

INDUSTRIAL WASTE WATER MANAGEMENT- ZERO LIQUID DISCHARGE SYSTEM

****P.SUGUNA, ASSISTANT PROFESSOR IN COMMERCE, PSGR KRISHNAMMAL COLLEGE FOR
WOMEN,COIMBATORE**

ABSTRACT

With an increasing demand on natural water resources, and unabated pollution posed by industrial discharges into the environment, it has become necessary to implement zero discharge systems in industrial waste water treatment plants. In a waste water treatment facility, zero discharge theoretically means no discharge of any kind of pollutants into the environment. This can be done in two ways viz.,

recovery of reusable water/other materials from waste water and minimization or no discharge of polluting substances into the environment away from the waste water treatment facility. The study highlights the operational efficiency of CETPs (common effluent treatment plant) in Tiruppur district . Financial assistance is required to improve the efficiency of the plants.

Key words : Industry, water, effluents, pollution, efficiency, assistance.

INTRODUCTION

In India, the concept of zero discharge essentially emerged from the situation where industry is unable to meet the discharge norms set by the State and Central Pollution Control Boards. This led to pollution of the environment and subsequent litigation. Initially, the polluters were penalized to an extent necessary to clean the environment that they polluted. Realizing that pollution is still uncontrolled and monitoring has become very much difficult with so many industries discharging the waste water into the environment, finally a solution was conceived and the concept of zero discharge has emerged by planting CETPs.

Industrialization and urbanization are the two sources of chemical agents which, cause environmental degradation. Industrialization has rapidly developed, which plays both a beneficial and harmful role in the environment. Tirupur is facing the problem of environment pollution more because of the primitive processing methods of dyeing. There are more than 700 dyeing and bleaching industries in around Tirupur which are engaged in dyeing and

bleaching of yarn and fabric. The hub which has cluster activities directly and indirectly employs nearly a million people accounts for more than half of India's textile exports.

The textile dyeing process starts with the treatment of the raw materials with hot alkaline hydrogen peroxide, additives dilute formic acid washing and followed by dyeing, washing, drying & finishing. Dyeing processes contribute substantially huge volume of effluent. The volume of effluent generated in dyeing is greater in comparison to the quantities of effluent arising from other processes. The quantity and quality of the effluent largely depends on the synthetic dyes used and the method of dye application. Usually, the quantity of effluent generated per 1000 kg of product is about 166500 litres. About 50% of the total volume of the effluent is generated only from dyeing. The total effluent generated from the industrial area is about 120 MLD.

The conventional technology adopted for treatment of industrial waste water, alum/ferrous sulphate with lime is used as flocculent in which quantity of sludge generation is very high. Sludge handling and its disposal in scientific manner is a costly affair. One of the most significant challenges for the Tirupur textile industry today is water. Textile production, particularly dyeing and bleaching, can be water intensive and can generate large quantities of effluent. Tirupur is in a dry, water-scarce region, and the rapid expansion of the textile industry has taken place in an unplanned manner, with no associated development of supporting infrastructure or institutional capacity. As a result, the growth has led to the depletion of groundwater reserves and a serious deterioration in environmental quality of both surface and ground water. Typical water consumption in Tirupur is around 200 to 400 litres/kg of finished product, compared with the international norm of 120 to 150 litres/kg. The city does not have a reliable piped water supply, and private water supplier's abstract ground water and supply it to the textile industry using tankers. Ground water in neighbouring areas has been decreasing and becoming contaminated. This has forced the tankers to travel even-larger distances to draw the water. Most of the bleaching and dyeing units in Tirupur are located in clusters along the banks of the River Noyyal and River Nallar, into which they were, until recently, discharging effluent. The two rivers are natural drainage courses that only carry water in the monsoon period. During the remainder of the year, they only carry industrial effluents that stagnate in the riverbeds and percolate into the groundwater. As a result, the groundwater quality around the cluster of bleaching and dyeing units is polluted to such a level that it is unfit for domestic, industrial and agricultural activities. Estimated wastewater generation from the nine industrial clusters in Tirupur is around 102 million litres per day. The bleaching and dyeing process are the main causes of

pollutants which include caustic soda, hydrochloric acid, sodium hydro sulphate, hypochlorite and peroxides.

Due to public pressure, the court intervened and ordered complete closure of the dyeing units and slapped crores of rupees of compensation to clean the environment on the dyeing units. A detailed Resource Flow Analysis was carried out for the town. The industrialists realize that they were collectively spending over US\$ 7 million annually on buying water and in addition, the annual maintenance cost of the effluent treatment plant would be an enormous burden. The aggregate figures immediately showed that water could be recycled profitably.

