Company at District Sialkot, Punjab, Pakistan, in order to introduce a new entry in local industry have been conducted, with future prospect of extensive national and international scope. Significant figures of expected outcomes from working network, data of personals, structure of organization and amangment, marketing plan of total capital US$3796.626 of launching a stretegedy with a handsome contigency plan and inter management of budgets that can produce an expected income of US$6985.91 along with net profit of US$6985.914 the fuel industry of Sialkot in future.

Add Keyword

Introduction:

The net GDP growth rate of round about 4 after the recession of 2008 [1] is lightening the signs of quick recovery in economy of Pakistan with crystal clear chances of a new business venture for the greater goal directed success stories. No doubt the Pakistani people even living in the cities are mostly of traditional mindset[2] but the young generations are seeking the ways to comfort or ease their lives with better, healthier and cheaper resources.

Fuels play a crucial role in economy of a country [3]. Both industry and transportation is impossible without the concept of fuel[4], which are backbone of modern society[5].

Although there are several big and small oil companies in market providing diesel and other fuels, including PSO (Pakistan State Oil) since 1974[6] and Attock Petroleum since 1998 mainly [7] ,but inspite of technological changes no significant changes are observed for a long time, because of a monopoly of government[8]. All the oil companies work under the pet rules and regulations of Pakistan government[9], with a great opportunity for us to enter in such industrial era where this innovative technology of marketing of bio-diesel is not introduced yet now. Competition in this market is intense enough than ever, but green Spectro has carefully designed its product with quality and benefits valued by the future market. It is a huge chance for us to gain high profit by providing efficient product in the market. Although there are many diesel giants sitting in the market, making the new entery difficult enough, but the price or uniqueness of our product can make it easy for to compete in such an intense market. I will give you a brief explanation of the competitiveness of the market.

In order to invade into this sky scraper infrastructure of oil companies a piolet study of manufacture, marketing

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and contingency plan of a Green Spectro Bio-diesel Company is designed with a wide spectra of objectives. Short term business objective of company is not only the supply of this ecofriendly diesel to whole district of Sialkot, but also to earn a well reputed position achievement of high market shares in the reigon. On the other hand long term business objectives are to thrive the company at national and international level as one of the biggest diesel company of Pakistan. Green Spectro is willing to capture maximum of the customers.

Materials and Methods:

Initial Status of Company is a environment friendly petroleum supplier of bio-diesel to the all petrol pump of Sialkot so that all the customers can get the cheap diesel at affordable rates. A mini plant is

built up at Department of Chemistry in University of Sialkot. First, the waste cooking oil is collected from the different restaurants, hotels in an oil tanker and moved toward the green Spectro industry where the conversion plant is installed for conversion of waste cooking oil in to the Bio-Diesel. Human resource management of the company is a crew of six members, partners of the company having equal share, which is looking after the complete package of all the operations of the company, working network, bio-data of orgazational personals and business plan is shown in **Figure**:

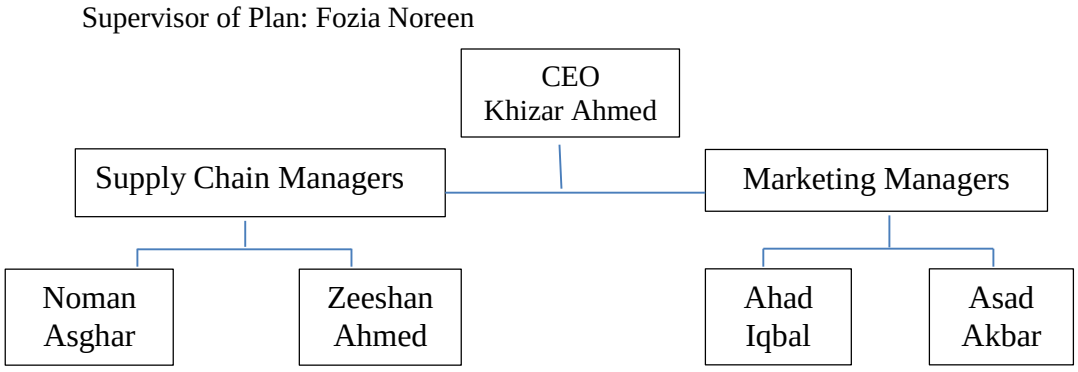

Figure: Hierarchy of Green Spectro Industry of Bio-diesel

Organizational Structure and Management:

Key Personals:

There are two key personals of Green Spectro. Khizer Ahmad and Asad Akbar both are chemists and having the main responsibilities of taking care of the production plant. They proceed and control all the process involved during the Bio-Diesel production, indiviual details of personals are given as as followed:

Name	Qualification	Duties Assigned	College/University
Khizer Ahmad	BS-Chemistry Organic Chemistry	Collection and processing of raw material for prepration of raw material	University of Gujrat, Sialkot subcampus Sialkot, Punjab, Pakistan.
Asad Akbar	BS-chemistry Inorganic Chemistry		University of Gujrat, Sialkot subcampus Sialkot, Punjab, Pakistan.

Other Personal:

There are three other personals, named as Noman Asghar, Ahad Iqbal, Zeeshan Ahmed. These three looks after on the other activities except the production plant. Zeeshan Ahmed will deal with collecting the oil from the restaurants, hotels and check their initial quality. Noman Asghar and Ahad Iqbal will manage the storing of the Bio-Diesel andregister all the information's about clients and keep checking the balance of the Bio-diesel delivery. Their details are as followed:

Name	Qualification	Duty Assigned	School/University
Zeeshan Ahmed	BS-Chemistry Organic Chemistry	Marketing and distribution of raw material.	University of Gujrat, Sialkot subcampus Sialkot, Punjab, Pakistan.
Noman Asghar	BS-Chemistry Organic Chemistry		University of Gujrat, Sialkot subcampus Sialkot, Punjab, Pakistan.
Ahad Iqbal	Bs-chemistry Organic Chemistry		University of Gujrat, Sialkot subcampus Sialkot, Punjab, Pakistan.

1. Oil truck is roaming along the city		
	2. Collection of the waste cooking oil from the different restaurants	
3. Transportation of waste oil to green Spectro industry for the conversion waste cooking oil into Bio-Diesel		
	4. Marketing of bio-diesel	

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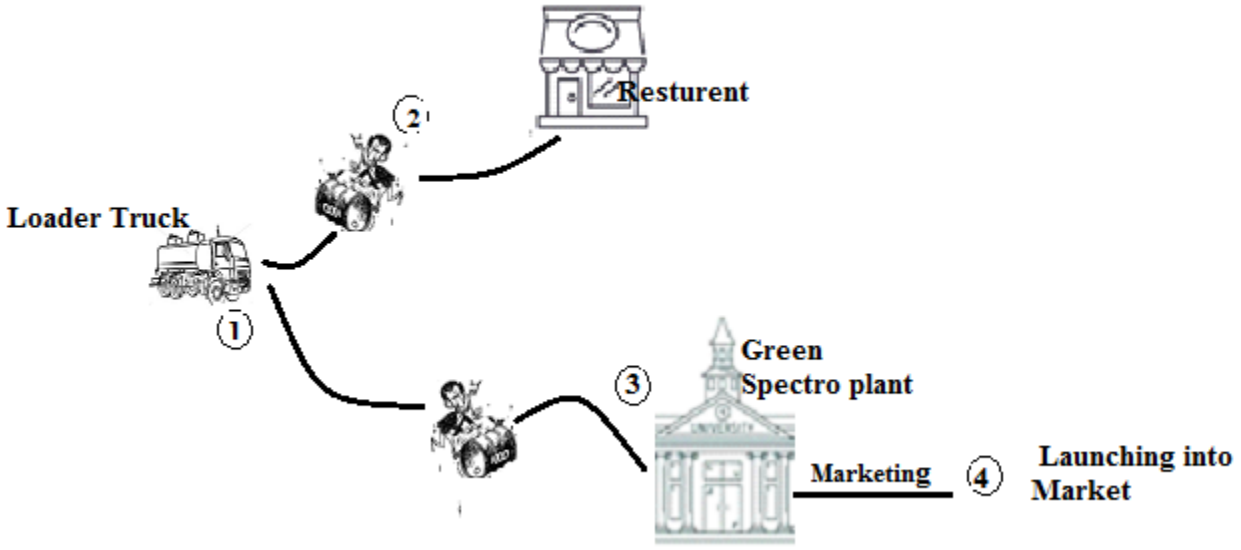