Under pressure from the regulatory authorities, it is planned to set up nine traditional common effluent treatment plants (CETP) at an estimated cost of US\$ 30 million including the cost of piping the effluents. The recurring costs of over US\$ 7.5 million per annum for operation and maintenance could be extra. The design of the CETPs is primarily aimed at reducing the biological and chemical oxygen demand (BOD and COD) of the effluents. But the effluents after treatment may continue to contain toxic chemicals and will also be very saline. Due to this, the post-treatment effluents will not be usable for agriculture or for industry, and obviously not for domestic use also.

STATEMENT OF THE PROBLEM

CETP(s) handle the industrial waste waters from units with capacities ranging from 1.5 to 10 MLD and discharge the treated waste waters into river Noyyal which ultimately gets impounded in Orathupalayam dam meant to be used for irrigation. The incoming TDS in the ETP range between 6000-9000 mg/l and slight increase was noticed in the treated effluents, perhaps due to soluble fractions of coagulants during treatment. As such CETP(s) remove only the colour and other suspended organic matter.

As against standard (2100 mg/l) for TDS, the existing TDS level above 5000 mg/l is a severe gross violation. The Noyyal River and ground water survey in Tirupur shows that TDS has grossly contaminated the waters. As such the water is not fit for irrigation in the downstream stretches. The CETP(s) remove only 40% of the COD, BOD and most of the time the BOD of the treated waste waters is above 100 mg/l as against limiting standard of 30 mg/l for discharge into river waters. This is yet non-compliance by the CETP(s). To know the operational efficiency of CETP(s) and to propose measures to reduce the non-compliance the study has undertaken.

OBJECTIVES

- ✓ To study the working conditions of CETPs in Tirupur
- ✓ To know the operational efficiency of CETPs in Tirupur.

METHODOLOGY

There are 88 CETPs that have been constructed and commissioned in the country; the Central Pollution Control Board has studied performance of 78 CETPs and permitted to operate throughout the country. In Tamil Nadu, 33 CETPs are operating. In Tirupur there are 17 CETPs constructed in Tirupur, at present only 7 units have pursued the norms of the pollution control board and permitted to carry out their activities. The member units (dyeing) and officials of CETPs were the respondents of the study. Diagnostic method has adopted to collect the information.

WORKING CONDITIONS OF CETPs IN TIRUPUR

Instead of using traditional methods some other new technology has been developed to remove suspended solids from industrial waste water to maintain zero liquid discharge. Industries are establishing CETPs to treat the waste water and to recycle/ reuse it in the process. The CETP(s) have been designed towards primary treatment only using lime, alum and poly-electrolytes as coagulation agents. The incoming TDS in the ETP range between 6000-9000 mg/l and slight increase was noticed in the treated effluents, perhaps due to soluble fractions of coagulants during treatment. As such CETP(s) remove only the colour and other suspended organic matter.

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In order to reduce effluent load to the Noyyal river, attempts were made at this CETP to evaporate the effluent using solar energy.



Though significant progress has been achieved in this direction, due to the concerns on air pollution, this method was abandoned in continuation of these efforts to achieve zero-discharge, trials were conducted for implementing reverse osmosis system through biological treatment.

BIOLOGICAL TREATMENT IN CETPs

The effluent treatment plant is a combination of physico-chemical followed by aerobic biological Treatment. The plant consisted of following primary and secondary treatment unit operations: sump well, equalization basin, chemical dosing tank, primary clariflocculator, activated sludge basin, secondary clarifier and sludge drying bed.

The combined waste water is collected in a sump well of 9m diameter. Effluent from sump well is further treated in screen chamber. The waste water from sump is continuously taken up into equalization basin to neutralize qualitative and quantitative irregularities from member industries. Concentrated sulfuric acid of 98% purity is also added for pH adjustment, if needed. Ferrous sulfate is used as a coagulating agent. Sulfuric acid, ferrous sulfate and polyelectrolyte are added in a chemical dosing tank. The contents are mixed for 60 seconds in the tank. The above chemicals help in coagulation. Coagulated mass enters primary clarifier where it is flocculated with the help of slow speed stirrer and settles along with some inorganics. The clear supernatant flows into aeration tank for biological treatment. The aeration tank is designed in 2 stages. The first stage is semicircular arch shaped structure with 2 surface aerators for maintaining the required dissolved oxygen level. The effluent from the first stage of aeration tank moves on to the next stage of aeration tank which is U shaped and also has 2 surface aerators in it. After aerobic treatment, the effluent enters secondary clarifier for biomass settlement, recycle or wastage. The excess sludge is dried up on sludge drying beds. The clarified biologically treated wastewater enters into activated sludge basin and is treated by activated micro-organisms. This treated effluent from activated sludge basin is then passed through the drain which finally discharges into the river. Total quantity of wet CETP sludge generation is about 1000 kg day⁻¹

OPERATIONAL EFFICIENCY OF CETPs

In order to reverse the ecological damages in the area, the existing CETP(s) shall also require upgradation in terms of R.O/Nano systems followed by MSES to constrain high TDS discharges into the river. The approximate expenditure towards this has been worked out as high as 126 crores Indian Rupees and almost 35 crores for routing operation and maintenance of these systems.