Figure 2: Business structure of Green Spectro Plant

One of them is working as CEO named Khizar Ahmed , and all remaining Asad Akbar, Zeeshan Ahmed, Noman Asghar and Ahad Iqbal are the directors of the company, and a supervisor named Fozia Noreen for monitoring the entire structure. All the operation of making this product is scheduled and all the activities are performed according to the schedule. At this intial career of the business no other employees are hired; all the activities are performed by these partners.

An indispensible figure of cost effecting factors are distingishable characters of the piolet study, given as followed:

a. As waste cooking oil contain triglycerides, free fatty acids, and other contaminants depending on the degree of pretreatment prior to delivery [10]. The most commonly used alcohol used in biodiesel production is methanol that is 3.4 times cheaper[11]than ethanol that is a basic raw material for synthesis of diesel.
b. Methanol is easier to recover than the ethanol[12], as well as unused alcohol can be recycled back[13] into the process to minimizing the costs and environmental impacts[14]..
c. Processes for making biodiesel uses a catalyst to initiate the transesterification reaction to proceed at relatively fast rate depending on temperature, concentration, mixing and alcohol etc. Homogeneous catalyst KOH[15] is used to be characterized by sophisticated temperature requirement rather than hetrogenous that demands high temperature upto 900 ^{o}C[16].
d. The process of removal of 97% glycerol and the 3% fatty acids from the vegetable oil in the presence of a KOH catalyst, that is dissolved in the methyl alcohol using a standard mixer, into a

closed reaction vessel, to prevent the loss of alcohol[17].

e. The reaction mixture is allowed to stand just above the boiling point of the methyl alcohol to increase the rate of reaction and cause to accomplish the process within 90 min. Continuous reactors have a steady flow of reactants into the reactor and products out of the reactor, leaving the product composition to be constant[18].

f. Once the reaction is complete, two major products exist: glycerin and biodiesel with substantial amount of methanol in each that can be removed by distillation process with availaibility of re-use, while the glycerin phase is simply drawn off the bottom of the settling vessel because of its higher density. This type of separation can also be achieved using a settling tank[19].

g. The glycerin by-product further contains unused catalyst and soaps that are neutralized with an acid and sent to storage as crude glycerin or recovered as fertilizer in some cases[20].

h. The process produces 80-88% pure glycerin that is ready to be sold as crude glycerin, or in more sophisticated operations, distilled to 99% is sold into the cosmetic and pharmaceutical markets[21].

i. The optimal reaction temperature may vary from 50°c to 59°C below the boiling point of alcohol to prevent the evaporation of alcohol[22].

j. The most important aspects of biodiesel production to ensure trouble free operation in diesel engines are completion of reaction, removal of glycerol, removal of catalyst and alcohol and absences of free fatty acids[23].

Figure 3: Collection of raw material

Figure 4: Green Spectro of bio-diesel

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Figure 5: Bio-diesel from waste oil

Figure 6 : Marketing of bio-diesel

Marketing Plans

Before comming into the marketing plan we have to come across SWOT[24] of the strengths, weaknesses, oppertunities and threats of the plan.

SWOT:

➢ Strengths:

- First mover advantage.
- Uniquenerss (Bio-Diesel).
- Superior in quality.
- Cheaper in price.
- Environment friendly

➢ Weaknesses:

- Lack of awareness of public of area.
- Limited budget for industrial plantation.

➢ Opportunity:

- Growing market.
- Can expand to other cities in the future.