The financial assistance required for the up gradation of these units should be according to the approved project report. The Ministry of Environment and Forests (MoEF) initiated an innovative technical and financial support scheme to ensure the growth of industry in an environmentally compatible manner. The scheme promoted common facilities for treatment of effluents generated from units located in clusters through liberal financial assistance. The financial assistance provided under this Common Effluent Treatment Plant (CETP) scheme was as follows:

Central Government subsidy	: 25% of the project capital cost
State Government subsidy	: 25% of the project capital cost
Loans from financial institutions	: 30% of the project capital cost
Entrepreneurs' contribution	: 20% of the project capital cost

Recently the state government has announced the interest free loan package of 10% of the total amount of 200 crores for the up gradation of CETPs in Tirupur.

Out of the 17 CETPs catering to the dyeing cluster, 13 have submitted Detailed Project Report (DPR) for plant upgradation to Anna University and the remaining four to IIT-Chennai for final approval to certify the feasibility of the method before doling out the financial package. The CETP at S Periyapalayam catering to just six dyeing units is yet to submit its project report.

At least seven units, including Arulpuram, Rayapuram, Chinnakkarai and Kallikaadu plants, have reportedly cleared the technical scrutiny and 11 more units are expected to get the go ahead from these institutes by next week. The distribution of the financial assistance and the expenses incurred for the up gradation of the units should be according to the approved project report. According to sources, seven units are opting for brine solution method while three have opted for nano membrane technology and another seven will be going in for a combination of brine solution and salt crystallization methods to ensure Zero Liquid Discharge (ZLD) as per the Madras high court norms.

The above said 17 CETPs based on the Biological Treatment, Ozonation and Oxidation Reduction through chlorination and Membrane Bio reactor has been constructed or is under construction to handle the industrial waste waters with capacities ranging from 1.5 to 10 MLD and discharge the treated waste waters into river Noyyal which ultimately gets impounded in Orathupalayam dam. The dam water is meant to be used as irrigation water. There are 7 units are opting for brine solution method, 3 have opted for nano membrane technology and another 7 will going in for a combination of brine solution and salt crystallization methods to ensure zero liquid discharge (ZLD).

CONCLUSION

Common effluent plants in Tirupur textile zone which are yet to be operated with their setting up Zero discharge system but legal hindrances have surmounted before regular operations. Achieving standards for treated effluent quality from CETPs is dependent on meeting the designed criteria of inlet quality to the CETPs that inter alia depends on effluent quality from each industry. The State Pollution Control Boards are required to prescribe standards for discharge effluent to CETP from each industry and enforce the same. CETP operating agencies should engage experts to advice them from time to time for proper operation and maintenance of CETP besides employing skilled manpower. Setting time limits in future for compliance of new regulations, compliance of which requires significant investment, is an industry-friendly and effective approach.

References:

1. Tchobanoglous, G., Burton, F.L., and Stensel, H.D. (2003). *Wastewater Engineering (Treatment Disposal Reuse) / Metcalf & Eddy, Inc. (4th ed.)*. McGraw-Hill Book Company. ISBN 0-07-041878-0.
2. Dr. B. Sengupta, Member Secretary Principal Coordinators Mr. P. M. Ansari, Additional Director Mr. Paritosh Kumar, Senior Environmental Engineer(2005) 'Performance status of Common Effluent Treatment plant in India', retrieved from http://cpcb.nic.in/upload/Publications/Publication_24_PerformanceStatusOfCETPsInIndia.pdf
3. Rittmann, B.(2010), 'Environmental Biotechnology in Water and Wastewater Treatment', Journal of environmental engineering, volume 136, issue 4, pp:348-353.
4. Khalid.A etal., (2011) 'The anaerobic digestion of solid organic waste', *Waste Management*, volume.31, issue:8, August 2011, pp1737-1744.
5. Orcun Turgay, Gulin Ersoz, Suheyda Atalay, Jorgen Forss, Ulrika Welander,(2011), 'The treatment of azo dyes found in textile industry wastewater by anaerobic biological method and chemical oxidation', Separation and Purification technology, volume 79, issue 1, pages26-33
6. Arenev.U. (2012) 'Process and technological aspect of municipal solid waste gasification, A review', *Waste management*, Vol.32, issue:4, pages 625-639.
7. V.K. Gupta, *Imran Ali* (2013), 'Waste water Treatment by biological methods', *Environmental water, Advances in Treatment, Remediation and Recycling* ,pages 179-204,ISBN: 978-0-444-59399-3
8. Estate S.Rampairi, C. Venkobachar, R.Chevannes, F.Granti & D.Thor, 'Design of a common Effluent Treatment Plant for an Industrial' ,retrieved from <http://www.bvsde.paho.org/bvsaidis/cwwa9/ven.pdfNHILL4>