➢ Threats:

- Threat of new entrants.
- Intense Competition.
- Political instability.

Marketing Strategy Development:

STP and 4Ps[25] marketing strategy is followed for development of a mini plant here. STP(segmentation, targeting and positioning) is a triangular study of marketing strategy development involved in this sample of study consitituting geographic segmentation of Sialkot only, involving one demographic segment of marketing. After segmentation Green Spectro target these segments. Green Spectro is willing to be the best-known product making brand by delivering good services to its customers and wishes to maintain healthy relations with its customers.

There are 4 Ps for product/service, price, placement and promotion, given as followed:

a. Product & service:

Green Spectro will offer a cheaper and better product than available market, as mentioned in description of venture section earlier in the project.

b. Price:

The prices will be affordable for both middle and high-class people. But target market are the petrol pumps. From our financial data you can understand it batter.

c. Placement:

Distribution of bio-diesel to location of our brand is in Sialkot is to be implemented.

d. **Promotion:**

Now days without promotion tools the successful sale of a product or service is impossible. Promotion tools e.g. electronic ads(television commercials on local cable channels), outdoor advertsflyers, bill boards, flex, transport), print media(newspapers), online adverts(social

websites) about the product are designed for promotion of product.

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Marketing Budget:

Electro-Mart decides to allocate an amount of 0.3 million in marketing budget for 3 months from its financial assets, from which running of local TV ads for a month will cost us round about 15,000 per month, newspape ads of round about 15,000 per month, and online ads of 20,000 per month. Spices on wheels is planning on spending 50,000 on other promotional tools for one month i.e. flyers, flexes and buntings etc.

Contingency Plans

Salient feature of this this idea is its contingency plan in case if business is in loss or about to collapse, that is relying over the by-product that is glycerol or glycerin, which is obtained during the formation of bio-diesel that is definitly much pure than any other method. It is a thick liquid that is used as sweetening agent, food preservative, in cosmetology, as a powerful cleaning agent in laundry and dish detergent.

Results:

Financial Data:

Current Financial Position

Current financial position is properly mentioned by income statement and balance sheet that is designed on the basis of first experience of pilot study of Green Spectro data sheet of facts and figures as followed:

Financial Plan

Budget for Operations of 1 Year

Operating Expenses		
Truck Rent Expense	800,000 PKR	US$5007.824
Machinery	200,000 PKR	US$1251.956
Plant Expense	2,300,000 PKR	US$14397.494
Maintenance & Repair	50,000 PKR	US$312.989
Rent	120,000 PKR	US$751.173
Distributive Expense	1,400,000 PKR	US$8763.692
Advertisement	300,000PKR	US$1877.934
Total Expense	7,870,000PKR	US$49264.468

It can be easily understood from financial statement which I have explained earlier. At initial level, there is no need of labor as all the partners can easily done their jobs. And the distributors collect the oil on their own so the problem with the distributor is negligible.

Income Statement
Green Spectro

Financial Statements in PKR and US$

Revenue		
Sales	6480000	US$40563.37
Net Sales	6480000	US$40563.37
Cost of Goods Sold		
	3564000	US$22309.855
Cost of Goods Sold	3564000	US$22309.855
Gross Profit (Loss)	2916000	US$18253.518
Expenses		
Operating expenses	1400000	US$8763.692
Distributive expenses	300000	1877.934
Total Expenses	1700000	US$10641.62
Net Operating Income	1216000	US$7611.892
Tax	100000	US$625.987
Net Income (Loss)	1116000	US$6985.91448

Green Spectro **Balance Sheet**

Assets

Fixed Assets:		
Machine	180,000	US$1126.760
Plant	207,000	US$1295.77
Computer	10,000	US$62.597
Printer	5,000	US$31.298

Furniture	15,000	US$93.896
Stationery	5,000	US$31.298
Current Assets:		
Cash in Hand	542,000	US$3392.8
Bank	601,000	US$3762.127
Total assets	**1416000**	US$**8863.848**
Liabilities and owner's equity		
Net Profit	1116000	US$**6985.914**
Owner's equity:		
Owners' Equity	811200	US$5077.933
Account payable	604800	US$3785.914
Total liabilities and owner's equity	**1416000**	US$**8863.848** -

Accounts payable

As we have explained it before that our project is at small level pilot study that is limited upto single city so that the initial investment is not much. The total payable is 600,000PKR(US$3755.868) which is borrowed from a bank as a loan. According to our calculations in 18 months all the payables of the company is paid giving a gradual raise in the margin of profits. There will be no account receivable and all the business will performed on cash. According to our close calculations company can reach its break even point in 15 months.