9. G.H.Trivedi, See J.D.Kalyani, R.O. 'Common Effluent Treatment Plant' retrieved from http://www.gpcb.gov.in/payroll/PRESENTATION_CETP.PDF

OPINION OF THE RETAILERS ON THE NEW FDI POLICY- AN ANALYSIS

Abstract

The winds of globalization sweeping across have taken the Indian economic environment in its fold and the proposals for further integration have gained momentum. The transformation has also changed the Indian consumer from a state of conserving resources; he's now ready to accept the shopping culture. The government encouraged by the outcome of economic policy of 1991 in India, has proposed retail reforms mainly as 100% FDI in the retail sector in India. It may benefit by bringing in investment into development of complete backend infrastructure as well as eliminating the exploitative system of middlemen. This paper is an attempt to study the challenges of retailers, opinion of the retailers about the proposed changes in business and the possible economic changes after the entrance of MNC retailers.

Keywords: Globalization, India, retailers, FDI policy, challenges and economic changes.

INTRODUCTION

As a result of the liberalized policies & reform measures taken by the government since 1991, Indian Economy has achieved commendable growth rates over the last few years with many success stories in many fronts. India's growing retail boom is one such success story. With strong fundamentals developing in the economy with changes in income levels, lifestyles, taste & habits reflecting in strong consumerism with preference for superior quality and branded products, vast domestic market with a very competitive manufacturing base, India also observed a major retail boom in recent years. India is the second most attractive retail destination globally from among thirty emergent Markets. With a contribution of 14% to the national GDP and employing 7% of the total workforce (only agriculture employs more) in the country, the retail industry is definitely one of the pillars of the Indian economy.

Being encouraged by India's growing retail boom many multinational companies also started making beeline to enter India's retail market. Indian Industry, by and large, has also hailed investment from abroad which has been considered to be very vital for adding to domestic investment, addition to capacity, higher growth in manufacturing, trade, business, employment, demand, consumption and income with multiplier effects. Government has also taken a number of pro-active policy measures in recent times for encouraging growth of retail business and other allied activities like creation of the required infrastructure facilities, centers of manufacturing excellence, providing for a good network of production, marketing, storages, distribution and cold chain facilities for spreading the effects of development to downstream level for inclusive growth.

FDI POLICY WITH REGARD TO RETAILING IN INDIA

Until 2011, Indian central government denied foreign direct investment (FDI) in multi-brand retail, forbidding foreign groups from any ownership in supermarkets, convenience stores or any retail outlets.

In November 2011, India's central government announced retail reforms for both multi-brand stores and single-brand stores. These market reforms paved the way for retail innovation and competition with multi-brand retailers such as Wal-Mart, Carrefour and Tesco, as well single brand majors such as IKEA, Nike and Apple. The announcement sparked intense activism, both in opposition and in support of the reforms. In December 2011, under pressure from the opposition, Indian government placed the retail reforms on hold till it reaches a consensus. In January 2012, India approved reforms for single-brand stores welcoming anyone in the world to innovate in Indian retail market with 100% ownership, but imposed the requirement that the single brand retailer source 30 percent of its goods from India. Indian government continues the hold on retail reforms for multi-brand stores. In June 2012, IKEA announced it has applied for permission to invest \$1.9 billion in India and set up 25 retail stores. Fitch believes that the 30 percent requirement is likely to significantly delay if not prevent most single brand majors from Europe, USA and Japan from opening stores and creating associated jobs in India.

On 14 September 2012, the government of India announced the opening of FDI in multi-brand retail, subject to approvals by individual states. This decision has been welcomed by economists and the markets, however has caused protests and an upheaval in India's central government's political coalition structure. On 20 September 2012, the Government of India formally notified the FDI reforms for single and multi brand retail, thereby making it effective under Indian law.

REVIEW OF LITERATURE

Dr. Gaurav Bisaria (2012) has stated that the FDI can be in the form of participation in management, joint venture, transfer of technology and expertise and it excludes investment through purchase of shares which can be used as a measure of growing economic globalization. **Arun K.R.Singh and P.K. Agarwal (2012)** has explained the relationship of Foreign Direct Investments with the Indian Retail Sector. He suggested that the Indian government must take decision to contain this revolution & safeguard the health of the Indian retail sector to stabilize themselves against competition from the giant players of the global economy in the present state of slowing growth, stubborn inflation & widening fiscal deficit in the country. **Kulkarni Keerti et al (2012)** have reviewed the issues and implications of foreign direct investment (FDI) inflows into the Indian retail sector. He pointed out that allowing FDI in multi brand retail can bring about Supply Chain Improvement, Investment in Technology, Manpower and Skill Development, Tourism Development, Greater Sourcing from India, Up-gradation in Agriculture, Efficient Small and Medium Scale Industries, growth in market size and benefits to Government through greater GDP, tax income and employment generation. **Anusha Chari (2012)** has suggested that allowing entry by large international retailers into the Indian market may help to tackle inflation especially in food prices. Moreover, technical know-how from foreign firms, such as warehousing technologies and distribution systems can improve supply chain efficiency in India, in particular for agricultural produce. **Anoop jain (2012)** has referred that foreign direct investment (FDI) is an integral part of an open and effective international economic system, which acts as a major catalyst in the development of a country through up-gradation of technology, managerial skills and capabilities in various sectors. **Nirmal Kumar (2012)** has pointed out that opening up FDI will not only lead to a greater variety of products for sale and increased consumer choice, but also penetrate deep into the hinterland of Indian economic activity and do much to improve the country's "shunned sectors" -- infrastructure and logistics. **Chandu K. L (2012)** has analyzed the pros and cons of government's policy on FDI in retailing and tries to examine the perceptions of small retailers on the government's decision. He suggested that a country-wide discussion through the mass-media is highly pertinent regarding this issue and the policy must be well-drafted for which a countrywide perceptual study of the stakeholders of retailing is solicited. **Mr. Shi (2012)** China first allowed 26 per cent FDI in 1992, and expanded this to 51 per cent — what India has allowed — only 12 years later. The entry of Wal-Mart and Carrefour had helped make China's retail sector more efficient, modernizing the sector and increasing investment in supply chains. Today, China's biggest retail chains are all Chinese, such as the Bailian group, Walmart, which has more than 350 stores in China, only has a 5.5 per cent market share, according to the China Market Research

Group. (**Hindu news2012**) Internationally, most of the developing countries such as China, Thailand, Brazil, Russia, Argentina, Indonesia and Brazil etc. allow 100% FDI in retail sector. In respect to India’s 2 per cent growth in organized sector in over a period of 10 years (1995-2005) Brazil shows growth rate of 10 per cent to 40 per cent and 20 per cent in China. The main cause for the lack of this growth is that in retailing sector unlike other sectors foreign direct investment was not allowed. **Amit Guin (2012)** In countries such as China, Thailand, Indonesia, Brazil, Singapore, Argentina and Chile, where there are no caps on FDI and where there are no conditions, small retail stores have flourished, leading to more employment.

STATEMENT OF THE PROBLEM

The liberalization of Foreign Direct Investment (FDI) policy of the Indian economy, has made most business sectors in India eligible to receive foreign investment, has opened up front doors to many a multinational corporation. But the policy framework for the retail sector has continued to be highly restricted. Finally our government has decided to open up the doors for FDI in retailing. To discuss why the global retailers are interested in investing capital in Indian retail sector and to analyse the perceptions of small retailers on the proposed changes in their business after New FDI policy, the study has been undertaken.

OBJECTIVES OF THE STUDY

- To examine the challenges faced by the retailers in their business.
- To know the opinion of the retailers on the reasons for opening up of FDI in retail business.
- To analyze the perception of the retailers on the proposed changes in their business after the entrance of MNC retailers.
- To explore the opinion of the respondent retailers on the possible economic changes through opening up of FDI in retail sector.

RESEARCH METHODOLOGY

The research design for the study is an analytical one, which is concerned with describing the characteristics of particular individual or of a group. The samples have been collected from 50 retailers who involved in groceries. The survey covers different categories of retailer viz., independent small retailer, Departmental store, super market and hyper market. Samples have been collected using purposive sampling technique. Interview schedule has been used to collect the primary data. Secondary data were collected from magazines, text books, journals & websites etc. To analyze the data, statistical techniques viz., ANOVA, Chi-square test, Kendall’s co-efficient of concordance, kruskal wallis- H-test and Mann whitney U-test have been used. .

PERSONAL PROFILE OF THE RESPONDENTS

The profile of the 50 surveyed respondent retailers (age, gender, experience, type, annual turnover) has been depicted in this section of the research work.