Data of Capitalization:

The current capital for running the business is 6,00,000 PKR. After paying all the loan which we have taken from the bank, all the profit is of our own assert and we use this profit to expand our business nationally and internationally after some years of business started.

Exit Strategy

Green Spectro have the six partners and these partners have equal shares and the money that is equally divided among them. These partners get the money from the profit along with the installments of the loan, which is taken from the bank, and the bank loan will be clear within 15 months and then all the profit in the form of money is equally distributed between the partners of Green Spectro.

Conclusion:

Biodiesel is an effective alternative fuel for conventional diesel and can be directly used as fuel in a diesel engine without any modifications to the engine. We are introducing a very improved technology of making Bio-Diesel. Which provides the breakthrough to the development of the technology and our industry put its 100 percent for the development of the technology, by providing a complete road map for enterpenureship of bio-diesel at lower cost as compared to the other oil companies working in Pakistan. This cheaper and cost effective product will gradually have a positive impact on current economical status of Pakista to facilitates its development. It has high biodegradability[26], reduction

in greenhouse gas emissions[27], non-sulfur emissions[28], non-particulate matter pollutants[29], low toxicity[30], excellent lubricity and is obtained from renewable source like waste cooking oil.We have also some competitors like shell, PSO, and Attock. But initially we are at the small level, so their competition is not significantly affecting our company, although because of inadequate capital, so we started it at lower level.

Our business will serve the customers with cheapest and ecofriendly bio-diesel which makes their life much healthier and smarter, prepared in perfect conditions and different chemicals and procedures through our purpose-built plant. Sales Although the idea of making bio-diesel from waste cooking oil is not not novel enough but its tendency towards the profitable business can be a new approach in Sialkot.

Aknowledgement:

At the very start we are very thankful to almighty Allah by giving us the strength and intellectual ability to complete this project. A humble gratitude for Department of Chemistry and University of Sialkot, Punjab, Pakistan, to provide us a plate form for this experience and facilitate us in expoure of market. We are also very obliged to the Faculty of Sciences and specially of our coordinators for their humble support during this challenge. A special thanks to Mam Qamar and Mam Huda who guided and directed us during this report, gave us their precious time, shared their experience and provided all the necessary material for preparing this report

References:

[1] Nawaz, S., Iqbal, N., & Anwar, S. (2013). Electricity demand in Pakistan: a nonlinear estimation. *The Pakistan Development Review*, 479-491.

[2] Yasmin, M., Naseem, F., & Masso, I. C. (2019). Teacher-directed learning to self-directed learning transition barriers in Pakistan. *Studies in Educational Evaluation*, *61*, 34-40.

[3] Shafiee, S., & Topal, E. (2008). An econometrics view of worldwide fossil fuel consumption and the role of US. *Energy Policy*, *36*(2), 775-786.

[4] Moritz, M. A., Keeley, J. E., Johnson, E. A., & Schaffner, A. A. (2004). Testing a basic assumption of shrubland fire management: how important is fuel age?. *Frontiers in Ecology and the Environment*, *2*(2), 67-72.

[5] Droege, P. (2002). Renewable energy and the city: Urban life in an age of fossil fuel depletion and climate change. *Bulletin of Science, Technology & Society*, *22*(2), 87-99.

[6] Zaheer, A. N. (2011). Comparative analyses of PSO and BP regarding sustainable business. *Journal of Management*.

[7] West, R. M. (1980). Middle Eocene large mammal assemblage with Tethyan affinities, Ganda Kas region, Pakistan. *Journal of Paleontology*, 508-533.