PROFILE OF THE RESPONDENTS

Personal factors		No of respondents	Percentage
Age	Below 25 years	6	16

	25 to 30 years	15	30
	30 to 35 years	10	20
	35 years and above	17	34
	Total	50	100
Gender	Male	44	88
	Female	6	12
	Total	50	100
Experience	Below 5 years	20	40
	5-10 years	22	44
	10 years and above	8	16
	Total	50	100
Type of Respondents	Independent small retailers	32	64
	Departmental stores	14	28
	Super market	2	4
	Hyper market	2	4
	Total	50	100
Annual turnover	Below 1 crore	34	68
	1 crore to 5 crore	8	16
	5 crore to 10 crore	5	10
	10 crore and above	3	6
	Total	50	100

There has been more number of respondents under the age group of 35 and above years than other age groups (below 25 years-16%, 25-30 years-30% and 30-35 years-20%). The male respondents account for 88% and female 12%. 44% of the respondents have 5-10 years experience. (Below 5 years -40% and 10 years and above 16%). The different categories of retailer have traded with the groceries taken for the study. In that, 64% of the respondents have been independent small retailers, 28%- departmental stores, 4%-super market and remaining 4%-hypermarket. While taking annual turnover of the retailers, 68% of the respondents have been traded with below 1 crore annual turnover. (16%- 1 - 5 crores, 10% - 5 crores-10 crores, 6% - above 10 crores).

CHALLENGES IN RETAIL BUSINESS

The respondent retailers have opined that they have been facing challenges in their retail business.

CHALLENGES IN RETAIL BUSINESS

Challenges	Total score	Mean	Rank
Shortage of desirable talent and skilled man power	249	4.98	II
Presence of numerous intermediaries	201	4.02	IV
Consumers expectation on quality goods	153	3.06	VII
Lack of basic infrastructure	169	3.38	V
Lack of branding to reach world market	162	3.24	VI

Lack of technology up gradation	205	4.1	III
In efficient supply chain	261	5.22	I

Among 50 respondents, most of the respondents had the problem of inefficient supply chain (mean value 5.22). To reap the different economies of scale with mutual dependence on each other and to transfer a substantial amount of knowledge and skills efficient supply chain becomes inevitable in these days. Next they had a problem of shortage of desirable skilled man power (mean value 4.98). Lack of technology upgradation being the next challenge for the respondents(mean value of 4.1). Presence of numerous intermediaries in the retail business becomes a great problem in turn the price of the product increases as their profit is included in the price(mean value 4.02) lack of basic infrastructure which needs high investment for the retailers become a challenge to compete with others(mean value 3.38), lack of branding to reach world market (mean value 3.24)as the customers demand shift to foreign brands, the respondents are in a position to create a brand name for their product to differentiate with others. To satisfy the customers, the retailers have been pushed to the position of supplying quality goods to them. (mean value 3.06).

Kendall's Coefficient of Concordance

Kendall's W	0.1537
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Kendall's co-efficient of concordance has been used to find whether the ranks assigned by respondents have any similarities. The Kendall's (W) has found to be 0.1537(which has been less than ± 1) indicates that there has been low level of concordance among the respondents. The retailers' opinion on the challenges that they are facing has a very low similarity, revealing a wide dispersion in the opinion of the retailers.

NECESSITY FOR OPENING UP OF FDI IN RETAIL BUSINESS

Indian retail industry is the most promising emerging market for investment. For various reasons the opening of FDI in retail business becomes inevitable. Following table has shown the respondents opinion about the necessity for opening up of FDI in retail business.

NECESSITY FOR OPENING UP OF FDI IN RETAIL BUSINESS

OPINION ON THE NECESSITY FOR OPENING UP OF FDI IN RETAIL BUSINESS	NO.OF RESPONDENTS	PERCENTAGE (%)
Global market	8	16
Increase of consumer awareness	8	16
Ready to pay premium for quality, environment and brand	9	18
People keen to spend on life style	13	26
Customers expects everything to be available under a single roof	12	24

26% of the respondents have said that increase of consumer attitude to spend on life style necessitates for opening up FDI in retail business. 24% of the respondents have opined that the customers' expectation to get everything under a single roof being one of the reason for opening up of FDI in retail business. 18% of the respondents have said that nowadays people are ready to pay premium for quality, environment and brand and each of 16% of the

respondents have agreed that global market and increased consumer awareness induce the government and consumers to open up FDI in retail business.

OPINION ON THE OBJECTIVES OF FDI POLICY

The government of India has taken efforts for opening up of FDI in retail sector. The policy objectives are framed for the welfare of the society and the retailers. Following table has shown the opinion of the respondents about the objectives of the FDI policy.

OPINION ON THE OBJECTIVES OF FDI POLICY

Objectives	Total score	Mean	Rank
50% of foreign investment to be invested in backend infrastructure	157	3.14	II
Minimum sourcing of 30% from SME	171	3.42	I
E-commerce is any-form being disallowed	90	1.8	III
Foreign investor should be the owner of the brand	73	1.46	IV

Among 50 respondents, most of the respondents have favored for minimum sourcing of 30% from SME (mean value 3.42). 50% of foreign investment to be invested in backend infrastructure has scored as second (mean value 3.14), E-commerce is any-form being disallowed has been the next preferable objective by the respondents (mean value 1.8) foreign investor should be the owner of the brand being the least preferable objective by the respondents (mean value 1.46).

BENEFITS TO THE FARMERS THROUGH FDI POLICY

Provision of adequate and quality infrastructure is necessary for increasing the productivity and efficiency of agri value chain. It is estimated that the current FDI policy will bridge the gap. Following table has shown the opinion of the respondents with regard to the benefits that the farmers are going reap through FDI policy.

BENEFITS TO THE FARMERS THROUGH FDI POLICY

OPINION	NO.OF RESPONDENTS	PERCENTAGE (%)
Improvement can be made in the warehouses to reduce the wastage of food grains	7	14
Existing limited cold storage facility can be enhanced	11	22
Direct procurement from farmers ensure reasonable price and reduced the role of middlemen	32	64
TOTAL	50	100

64% of the respondents have opined that the direct procurement will provide knowledge of what needs to be produced, when, technological inputs to farmers and ensures reasonable price as the margin taken by the intermediaries being avoided. 22% of the respondents have said that the Indian agriculturist working with limited capacity cold storage facility, to meet the rising demand they need best cold storage facilities. This can be done through new FDI policy. 14% of the respondents have said that of existing warehouses was lack in optimal size, adequate design, ventilation facility, inventory management and storage system, through opening up of FDI, this can be improved.

AGREEABILITY OF THE RESPONDENTS ON THE PROPOSED CHANGES IN THEIR BUSINESS AFTER OPENING UP OF FDI POLICY IN MULTI BRAND

AGREEABILITY OF THE RESPONDENTS ON THE PROPOSED CHANGES IN THEIR BUSINESS

Particulars	S	A	N	D	SD	Total score	Mean value	Rank
MNC retailers can give cheaper priced products than me	17	20	3	5	5	189	3.78	I
MNC retailers would be the main competitor for me	8	24	12	3	3	181	3.62	II
Regular customers would still remain with me because of my own strategy to attract customers	10	10	21	7	2	169	3.38	IV
FDI in retail business will reduce the gap between price paid by the consumers (or) price received by the farmers	7	13	9	13	8	148	2.96	VII
FDI in retail will result in growth of my sales	6	10	9	10	15	132	2.64	IX
Through FDI substantial amount of knowledge and skill can be transferred	3	13	14	11	9	140	2.8	VIII
Employment opportunities can be created	3	19	14	7	7	154	3.08	V
Chance for possible impact on the size of the industry	8	10	11	16	5	150	3	VI
There can be franchising opportunity for local entrepreneurs	18	12	4	12	4	178	3.56	III

Among 50 respondent retailers, most of the respondents have highly agreed that MNC retailers can provide the products at cheaper price as they can make direct procurement from the farmers (mean value 3.78). The respondents have agreed that the MNC retailers would be the main competitor for them (mean value 3.62). New FDI policy can bring more franchising opportunity for local entrepreneurs (mean value 3.78). The respondents have ensured that their regular customers would still remain with them in spite of the entry of MNC retailers (mean value 3.38). Employment opportunities can be created has scored as the next proposed change (mean value 3.08). The respondents have agreed that there has been a chance for possible impact on the size of the industry as their sales will be affected in the long run(mean value 3). Next agreeable factor is FDI in retail business will reduce the gap between price paid by the consumers (or) price received by the farmers (mean value 2.96). Through FDI substantial amount of knowledge and skill can be transferred to the retailers, agreed with a mean value of 2.8. Few of the respondents have agreed that the FDI in retail will result in growth of their sales (mean value 2.64).

AGE GROUP VS PROPOSED CHANGES IN THE BUSINESS AFTER THE OPENING OF FDI IN MULTI BRAND

ANOVA has been carried out to test the difference of opinion among the respondents of different age group with respect to the proposed changes in the business after the opening of FDI in multi brand retail business and shown in the following Table.

Ho: There is no significant difference of opinion among the respondents of different age group about the proposed changes in their business after the opening of FDI in multi brand retail business.

ANOVA TABLE

Source of variation	Sum of square	Df	Mean of square	F value
Between columns	4419	3	1473	111.17
Between rows	660.85	8	82.6	6.23
Residual	318	24	13.25	
Total	5398	35		

ANOVA results (high F value 111.17, 6.23) have revealed the fact that the opinion of the respondents of different age group differed significantly about the proposed changes in the business after opening up FDI in multi brand retail.