[8] Ali, F., & Beg, F. (2007). *The history of private power in Pakistan*. Sustainable Development Policy Institute.

[9] Kemal, A. R. (2002). Regulatory framework in Pakistan. *The Pakistan Development Review*, *41*(4), 319-332.

[10] Toba, M., Abe, Y., Kuramochi, H., Osako, M., Mochizuki, T., & Yoshimura, Y. (2011). Hydrodeoxygenation of waste vegetable oil over sulfide catalysts. *Catalysis Today*, *164*(1), 533-537.

[11] Van Gerpen, J. (2005). Biodiesel processing and production. *Fuel processing technology*, *86*(10), 1097-1107.

[12] Saka, S., & Kusdiana, D. (2001). Biodiesel fuel from rapeseed oil as prepared in supercritical methanol. *Fuel*, *80*(2), 225-231.

[13]

[14] Escobar, J. C., Lora, E. S., Venturini, O. J., Yáñez, E. E., Castillo, E. F., & Almazan, O. (2009). Biofuels: environment, technology and food security. *Renewable and sustainable energy reviews*, *13*(6-7), 1275-1287.

[15-17] Noiroj, K., Intarapong, P., Luengnaruemitchai, A., & Jai-In, S. (2009). A comparative study of KOH/Al2O3 and KOH/NaY catalysts for biodiesel production via transesterification from palm oil. *Renewable Energy*, *34*(4), 1145-1150.

[18] Alamu, O. J., Waheed, M. A., Jekayinfa, S. O., & Akintola, T. A. (2007). Optimal transesterification duration for biodiesel production from Nigerian palm kernel oil. *Agricultural Engineering International: CIGR Journal*.

[19] Atadashi, I. M., Aroua, M. K., & Aziz, A. A. (2011). Biodiesel separation and purification: a review. *Renewable Energy*, *36*(2), 437-443.
[20] Zhang, Y., Dube, M. A., McLean, D. D. L., & Kates, M. (2003). Biodiesel production from waste cooking oil: 1. Process design and technological assessment. *Bioresource technology*, *89*(1), 1-16.
[21] Zhang, Y., Dubé, M. A., McLean, D. D., & Kates, M. (2003). Biodiesel production from waste cooking oil: 2. Economic assessment and sensitivity analysis. *Bioresource technology*, *90*(3), 229-240.
[22] Leung, D. Y. C., & Guo, Y. (2006). Transesterification of neat and used frying oil: optimization for biodiesel production. *Fuel processing technology*, *87*(10), 883-890.
[23]
[24] Lee, S. F., & Sai On Ko, A. (2000). Building balanced scorecard with SWOT analysis, and implementing "Sun Tzu's The Art of Business Management Strategies" on QFD methodology. *Managerial Auditing Journal*, *15*(1/2), 68-76.
[25] Goldsmith, R. E. (1999). The personalised marketplace: beyond the 4Ps. *Marketing Intelligence & Planning*, *17*(4), 178-185.
[26] Demirbas, A. (2007). Importance of biodiesel as transportation fuel. *Energy policy*, *35*(9), 4661-4670.
[27]Barth, D. S., & Blacker, S. M. (1978). The EPA program to assess the public health significance of diesel emissions. *Journal of the Air Pollution Control Association*, *28*(8), 769-771.
[28] Canakci, M. (2005). Performance and emissions characteristics of biodiesel from soybean oil. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*, *219*(7), 915-922.
[29] Venkataraman, C., Negi, G., Sardar, S. B., & Rastogi, R. (2002). Size distributions of polycyclic aromatic hydrocarbons in aerosol emissions from biofuel combustion. *Journal of Aerosol Science*, *33*(3), 503-518.
[30] Peralta-Yahya, P. P., Ouellet, M., Chan, R., Mukhopadhyay, A., Keasling, J. D., & Lee, T. S. (2011). Identification and microbial production of a terpene-based advanced biofuel. *Nature communications*, *2*, 483.