GENDER VS PROPOSED CHANGES IN BUSINESS AFTER OPENING OF FDI IN MULTI BRAND

Mann whitney U-test has been carried out to test difference of opinion between the genders with regard to proposed changes in business after opening of FDI in multi brand. As the U value (3.78) is higher than 1.96 (0.05% level), there exist significant difference of opinion between genders with regard to proposed changes in business after opening of FDI in multi brand.

EXPERIENCE VS PROPOSED CHANGES IN THE BUSINESS AFTER OPENING OF FDI IN MULTI BRAND

H-test is used to test the difference of opinion among the respondents of varied years of experience with regard to proposed changes in their business after opening of FDI in multi brand. The H test result (18.97) reveals the fact that there exists difference of opinion among the respondents of varied years of experience on the proposed changes in their business after opening of FDI in multi brand.

Through FDI entry in retail business, how the economy can be boosted in many ways.

POSSIBLE ECONOMIC CHANGES THROUGH ENTRANCE OF FDI IN RETAIL SECTOR

ECONOMIC CHANGES	NO.OF RESPONDENTS	PERCENTAGE (%)
Chances for Substantial increase in country's GDP	6	12
Integrating the Indian retail market with that of global market	19	38

Tax revenue	5	10
Better payment to employees than local retailers	20	40

The Entrance of MNC in retail business would integrate the Indian retail market with that of global market as opined by 38% of the respondents. 40% of the respondents have opined that there is a chance for employment generation and better payment to employees than local retailers. 10% of them have said through the policy changes the tax revenue can be increased to the government through expected increase of standard of living. High consumer spending and rising disposable income will substantially increase the country's GDP as opined by 6% of the respondents

RESULTS AND DISCUSSION

The profile of the respondent retailers shows that 64% of them were small independent retailers. All of them belong to unorganized sector. **It shows** India's lowest percent(2 per cent) growth in organized sector in over a period of 10 years (1995-2005) While Brazil shows growth rate of 10 per cent to 40 per cent and 20 per cent in China. The main cause for the lack of this growth is that in retailing sector unlike other sectors foreign direct investment was not allowed. (**Hindu news**). Inefficient supply chain, lack of skilled man power and lack of technology up gradation have been the important challenges that the respondents are facing presently. Allowing FDI can solve all the above said challenges of retailers (**Kulkarni Keerti et al (2012)**). **Mr. Shi (2012)** The entry of Wal-Mart and Carrefour had helped to make China's retail sector more efficient, modernizing the sector and increasing investment in supply chains. Initially **China** allowed 26 per cent FDI in 1992, and expanded this to 51 per cent — what India has allowed — only 12 years later (**Mr. Shi 2012**). 26% of the respondents have said that increase of consumer attitude to spend on life style necessitates for opening up FDI in retail business. **Nirmal Kumar (2012)** also has pointed out the same that opening up FDI will not only lead to a greater variety of products for sale and increased consumer choice. Most of the respondents have highly agreed that MNC retailers can provide the products at cheaper price they be the main competitor for them. Today, China's biggest retail chains are all Chinese, such as the Bailian group, Wal-Mart, which has more than 350 stores in China, only has a 5.5 per cent market share, according to the China Market Research Group. (**Hindu news2012**) 40% of the respondents have opined that there is a chance for employment generation and better payment to employees than local retailers. In countries such as China, Thailand, Indonesia, Brazil, Singapore, Argentina and Chile, where there are no caps on FDI and where there are no conditions, small retail stores have flourished, leading to more employment.

CONCLUSION

FDI in the buzzing Indian retail sector should not just be freely allowed and significantly encouraged. FDI would lead to a more comprehensive integration of India into the worldwide market and, as such, it is imperative for the government to promote the retail sector for the overall economic development and social welfare of the country. But the policy must be well-drafted for which a countrywide perceptual study of the stakeholders of

retailing is solicited. Innovative government measures could further mitigate adverse effects on small retailers and traders. Farmers will get another window of direct marketing and hence get better remuneration, but this would require affirmative action and creation of adequate safety nets.

References:

Anoop Jain (2012) “A study on foreign direct investment in indian retail sector: issues and implications” *Indian journal of marketing management*, Vol.20, Issue-9.

Arun Kr. Singh and P.K. Agarwal (2012), Foreign Direct Investment: The Big Bang in Indian Retail, *VSRD International Journal of Business & Management Research*, Vol. 2, issue : 7

Anusha Chair (2012) “A case study on FDI in retail India” *Indian journal of marketing management*, Vol8, Issue-4.

Chandu. K. L (2012) , The New FDI policy in Retail in India: Promises, Problems and Perceptions, *Asian Journal Of Management Research* ,Volume 3 Issue 1.

Gaurav Bisaria (January 2012) “A case study on FID in retail India” *International journal of Engineering and Management Research*, Vol.2, Issue-1, Jan2012.